



# **Groundwater Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, Sample Location Report, SDG J237831**

*Bay Head Road Annex  
NSWC Annapolis  
Maryland*

December 2020

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Sacramento

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TestAmerica Job ID: 320-23783-1

Client Project/Site: Former Bay Head Road Annex (RFP JU06-01)

For:

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Attn: Kurt Vangelder



Authorized for release by:

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

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

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

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## Definitions/Glossary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

### Qualifiers

#### LCMS

| Qualifier | Qualifier Description                                                               |
|-----------|-------------------------------------------------------------------------------------|
| J         | Estimated: The analyte was positively identified; the quantitation is an estimation |
| M         | Manual integrated compound.                                                         |
| U         | Undetected at the Limit of Detection.                                               |
| Q         | One or more quality control criteria failed.                                        |
| E         | Result exceeded calibration range.                                                  |
| D         | The reported value is from a dilution.                                              |

### Glossary

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



# Case Narrative

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Job ID: 320-23783-1**

**Laboratory: TestAmerica Sacramento**

## Narrative

### CASE NARRATIVE

**Client: AECOM Technical Services Inc.**

**Project: Former Bay Head Road Annex (RFP JU06-01)**

**Report Number: 320-23783-1**

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

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

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

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

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

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

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

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

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

### RECEIPT

The samples were received on 11/23/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.5 C.

### **Receipt Exceptions**

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): DPT-16-28-SO-14-15 (320-23783-10). The container label lists DPT-16-22-SO-14-15, while the COC lists DPT-16-28-SO-14-15. The sample was logged in per the COC.

### PFAS

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.

## Case Narrative

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

### Job ID: 320-23783-1 (Continued)

#### Laboratory: TestAmerica Sacramento (Continued)

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: DPT-16-35-GW-21-25 (320-23783-3), DPT-16-35-GW-31-35 (320-23783-4), DPT-16-19-SO-00-01 (320-23783-5), DPT-16-15-GW-18-22 (320-23783-12) and DPT-16-15-GW-31-35 (320-23783-13). These samples have been run at dilution and both sets of data were reported.

The Isotope Dilution Analyte (IDA) recoveries for 18O2 PFHxS and 13C4 PFOA associated with the following sample is below the method recommended limit: DPT-16-15-GW-18-22 (320-23783-12). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-139749.

Due to excessive amount of sediment in the sample bottles, the aqueous portion of these samples was decanted to new bottles prior to spiking and the extraction. DPT-16-35-GW-21-25 (320-23783-3), DPT-16-35-GW-31-35 (320-23783-4), DPT-16-15-GW-18-22 (320-23783-12) and DPT-16-15-GW-31-35 (320-23783-13)

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

#### PERCENT SOLIDS

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

# Detection Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-35-SO-00-01

## Lab Sample ID: 320-23783-1

| Analyte                             | Result | Qualifier | RL   | MDL  | Unit  | Dil Fac | D | Method         | Prep Type |
|-------------------------------------|--------|-----------|------|------|-------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)       | 12     | M         | 0.58 | 0.12 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)    | 28     |           | 0.58 | 0.15 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) | 0.21   | J         | 0.46 | 0.12 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-35-SO-19-20

## Lab Sample ID: 320-23783-2

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.56   | J         | 0.60 | 0.12 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 4.0    | M         | 0.60 | 0.15 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-35-GW-21-25

## Lab Sample ID: 320-23783-3

| Analyte                                  | Result | Qualifier | RL     | MDL     | Unit | Dil Fac | D | Method         | Prep Type |
|------------------------------------------|--------|-----------|--------|---------|------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)            | 0.60   | E M       | 0.0025 | 0.00075 | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)         | 1.9    | E M       | 0.0040 | 0.0013  | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)      | 0.28   |           | 0.0025 | 0.00092 | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL       | 0.76   | D         | 0.025  | 0.0075  | ug/L | 10      |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL    | 2.4    | D         | 0.040  | 0.013   | ug/L | 10      |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) - DL | 0.19   | D         | 0.025  | 0.0092  | ug/L | 10      |   | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-35-GW-31-35

## Lab Sample ID: 320-23783-4

| Analyte                                  | Result | Qualifier | RL     | MDL     | Unit | Dil Fac | D | Method         | Prep Type |
|------------------------------------------|--------|-----------|--------|---------|------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)            | 1.1    | E M       | 0.0025 | 0.00075 | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)         | 0.72   | E         | 0.0040 | 0.0013  | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)      | 0.58   | E         | 0.0025 | 0.00092 | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL       | 1.4    | D         | 0.025  | 0.0075  | ug/L | 10      |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL    | 0.80   | D         | 0.040  | 0.013   | ug/L | 10      |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) - DL | 0.38   | D         | 0.025  | 0.0092  | ug/L | 10      |   | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-19-SO-00-01

## Lab Sample ID: 320-23783-5

| Analyte                               | Result | Qualifier | RL   | MDL  | Unit  | Dil Fac | D | Method         | Prep Type |
|---------------------------------------|--------|-----------|------|------|-------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)         | 3.8    |           | 0.57 | 0.12 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)      | 130    | M E       | 0.57 | 0.14 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)   | 0.18   | J         | 0.46 | 0.12 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL    | 3.5    | J D M     | 5.7  | 1.2  | ug/Kg | 10      | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL | 170    | D         | 5.7  | 1.4  | ug/Kg | 10      | ✱ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-19-SO-17-18

## Lab Sample ID: 320-23783-6

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.37   | J         | 0.62 | 0.13 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 6.5    | M         | 0.62 | 0.16 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-32-SO-14-15

## Lab Sample ID: 320-23783-7

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Detection Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-32-SO-14-15 (Continued)

## Lab Sample ID: 320-23783-7

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 1.1    |           | 0.60 | 0.12 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 46     | M         | 0.60 | 0.15 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-31-SO-14-15

## Lab Sample ID: 320-23783-8

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.27   | J         | 0.60 | 0.12 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 11     | M         | 0.60 | 0.15 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-30-SO-14-15

## Lab Sample ID: 320-23783-9

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 5.5    |           | 0.59 | 0.12 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 57     | M         | 0.59 | 0.15 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-28-SO-14-15

## Lab Sample ID: 320-23783-10

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.45   | J         | 0.58 | 0.12 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 10     | M         | 0.58 | 0.15 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-15-SO-14-15

## Lab Sample ID: 320-23783-11

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.51   | J         | 0.61 | 0.13 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 11     | M         | 0.61 | 0.15 | ug/Kg | 1       | ✱ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-15-GW-18-22

## Lab Sample ID: 320-23783-12

| Analyte                                  | Result | Qualifier | RL     | MDL     | Unit | Dil Fac | D | Method         | Prep Type |
|------------------------------------------|--------|-----------|--------|---------|------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)            | 5.8    | E M       | 0.0025 | 0.00075 | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)         | 6.5    | E M       | 0.0040 | 0.0013  | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)      | 1.2    | E         | 0.0025 | 0.00092 | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL       | 15     | D         | 0.25   | 0.075   | ug/L | 100     |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL    | 12     | D         | 0.40   | 0.13    | ug/L | 100     |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) - DL | 0.54   | D         | 0.25   | 0.092   | ug/L | 100     |   | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-15-GW-31-35

## Lab Sample ID: 320-23783-13

| Analyte                                  | Result | Qualifier | RL     | MDL     | Unit | Dil Fac | D | Method         | Prep Type |
|------------------------------------------|--------|-----------|--------|---------|------|---------|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)            | 0.27   | M         | 0.0025 | 0.00076 | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)         | 0.46   | E         | 0.0041 | 0.0013  | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)      | 0.048  |           | 0.0025 | 0.00093 | ug/L | 1       |   | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL       | 0.27   | D         | 0.025  | 0.0076  | ug/L | 10      |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL    | 0.45   | D         | 0.041  | 0.013   | ug/L | 10      |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) - DL | 0.035  | D         | 0.025  | 0.0093  | ug/L | 10      |   | 537 (Modified) | Total/NA  |

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-35-SO-00-01

Date Collected: 11/22/16 09:24

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-1

Matrix: Solid

Percent Solids: 86.4

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 12        | M         | 0.58     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 28        |           | 0.58     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.21      | J         | 0.46     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 93        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| 13C4 PFOS                           | 73        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| 18O2 PFHxS                          | 86        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:52 | 1       |

## Client Sample ID: DPT-16-35-SO-19-20

Date Collected: 11/22/16 09:36

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-2

Matrix: Solid

Percent Solids: 82.8

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.56      | J         | 0.60     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 4.0       | M         | 0.60     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.36      | U         | 0.48     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 112       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| 13C4 PFOS                           | 101       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| 18O2 PFHxS                          | 108       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:59 | 1       |

## Client Sample ID: DPT-16-35-GW-21-25

Date Collected: 11/22/16 10:10

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-3

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|---------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.60      | E M       | 0.0025   | 0.00075 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 1.9       | E M       | 0.0040   | 0.0013  | ug/L | — | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.28      |           | 0.0025   | 0.00092 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 70        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| 13C4 PFOS                           | 58        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| 18O2 PFHxS                          | 43        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:26 | 1       |

### Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|--------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.76      | D         | 0.025    | 0.0075 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| Perfluorooctane Sulfonate (PFOS)    | 2.4       | D         | 0.040    | 0.013  | ug/L | — | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| Perfluorobutanesulfonic acid (PFBS) | 0.19      | D         | 0.025    | 0.0092 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |        |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 91        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| 13C4 PFOS                           | 87        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| 18O2 PFHxS                          | 83        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:10 | 10      |

TestAmerica Sacramento

# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-35-GW-31-35**

**Lab Sample ID: 320-23783-4**

**Date Collected: 11/22/16 10:30**

**Matrix: Water**

**Date Received: 11/23/16 08:46**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|---------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 1.1       | E M       | 0.0025   | 0.00075 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 0.72      | E         | 0.0040   | 0.0013  | ug/L | — | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.58      | E         | 0.0025   | 0.00092 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 52        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| 13C4 PFOS                           | 76        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| 18O2 PFHxS                          | 30        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:33 | 1       |

## Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|--------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 1.4       | D         | 0.025    | 0.0075 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| Perfluorooctane Sulfonate (PFOS)    | 0.80      | D         | 0.040    | 0.013  | ug/L | — | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| Perfluorobutanesulfonic acid (PFBS) | 0.38      | D         | 0.025    | 0.0092 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |        |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 78        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| 13C4 PFOS                           | 91        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| 18O2 PFHxS                          | 73        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:18 | 10      |

**Client Sample ID: DPT-16-19-SO-00-01**

**Lab Sample ID: 320-23783-5**

**Date Collected: 11/22/16 11:20**

**Matrix: Solid**

**Date Received: 11/23/16 08:46**

**Percent Solids: 86.7**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 3.8       |           | 0.57     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 130       | M E       | 0.57     | 0.14 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.18      | J         | 0.46     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 96        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| 13C4 PFOS                           | 54        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| 18O2 PFHxS                          | 85        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:07 | 1       |

## Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|-----|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 3.5       | J D M     | 5.7      | 1.2 | ug/Kg | ☼ | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| Perfluorooctane Sulfonate (PFOS)    | 170       | D         | 5.7      | 1.4 | ug/Kg | ☼ | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| Perfluorobutanesulfonic acid (PFBS) | 3.4       | U         | 4.6      | 1.2 | ug/Kg | ☼ | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |     |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 136       |           | 25 - 150 |     |       |   | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| 13C4 PFOS                           | 90        |           | 25 - 150 |     |       |   | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| 18O2 PFHxS                          | 106       |           | 25 - 150 |     |       |   | 11/28/16 11:03 | 12/07/16 17:33 | 10      |

TestAmerica Sacramento



# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-19-SO-17-18

Date Collected: 11/22/16 11:30

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-6

Matrix: Solid

Percent Solids: 79.7

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.37      | J         | 0.62     | 0.13 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 6.5       | M         | 0.62     | 0.16 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.37      | U         | 0.50     | 0.13 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 69        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| 13C4 PFOS                           | 64        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| 18O2 PFHxS                          | 73        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:44 | 1       |

## Client Sample ID: DPT-16-32-SO-14-15

Date Collected: 11/21/16 09:36

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-7

Matrix: Solid

Percent Solids: 82.3

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 1.1       |           | 0.60     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 46        | M         | 0.60     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.36      | U         | 0.48     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 96        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| 13C4 PFOS                           | 62        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| 18O2 PFHxS                          | 70        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:52 | 1       |

## Client Sample ID: DPT-16-31-SO-14-15

Date Collected: 11/21/16 10:12

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-8

Matrix: Solid

Percent Solids: 83.8

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.27      | J         | 0.60     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 11        | M         | 0.60     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.36      | U         | 0.48     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 108       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| 13C4 PFOS                           | 82        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| 18O2 PFHxS                          | 93        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:59 | 1       |

## Client Sample ID: DPT-16-30-SO-14-15

Date Collected: 11/21/16 10:46

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-9

Matrix: Solid

Percent Solids: 83.8

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 5.5       |           | 0.59     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 57        | M         | 0.59     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.36      | U         | 0.48     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 101       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| 13C4 PFOS                           | 63        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| 18O2 PFHxS                          | 90        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:07 | 1       |

TestAmerica Sacramento

# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-28-SO-14-15

Date Collected: 11/21/16 11:54

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-10

Matrix: Solid

Percent Solids: 85.2

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.45      | J         | 0.58     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 10        | M         | 0.58     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.35      | U         | 0.47     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 105       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| 13C4 PFOS                           | 61        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| 18O2 PFHxS                          | 89        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:14 | 1       |

## Client Sample ID: DPT-16-15-SO-14-15

Date Collected: 11/21/16 12:50

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-11

Matrix: Solid

Percent Solids: 80.6

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.51      | J         | 0.61     | 0.13 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 11        | M         | 0.61     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.37      | U         | 0.49     | 0.13 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 101       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| 13C4 PFOS                           | 66        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| 18O2 PFHxS                          | 89        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:22 | 1       |

## Client Sample ID: DPT-16-15-GW-18-22

Date Collected: 11/21/16 13:30

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-12

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|---------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 5.8       | E M       | 0.0025   | 0.00075 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 6.5       | E M       | 0.0040   | 0.0013  | ug/L | — | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 1.2       | E         | 0.0025   | 0.00092 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 23        | Q         | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| 13C4 PFOS                           | 29        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| 18O2 PFHxS                          | 21        | Q         | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:41 | 1       |

### Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL   | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|-------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 15        | D         | 0.25     | 0.075 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| Perfluorooctane Sulfonate (PFOS)    | 12        | D         | 0.40     | 0.13  | ug/L | — | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| Perfluorobutanesulfonic acid (PFBS) | 0.54      | D         | 0.25     | 0.092 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |       |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 83        |           | 25 - 150 |       |      |   | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| 13C4 PFOS                           | 94        |           | 25 - 150 |       |      |   | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| 18O2 PFHxS                          | 104       |           | 25 - 150 |       |      |   | 11/28/16 16:55 | 12/07/16 17:03 | 100     |

TestAmerica Sacramento



# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-15-GW-31-35**

**Lab Sample ID: 320-23783-13**

**Date Collected: 11/21/16 14:00**

**Matrix: Water**

**Date Received: 11/23/16 08:46**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|---------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.27      | M         | 0.0025   | 0.00076 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 0.46      | E         | 0.0041   | 0.0013  | ug/L | — | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.048     |           | 0.0025   | 0.00093 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 22        | Q         | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| 13C4 PFOS                           | 82        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| 18O2 PFHxS                          | 66        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:48 | 1       |

## Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|--------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.27      | D         | 0.025    | 0.0076 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| Perfluorooctane Sulfonate (PFOS)    | 0.45      | D         | 0.041    | 0.013  | ug/L | — | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| Perfluorobutanesulfonic acid (PFBS) | 0.035     | D         | 0.025    | 0.0093 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |        |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 33        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| 13C4 PFOS                           | 95        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| 18O2 PFHxS                          | 101       |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:25 | 10      |

TestAmerica Sacramento

# Isotope Dilution Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Solid

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

| Lab Sample ID      | Client Sample ID   | 3C4 PFO/ (25-150) | 3C4 PFO/ (25-150) | 3O2 PFHx (25-150) |
|--------------------|--------------------|-------------------|-------------------|-------------------|
| 320-23783-1        | DPT-16-35-SO-00-01 | 93                | 73                | 86                |
| 320-23783-2        | DPT-16-35-SO-19-20 | 112               | 101               | 108               |
| 320-23783-5        | DPT-16-19-SO-00-01 | 96                | 54                | 85                |
| 320-23783-5 - DL   | DPT-16-19-SO-00-01 | 136               | 90                | 106               |
| 320-23783-6        | DPT-16-19-SO-17-18 | 69                | 64                | 73                |
| 320-23783-7        | DPT-16-32-SO-14-15 | 96                | 62                | 70                |
| 320-23783-8        | DPT-16-31-SO-14-15 | 108               | 82                | 93                |
| 320-23783-9        | DPT-16-30-SO-14-15 | 101               | 63                | 90                |
| 320-23783-10       | DPT-16-28-SO-14-15 | 105               | 61                | 89                |
| 320-23783-11       | DPT-16-15-SO-14-15 | 101               | 66                | 89                |
| LCS 320-139627/2-A | Lab Control Sample | 119               | 112               | 120               |
| MB 320-139627/1-A  | Method Blank       | 108               | 94                | 104               |

### Surrogate Legend

13C4 PFOA = 13C4 PFOA  
13C4 PFOS = 13C4 PFOS  
18O2 PFHxS = 18O2 PFHxS

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

| Lab Sample ID       | Client Sample ID       | 3C4 PFO/ (25-150) | 3C4 PFO/ (25-150) | 3O2 PFHx (25-150) |
|---------------------|------------------------|-------------------|-------------------|-------------------|
| 320-23783-3         | DPT-16-35-GW-21-25     | 70                | 58                | 43                |
| 320-23783-3 - DL    | DPT-16-35-GW-21-25     | 91                | 87                | 83                |
| 320-23783-4         | DPT-16-35-GW-31-35     | 52                | 76                | 30                |
| 320-23783-4 - DL    | DPT-16-35-GW-31-35     | 78                | 91                | 73                |
| 320-23783-12        | DPT-16-15-GW-18-22     | 23 Q              | 29                | 21 Q              |
| 320-23783-12 - DL   | DPT-16-15-GW-18-22     | 83                | 94                | 104               |
| 320-23783-13        | DPT-16-15-GW-31-35     | 22 Q              | 82                | 66                |
| 320-23783-13 - DL   | DPT-16-15-GW-31-35     | 33                | 95                | 101               |
| LCS 320-139749/2-A  | Lab Control Sample     | 108               | 104               | 105               |
| LCSD 320-139749/3-A | Lab Control Sample Dup | 116               | 104               | 104               |
| MB 320-139749/1-A   | Method Blank           | 93                | 85                | 86                |

### Surrogate Legend

13C4 PFOA = 13C4 PFOA  
13C4 PFOS = 13C4 PFOS  
18O2 PFHxS = 18O2 PFHxS

# QC Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-139627/1-A

Matrix: Solid

Analysis Batch: 140429

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 139627

| Analyte                             | MB Result    | MB Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|--------------|--------------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.30         | U            | 0.50     | 0.10 | ug/Kg |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 0.30         | U            | 0.50     | 0.13 | ug/Kg |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.30         | U            | 0.40     | 0.10 | ug/Kg |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| Isotope Dilution                    | MB %Recovery | MB Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 108          |              | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| 13C4 PFOS                           | 94           |              | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| 18O2 PFHxS                          | 104          |              | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |

Lab Sample ID: LCS 320-139627/2-A

Matrix: Solid

Analysis Batch: 140429

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 139627

| Analyte                             | Spike Added   | LCS Result    | LCS Qualifier | Unit  | D | %Rec | Limits   |
|-------------------------------------|---------------|---------------|---------------|-------|---|------|----------|
| Perfluorooctanoic acid (PFOA)       | 4.00          | 4.25          |               | ug/Kg |   | 106  | 60 - 140 |
| Perfluorooctane Sulfonate (PFOS)    | 3.71          | 3.66          |               | ug/Kg |   | 99   | 60 - 140 |
| Perfluorobutanesulfonic acid (PFBS) | 3.54          | 4.03          |               | ug/Kg |   | 114  | 50 - 150 |
| Isotope Dilution                    | LCS %Recovery | LCS Qualifier | Limits        |       |   |      |          |
| 13C4 PFOA                           | 119           |               | 25 - 150      |       |   |      |          |
| 13C4 PFOS                           | 112           |               | 25 - 150      |       |   |      |          |
| 18O2 PFHxS                          | 120           |               | 25 - 150      |       |   |      |          |

Lab Sample ID: MB 320-139749/1-A

Matrix: Water

Analysis Batch: 140564

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 139749

| Analyte                             | MB Result    | MB Qualifier | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|--------------|--------------|----------|---------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.0020       | U            | 0.0025   | 0.00075 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 0.0030       | U            | 0.0040   | 0.0013  | ug/L |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.0020       | U            | 0.0025   | 0.00092 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| Isotope Dilution                    | MB %Recovery | MB Qualifier | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 93           |              | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| 13C4 PFOS                           | 85           |              | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| 18O2 PFHxS                          | 86           |              | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |

Lab Sample ID: LCS 320-139749/2-A

Matrix: Water

Analysis Batch: 140564

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 139749

| Analyte                             | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits   |
|-------------------------------------|-------------|------------|---------------|------|---|------|----------|
| Perfluorooctanoic acid (PFOA)       | 0.0400      | 0.0296     |               | ug/L |   | 74   | 60 - 140 |
| Perfluorooctane Sulfonate (PFOS)    | 0.0371      | 0.0261     |               | ug/L |   | 70   | 60 - 140 |
| Perfluorobutanesulfonic acid (PFBS) | 0.0354      | 0.0289     |               | ug/L |   | 82   | 50 - 150 |

TestAmerica Sacramento

# QC Sample Results

Client: AECOM Technical Services Inc.

TestAmerica Job ID: 320-23783-1

Project/Site: Former Bay Head Road Annex (RFP JU06-01)

LCS LCS

| Isotope Dilution | %Recovery | Qualifier | Limits   |
|------------------|-----------|-----------|----------|
| 13C4 PFOA        | 108       |           | 25 - 150 |
| 13C4 PFOS        | 104       |           | 25 - 150 |
| 18O2 PFHxS       | 105       |           | 25 - 150 |

Lab Sample ID: LCSD 320-139749/3-A

Matrix: Water

Analysis Batch: 140564

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 139749

| Analyte                             | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|-------------------------------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| Perfluorooctanoic acid (PFOA)       | 0.0400      | 0.0314      |                | ug/L |   | 79   | 60 - 140     | 6   | 30        |
| Perfluorooctane Sulfonate (PFOS)    | 0.0371      | 0.0289      |                | ug/L |   | 78   | 60 - 140     | 10  | 30        |
| Perfluorobutanesulfonic acid (PFBS) | 0.0354      | 0.0325      |                | ug/L |   | 92   | 50 - 150     | 12  | 30        |

LCSD LCSD

| Isotope Dilution | %Recovery | Qualifier | Limits   |
|------------------|-----------|-----------|----------|
| 13C4 PFOA        | 116       |           | 25 - 150 |
| 13C4 PFOS        | 104       |           | 25 - 150 |
| 18O2 PFHxS       | 104       |           | 25 - 150 |

TestAmerica Sacramento

# QC Association Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## LCMS

### Prep Batch: 139627

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 320-23783-1        | DPT-16-35-SO-00-01 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-2        | DPT-16-35-SO-19-20 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-5 - DL   | DPT-16-19-SO-00-01 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-5        | DPT-16-19-SO-00-01 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-6        | DPT-16-19-SO-17-18 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-7        | DPT-16-32-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-8        | DPT-16-31-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-9        | DPT-16-30-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-10       | DPT-16-28-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-11       | DPT-16-15-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| MB 320-139627/1-A  | Method Blank       | Total/NA  | Solid  | SHAKE  |            |
| LCS 320-139627/2-A | Lab Control Sample | Total/NA  | Solid  | SHAKE  |            |

### Prep Batch: 139749

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-23783-3 - DL    | DPT-16-35-GW-21-25     | Total/NA  | Water  | 3535   |            |
| 320-23783-3         | DPT-16-35-GW-21-25     | Total/NA  | Water  | 3535   |            |
| 320-23783-4 - DL    | DPT-16-35-GW-31-35     | Total/NA  | Water  | 3535   |            |
| 320-23783-4         | DPT-16-35-GW-31-35     | Total/NA  | Water  | 3535   |            |
| 320-23783-12        | DPT-16-15-GW-18-22     | Total/NA  | Water  | 3535   |            |
| 320-23783-12 - DL   | DPT-16-15-GW-18-22     | Total/NA  | Water  | 3535   |            |
| 320-23783-13        | DPT-16-15-GW-31-35     | Total/NA  | Water  | 3535   |            |
| 320-23783-13 - DL   | DPT-16-15-GW-31-35     | Total/NA  | Water  | 3535   |            |
| MB 320-139749/1-A   | Method Blank           | Total/NA  | Water  | 3535   |            |
| LCS 320-139749/2-A  | Lab Control Sample     | Total/NA  | Water  | 3535   |            |
| LCSD 320-139749/3-A | Lab Control Sample Dup | Total/NA  | Water  | 3535   |            |

### Analysis Batch: 140429

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method         | Prep Batch |
|--------------------|--------------------|-----------|--------|----------------|------------|
| 320-23783-1        | DPT-16-35-SO-00-01 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-2        | DPT-16-35-SO-19-20 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-5        | DPT-16-19-SO-00-01 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-6        | DPT-16-19-SO-17-18 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-7        | DPT-16-32-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-8        | DPT-16-31-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-9        | DPT-16-30-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-10       | DPT-16-28-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-11       | DPT-16-15-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| MB 320-139627/1-A  | Method Blank       | Total/NA  | Solid  | 537 (Modified) | 139627     |
| LCS 320-139627/2-A | Lab Control Sample | Total/NA  | Solid  | 537 (Modified) | 139627     |

### Analysis Batch: 140564

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method         | Prep Batch |
|---------------------|------------------------|-----------|--------|----------------|------------|
| 320-23783-3         | DPT-16-35-GW-21-25     | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-4         | DPT-16-35-GW-31-35     | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-12        | DPT-16-15-GW-18-22     | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-13        | DPT-16-15-GW-31-35     | Total/NA  | Water  | 537 (Modified) | 139749     |
| MB 320-139749/1-A   | Method Blank           | Total/NA  | Water  | 537 (Modified) | 139749     |
| LCS 320-139749/2-A  | Lab Control Sample     | Total/NA  | Water  | 537 (Modified) | 139749     |
| LCSD 320-139749/3-A | Lab Control Sample Dup | Total/NA  | Water  | 537 (Modified) | 139749     |

TestAmerica Sacramento

## QC Association Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

### LCMS (Continued)

#### Analysis Batch: 141062

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method         | Prep Batch |
|-------------------|--------------------|-----------|--------|----------------|------------|
| 320-23783-3 - DL  | DPT-16-35-GW-21-25 | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-4 - DL  | DPT-16-35-GW-31-35 | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-5 - DL  | DPT-16-19-SO-00-01 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-12 - DL | DPT-16-15-GW-18-22 | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-13 - DL | DPT-16-15-GW-31-35 | Total/NA  | Water  | 537 (Modified) | 139749     |

### General Chemistry

#### Analysis Batch: 140129

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 320-23783-1   | DPT-16-35-SO-00-01 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-2   | DPT-16-35-SO-19-20 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-5   | DPT-16-19-SO-00-01 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-6   | DPT-16-19-SO-17-18 | Total/NA  | Solid  | D 2216 |            |

#### Analysis Batch: 140181

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 320-23783-7   | DPT-16-32-SO-14-15 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-8   | DPT-16-31-SO-14-15 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-9   | DPT-16-30-SO-14-15 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-10  | DPT-16-28-SO-14-15 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-11  | DPT-16-15-SO-14-15 | Total/NA  | Solid  | D 2216 |            |

# Lab Chronicle

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-35-SO-00-01**

**Date Collected: 11/22/16 09:24**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-1**

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1          |                |              | 140129       | 12/01/16 09:31       | CRM     | TAL SAC |

**Client Sample ID: DPT-16-35-SO-00-01**

**Date Collected: 11/22/16 09:24**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-1**

**Matrix: Solid**

**Percent Solids: 86.4**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |            | 5.01 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140429       | 12/02/16 15:52       | SBC     | TAL SAC |

**Client Sample ID: DPT-16-35-SO-19-20**

**Date Collected: 11/22/16 09:36**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-2**

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1          |                |              | 140129       | 12/01/16 09:31       | CRM     | TAL SAC |

**Client Sample ID: DPT-16-35-SO-19-20**

**Date Collected: 11/22/16 09:36**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-2**

**Matrix: Solid**

**Percent Solids: 82.8**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |            | 5.07 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140429       | 12/02/16 15:59       | SBC     | TAL SAC |

**Client Sample ID: DPT-16-35-GW-21-25**

**Date Collected: 11/22/16 10:10**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-3**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           |     |            | 250.2 mL       | 0.5 mL       | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140564       | 12/03/16 16:26       | SBC     | TAL SAC |
| Total/NA  | Prep       | 3535           | DL  |            | 250.2 mL       | 0.5 mL       | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 10         |                |              | 141062       | 12/07/16 17:10       | CBW     | TAL SAC |

**Client Sample ID: DPT-16-35-GW-31-35**

**Date Collected: 11/22/16 10:30**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-4**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           |     |            | 249.6 mL       | 0.5 mL       | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140564       | 12/03/16 16:33       | SBC     | TAL SAC |

TestAmerica Sacramento



# Lab Chronicle

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-35-GW-31-35**

**Lab Sample ID: 320-23783-4**

Date Collected: 11/22/16 10:30

Matrix: Water

Date Received: 11/23/16 08:46

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           | DL  |            | 249.6 mL       | 0.5 mL       | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 10         |                |              | 141062       | 12/07/16 17:18       | CBW     | TAL SAC |

**Client Sample ID: DPT-16-19-SO-00-01**

**Lab Sample ID: 320-23783-5**

Date Collected: 11/22/16 11:20

Matrix: Solid

Date Received: 11/23/16 08:46

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1          |                |              | 140129       | 12/01/16 09:31       | CRM     | TAL SAC |

**Client Sample ID: DPT-16-19-SO-00-01**

**Lab Sample ID: 320-23783-5**

Date Collected: 11/22/16 11:20

Matrix: Solid

Date Received: 11/23/16 08:46

Percent Solids: 86.7

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |            | 5.02 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140429       | 12/02/16 16:07       | SBC     | TAL SAC |
| Total/NA  | Prep       | SHAKE          | DL  |            | 5.02 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 10         |                |              | 141062       | 12/07/16 17:33       | CBW     | TAL SAC |

**Client Sample ID: DPT-16-19-SO-17-18**

**Lab Sample ID: 320-23783-6**

Date Collected: 11/22/16 11:30

Matrix: Solid

Date Received: 11/23/16 08:46

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1          |                |              | 140129       | 12/01/16 09:31       | CRM     | TAL SAC |

**Client Sample ID: DPT-16-19-SO-17-18**

**Lab Sample ID: 320-23783-6**

Date Collected: 11/22/16 11:30

Matrix: Solid

Date Received: 11/23/16 08:46

Percent Solids: 79.7

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |            | 5.06 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140429       | 12/02/16 16:44       | SBC     | TAL SAC |

**Client Sample ID: DPT-16-32-SO-14-15**

**Lab Sample ID: 320-23783-7**

Date Collected: 11/21/16 09:36

Matrix: Solid

Date Received: 11/23/16 08:46

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1          |                |              | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

TestAmerica Sacramento

# Lab Chronicle

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-32-SO-14-15**

**Date Collected: 11/21/16 09:36**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-7**

**Matrix: Solid**

**Percent Solids: 82.3**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |            | 5.03 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140429       | 12/02/16 16:52       | SBC     | TAL SAC |

**Client Sample ID: DPT-16-31-SO-14-15**

**Date Collected: 11/21/16 10:12**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-8**

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1          |                |              | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

**Client Sample ID: DPT-16-31-SO-14-15**

**Date Collected: 11/21/16 10:12**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-8**

**Matrix: Solid**

**Percent Solids: 83.8**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |            | 5.00 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140429       | 12/02/16 16:59       | SBC     | TAL SAC |

**Client Sample ID: DPT-16-30-SO-14-15**

**Date Collected: 11/21/16 10:46**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-9**

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1          |                |              | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

**Client Sample ID: DPT-16-30-SO-14-15**

**Date Collected: 11/21/16 10:46**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-9**

**Matrix: Solid**

**Percent Solids: 83.8**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |            | 5.02 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140429       | 12/02/16 17:07       | SBC     | TAL SAC |

**Client Sample ID: DPT-16-28-SO-14-15**

**Date Collected: 11/21/16 11:54**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-10**

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1          |                |              | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

TestAmerica Sacramento

# Lab Chronicle

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-28-SO-14-15**

**Lab Sample ID: 320-23783-10**

**Date Collected: 11/21/16 11:54**

**Matrix: Solid**

**Date Received: 11/23/16 08:46**

**Percent Solids: 85.2**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |            | 5.03 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140429       | 12/02/16 17:14       | SBC     | TAL SAC |

**Client Sample ID: DPT-16-15-SO-14-15**

**Lab Sample ID: 320-23783-11**

**Date Collected: 11/21/16 12:50**

**Matrix: Solid**

**Date Received: 11/23/16 08:46**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1          |                |              | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

**Client Sample ID: DPT-16-15-SO-14-15**

**Lab Sample ID: 320-23783-11**

**Date Collected: 11/21/16 12:50**

**Matrix: Solid**

**Date Received: 11/23/16 08:46**

**Percent Solids: 80.6**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |            | 5.05 g         | 1.00 mL      | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140429       | 12/02/16 17:22       | SBC     | TAL SAC |

**Client Sample ID: DPT-16-15-GW-18-22**

**Lab Sample ID: 320-23783-12**

**Date Collected: 11/21/16 13:30**

**Matrix: Water**

**Date Received: 11/23/16 08:46**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           |     |            | 249.7 mL       | 0.5 mL       | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140564       | 12/03/16 16:41       | SBC     | TAL SAC |
| Total/NA  | Prep       | 3535           | DL  |            | 249.7 mL       | 0.5 mL       | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 100        |                |              | 141062       | 12/07/16 17:03       | CBW     | TAL SAC |

**Client Sample ID: DPT-16-15-GW-31-35**

**Lab Sample ID: 320-23783-13**

**Date Collected: 11/21/16 14:00**

**Matrix: Water**

**Date Received: 11/23/16 08:46**

| Prep Type | Batch Type | Batch Method   | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           |     |            | 245.9 mL       | 0.5 mL       | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1          |                |              | 140564       | 12/03/16 16:48       | SBC     | TAL SAC |
| Total/NA  | Prep       | 3535           | DL  |            | 245.9 mL       | 0.5 mL       | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 10         |                |              | 141062       | 12/07/16 17:25       | CBW     | TAL SAC |

## Laboratory References:

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

TestAmerica Sacramento

# Certification Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Laboratory: TestAmerica Sacramento

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

| Authority | Program  | EPA Region | Certification ID | Expiration Date |
|-----------|----------|------------|------------------|-----------------|
| A2LA      | DoD ELAP |            | 2928-01          | 01-31-17        |

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

| Analysis Method | Prep Method | Matrix | Analyte                          |
|-----------------|-------------|--------|----------------------------------|
| 537 (Modified)  | SHAKE       | Solid  | Perfluorooctane Sulfonate (PFOS) |
| D 2216          |             | Solid  | Percent Moisture                 |
| D 2216          |             | Solid  | Percent Solids                   |

## Method Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

| Method         | Method Description          | Protocol | Laboratory |
|----------------|-----------------------------|----------|------------|
| 537 (Modified) | Perfluorinated Hydrocarbons | EPA      | TAL SAC    |
| D 2216         | Percent Moisture            | ASTM     | TAL SAC    |

### Protocol References:

ASTM = ASTM International

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: AECOM Technical Services Inc.

TestAmerica Job ID: 320-23783-1

Project/Site: Former Bay Head Road Annex (RFP JU06-01)

| Lab Sample ID | Client Sample ID   | Matrix | Collected      | Received       |
|---------------|--------------------|--------|----------------|----------------|
| 320-23783-1   | DPT-16-35-SO-00-01 | Solid  | 11/22/16 09:24 | 11/23/16 08:46 |
| 320-23783-2   | DPT-16-35-SO-19-20 | Solid  | 11/22/16 09:36 | 11/23/16 08:46 |
| 320-23783-3   | DPT-16-35-GW-21-25 | Water  | 11/22/16 10:10 | 11/23/16 08:46 |
| 320-23783-4   | DPT-16-35-GW-31-35 | Water  | 11/22/16 10:30 | 11/23/16 08:46 |
| 320-23783-5   | DPT-16-19-SO-00-01 | Solid  | 11/22/16 11:20 | 11/23/16 08:46 |
| 320-23783-6   | DPT-16-19-SO-17-18 | Solid  | 11/22/16 11:30 | 11/23/16 08:46 |
| 320-23783-7   | DPT-16-32-SO-14-15 | Solid  | 11/21/16 09:36 | 11/23/16 08:46 |
| 320-23783-8   | DPT-16-31-SO-14-15 | Solid  | 11/21/16 10:12 | 11/23/16 08:46 |
| 320-23783-9   | DPT-16-30-SO-14-15 | Solid  | 11/21/16 10:46 | 11/23/16 08:46 |
| 320-23783-10  | DPT-16-28-SO-14-15 | Solid  | 11/21/16 11:54 | 11/23/16 08:46 |
| 320-23783-11  | DPT-16-15-SO-14-15 | Solid  | 11/21/16 12:50 | 11/23/16 08:46 |
| 320-23783-12  | DPT-16-15-GW-18-22 | Water  | 11/21/16 13:30 | 11/23/16 08:46 |
| 320-23783-13  | DPT-16-15-GW-31-35 | Water  | 11/21/16 14:00 | 11/23/16 08:46 |



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt \_\_\_\_\_

Drinking Water? Yes ☐ No ☒

|                                    |                                                                  |                                  |                                          |
|------------------------------------|------------------------------------------------------------------|----------------------------------|------------------------------------------|
| Client<br><b>AECOM</b>             | Project Manager<br><b>Kurt Vangelder</b>                         | Date<br><b>11/22/16</b>          | Chain of Custody Number<br><b>299019</b> |
| Address<br><b>3101 WILSON BLVD</b> | Telephone Number (Area Code)/Fax Number<br><b>(703) 682-9041</b> | Lab Number<br><b>Page 1 of 2</b> |                                          |
| City<br><b>ARLINGTON</b>           | State<br><b>VA</b>                                               | Zip Code<br><b>22201</b>         |                                          |

|                                                                                  |                                        |                                    |                                                |
|----------------------------------------------------------------------------------|----------------------------------------|------------------------------------|------------------------------------------------|
| Project Name and Location (State)<br><b>Former Bay Head Rd Annex - Annapolis</b> | Site Contact<br><b>MIKE GLINSKI</b>    | Lab Contact<br><b>Jill Kellman</b> | Analysis (Attach list if more space is needed) |
| Contract/Purchase Order/Quote No.<br><b>32007449</b>                             | Carrier/Waybill Number<br><b>Fedex</b> |                                    |                                                |

Special Instructions/  
Conditions of Receipt

| Sample I.D. No. and Description<br>(Containers for each sample may be combined on one line) | Date     | Time | Matrix |         |     |      |        | Containers & Preservatives |      |     |      |           | Analysis |
|---------------------------------------------------------------------------------------------|----------|------|--------|---------|-----|------|--------|----------------------------|------|-----|------|-----------|----------|
|                                                                                             |          |      | Air    | Aqueous | Sed | Soil | Unpres | H2SO4                      | HNO3 | HCl | NaOH | ZnAc/NaOH |          |
| DPT-16-35-50-00-01                                                                          | 11/22/16 | 0924 |        |         |     | ✓    | 1      |                            |      |     |      |           | PFOA     |
| DPT-16-35-50-19-20                                                                          |          | 0936 |        |         |     | ✓    | 1      |                            |      |     |      |           | PFOA     |
| DPT-16-35-50-21-25                                                                          |          | 1010 |        | ✓       |     |      | 2      |                            |      |     |      |           | PFOA     |
| DPT-16-35-50-31-35                                                                          |          | 1030 |        | ✓       |     |      | 2      |                            |      |     |      |           | PFOA     |
| DPT-16-19-50-00-01                                                                          |          | 1120 |        |         |     | ✓    | 1      |                            |      |     |      |           | PFOA     |
| DPT-16-19-50-17-18                                                                          |          | 1130 |        |         |     | ✓    | 1      |                            |      |     |      |           | PFOA     |
| DPT-16-32-50-14-15                                                                          | 11/21/16 | 0936 |        |         |     | ✓    | 1      |                            |      |     |      |           | PFOA     |
| DPT-16-31-50-14-15                                                                          |          | 1012 |        |         |     | ✓    | 1      |                            |      |     |      |           | PFOA     |
| DPT-16-30-50-14-15                                                                          |          | 1046 |        |         |     | ✓    | 1      |                            |      |     |      |           | PFOA     |
| DPT-16-28-50-14-15                                                                          |          | 1154 |        |         |     | ✓    | 1      |                            |      |     |      |           | PFOA     |
| DPT-16-15-50-14-15                                                                          |          | 1250 |        |         |     | ✓    | 1      |                            |      |     |      |           | PFOA     |
| DPT-16-15-GW-18-22                                                                          |          | 1330 | ✓      |         |     |      | 2      |                            |      |     |      |           | PFOA     |



320-23783 Chain of Custody

|                                                                                                                                                                                             |                                           |                                     |             |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------|-------------|--------|
| Possible Hazard Identification                                                                                                                                                              | Sample Disposal                           | Disposal By Lab                     | 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 | <input type="checkbox"/> Return To Client | <input checked="" type="checkbox"/> |             |        |

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

|                                                                                                                                                                                                                 |                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Turn Around Time Required                                                                                                                                                                                       | QC Requirements (Specify)                    |
| <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input checked="" type="checkbox"/> 7 Days <input type="checkbox"/> 14 Days <input type="checkbox"/> 21 Days <input type="checkbox"/> Other |                                              |
| 1. Relinquished By<br><b>WV/K</b>                                                                                                                                                                               | 1. Received By<br><b>TRANSFER TO FEDEX</b>   |
| 2. Relinquished By                                                                                                                                                                                              | 2. Received By<br><b>James J. Turpen JAS</b> |
| 3. Relinquished By                                                                                                                                                                                              | 3. Received By                               |
| Date                                                                                                                                                                                                            | Date                                         |
| Time                                                                                                                                                                                                            | Time                                         |

|                                                         |          |       |
|---------------------------------------------------------|----------|-------|
| Comments                                                | Date     | Time  |
| 1.5°C ice                                               | 11/22/16 | 1400  |
| * Sample label states "DPT-16-22-50-14-15" but 11/25/16 | 11/25/16 | 09:30 |

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy







# Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 320-23783-1

Login Number: 23783

List Number: 1

Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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

## ANALYTICAL REPORT

Job Number: 320-23783-1

Job Description: Former Bay Head Road Annex (RFP JU06-01)

For:  
AECOM Technical Services Inc.  
3101 Wilson Blvd.  
Suite 900  
Arlington, VA 22201  
Attention: Kurt Vangelder



Approved for release.  
Jill Kellmann  
Manager of Project Management  
12/9/2016 4:36 PM

---

Jill Kellmann, Manager of Project Management  
880 Riverside Parkway, West Sacramento, CA, 95605  
(916)374-4402  
jill.kellmann@testamericainc.com  
12/09/2016

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## Definitions/Glossary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

### Qualifiers

#### LCMS

| Qualifier | Qualifier Description                                                               |
|-----------|-------------------------------------------------------------------------------------|
| J         | Estimated: The analyte was positively identified; the quantitation is an estimation |
| M         | Manual integrated compound.                                                         |
| U         | Undetected at the Limit of Detection.                                               |
| Q         | One or more quality control criteria failed.                                        |
| E         | Result exceeded calibration range.                                                  |
| D         | The reported value is from a dilution.                                              |

### Glossary

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

## CASE NARRATIVE

**Client: AECOM Technical Services Inc.**

**Project: Former Bay Head Road Annex (RFP JU06-01)**

**Report Number: 320-23783-1**

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

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

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

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

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

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

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

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

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

### **RECEIPT**

The samples were received on 11/23/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.5 C.

### **Receipt Exceptions**

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): DPT-16-28-SO-14-15 (320-23783-10). The container label lists DPT-16-22-SO-14-15, while the COC lists DPT-16-28-SO-14-15. The sample was logged in per the COC.

### **PFAS**

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.

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: DPT-16-35-GW-21-25 (320-23783-3), DPT-16-35-GW-31-35 (320-23783-4), DPT-16-19-SO-00-01 (320-23783-5), DPT-16-15-GW-18-22 (320-23783-12) and DPT-16-15-GW-31-35 (320-23783-13). These samples have been run at dilution and both sets of data were reported.

The Isotope Dilution Analyte (IDA) recoveries for 18O2 PFHxS and 13C4 PFOA associated with the following sample is below the method recommended limit: DPT-16-15-GW-18-22 (320-23783-12). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-139749.



Due to excessive amount of sediment in the sample bottles, the aqueous portion of these samples was decanted to new bottles prior to spiking and the extraction. DPT-16-35-GW-21-25 (320-23783-3), DPT-16-35-GW-31-35 (320-23783-4), DPT-16-15-GW-18-22 (320-23783-12) and DPT-16-15-GW-31-35 (320-23783-13)

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

**PERCENT SOLIDS**

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

# Detection Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-35-SO-00-01

## Lab Sample ID: 320-23783-1

| Analyte                             | Result | Qualifier | RL   | MDL  | Unit  | Dil | Fac | D | Method         | Prep Type |
|-------------------------------------|--------|-----------|------|------|-------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)       | 12     | M         | 0.58 | 0.12 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)    | 28     |           | 0.58 | 0.15 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) | 0.21   | J         | 0.46 | 0.12 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-35-SO-19-20

## Lab Sample ID: 320-23783-2

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil | Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.56   | J         | 0.60 | 0.12 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 4.0    | M         | 0.60 | 0.15 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-35-GW-21-25

## Lab Sample ID: 320-23783-3

| Analyte                                  | Result | Qualifier | RL     | MDL     | Unit | Dil | Fac | D | Method         | Prep Type |
|------------------------------------------|--------|-----------|--------|---------|------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)            | 0.60   | E M       | 0.0025 | 0.00075 | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)         | 1.9    | E M       | 0.0040 | 0.0013  | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)      | 0.28   |           | 0.0025 | 0.00092 | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL       | 0.76   | D         | 0.025  | 0.0075  | ug/L | 10  |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL    | 2.4    | D         | 0.040  | 0.013   | ug/L | 10  |     |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) - DL | 0.19   | D         | 0.025  | 0.0092  | ug/L | 10  |     |   | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-35-GW-31-35

## Lab Sample ID: 320-23783-4

| Analyte                                  | Result | Qualifier | RL     | MDL     | Unit | Dil | Fac | D | Method         | Prep Type |
|------------------------------------------|--------|-----------|--------|---------|------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)            | 1.1    | E M       | 0.0025 | 0.00075 | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)         | 0.72   | E         | 0.0040 | 0.0013  | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)      | 0.58   | E         | 0.0025 | 0.00092 | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL       | 1.4    | D         | 0.025  | 0.0075  | ug/L | 10  |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL    | 0.80   | D         | 0.040  | 0.013   | ug/L | 10  |     |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) - DL | 0.38   | D         | 0.025  | 0.0092  | ug/L | 10  |     |   | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-19-SO-00-01

## Lab Sample ID: 320-23783-5

| Analyte                               | Result | Qualifier | RL   | MDL  | Unit  | Dil | Fac | D | Method         | Prep Type |
|---------------------------------------|--------|-----------|------|------|-------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)         | 3.8    |           | 0.57 | 0.12 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)      | 130    | M E       | 0.57 | 0.14 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)   | 0.18   | J         | 0.46 | 0.12 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL    | 3.5    | J D M     | 5.7  | 1.2  | ug/Kg | 10  |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL | 170    | D         | 5.7  | 1.4  | ug/Kg | 10  |     | ☼ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-19-SO-17-18

## Lab Sample ID: 320-23783-6

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil | Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.37   | J         | 0.62 | 0.13 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 6.5    | M         | 0.62 | 0.16 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-32-SO-14-15

## Lab Sample ID: 320-23783-7

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Detection Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-32-SO-14-15 (Continued)

## Lab Sample ID: 320-23783-7

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil | Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 1.1    |           | 0.60 | 0.12 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 46     | M         | 0.60 | 0.15 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-31-SO-14-15

## Lab Sample ID: 320-23783-8

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil | Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.27   | J         | 0.60 | 0.12 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 11     | M         | 0.60 | 0.15 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-30-SO-14-15

## Lab Sample ID: 320-23783-9

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil | Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 5.5    |           | 0.59 | 0.12 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 57     | M         | 0.59 | 0.15 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-28-SO-14-15

## Lab Sample ID: 320-23783-10

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil | Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.45   | J         | 0.58 | 0.12 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 10     | M         | 0.58 | 0.15 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-15-SO-14-15

## Lab Sample ID: 320-23783-11

| Analyte                          | Result | Qualifier | RL   | MDL  | Unit  | Dil | Fac | D | Method         | Prep Type |
|----------------------------------|--------|-----------|------|------|-------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)    | 0.51   | J         | 0.61 | 0.13 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) | 11     | M         | 0.61 | 0.15 | ug/Kg | 1   |     | ☼ | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-15-GW-18-22

## Lab Sample ID: 320-23783-12

| Analyte                                  | Result | Qualifier | RL     | MDL     | Unit | Dil | Fac | D | Method         | Prep Type |
|------------------------------------------|--------|-----------|--------|---------|------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)            | 5.8    | E M       | 0.0025 | 0.00075 | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)         | 6.5    | E M       | 0.0040 | 0.0013  | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)      | 1.2    | E         | 0.0025 | 0.00092 | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL       | 15     | D         | 0.25   | 0.075   | ug/L | 100 |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL    | 12     | D         | 0.40   | 0.13    | ug/L | 100 |     |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) - DL | 0.54   | D         | 0.25   | 0.092   | ug/L | 100 |     |   | 537 (Modified) | Total/NA  |

## Client Sample ID: DPT-16-15-GW-31-35

## Lab Sample ID: 320-23783-13

| Analyte                                  | Result | Qualifier | RL     | MDL     | Unit | Dil | Fac | D | Method         | Prep Type |
|------------------------------------------|--------|-----------|--------|---------|------|-----|-----|---|----------------|-----------|
| Perfluorooctanoic acid (PFOA)            | 0.27   | M         | 0.0025 | 0.00076 | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS)         | 0.46   | E         | 0.0041 | 0.0013  | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS)      | 0.048  |           | 0.0025 | 0.00093 | ug/L | 1   |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctanoic acid (PFOA) - DL       | 0.27   | D         | 0.025  | 0.0076  | ug/L | 10  |     |   | 537 (Modified) | Total/NA  |
| Perfluorooctane Sulfonate (PFOS) - DL    | 0.45   | D         | 0.041  | 0.013   | ug/L | 10  |     |   | 537 (Modified) | Total/NA  |
| Perfluorobutanesulfonic acid (PFBS) - DL | 0.035  | D         | 0.025  | 0.0093  | ug/L | 10  |     |   | 537 (Modified) | Total/NA  |

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-35-SO-00-01

Date Collected: 11/22/16 09:24

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-1

Matrix: Solid

Percent Solids: 86.4

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 12        | M         | 0.58     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 28        |           | 0.58     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.21      | J         | 0.46     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 93        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| 13C4 PFOS                           | 73        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:52 | 1       |
| 18O2 PFHxS                          | 86        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:52 | 1       |

## Client Sample ID: DPT-16-35-SO-19-20

Date Collected: 11/22/16 09:36

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-2

Matrix: Solid

Percent Solids: 82.8

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.56      | J         | 0.60     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 4.0       | M         | 0.60     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.36      | U         | 0.48     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 112       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| 13C4 PFOS                           | 101       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:59 | 1       |
| 18O2 PFHxS                          | 108       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 15:59 | 1       |

## Client Sample ID: DPT-16-35-GW-21-25

Date Collected: 11/22/16 10:10

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-3

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|---------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.60      | E M       | 0.0025   | 0.00075 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 1.9       | E M       | 0.0040   | 0.0013  | ug/L |   | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.28      |           | 0.0025   | 0.00092 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 70        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| 13C4 PFOS                           | 58        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:26 | 1       |
| 18O2 PFHxS                          | 43        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:26 | 1       |

### Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|--------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.76      | D         | 0.025    | 0.0075 | ug/L |   | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| Perfluorooctane Sulfonate (PFOS)    | 2.4       | D         | 0.040    | 0.013  | ug/L |   | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| Perfluorobutanesulfonic acid (PFBS) | 0.19      | D         | 0.025    | 0.0092 | ug/L |   | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |        |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 91        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| 13C4 PFOS                           | 87        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:10 | 10      |
| 18O2 PFHxS                          | 83        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:10 | 10      |

TestAmerica Sacramento

# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-35-GW-31-35**

**Lab Sample ID: 320-23783-4**

**Date Collected: 11/22/16 10:30**

**Matrix: Water**

**Date Received: 11/23/16 08:46**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|---------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 1.1       | E M       | 0.0025   | 0.00075 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 0.72      | E         | 0.0040   | 0.0013  | ug/L |   | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.58      | E         | 0.0025   | 0.00092 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 52        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| 13C4 PFOS                           | 76        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:33 | 1       |
| 18O2 PFHxS                          | 30        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:33 | 1       |

## Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|--------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 1.4       | D         | 0.025    | 0.0075 | ug/L |   | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| Perfluorooctane Sulfonate (PFOS)    | 0.80      | D         | 0.040    | 0.013  | ug/L |   | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| Perfluorobutanesulfonic acid (PFBS) | 0.38      | D         | 0.025    | 0.0092 | ug/L |   | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |        |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 78        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| 13C4 PFOS                           | 91        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:18 | 10      |
| 18O2 PFHxS                          | 73        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:18 | 10      |

**Client Sample ID: DPT-16-19-SO-00-01**

**Lab Sample ID: 320-23783-5**

**Date Collected: 11/22/16 11:20**

**Matrix: Solid**

**Date Received: 11/23/16 08:46**

**Percent Solids: 86.7**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 3.8       |           | 0.57     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 130       | M E       | 0.57     | 0.14 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.18      | J         | 0.46     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 96        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| 13C4 PFOS                           | 54        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:07 | 1       |
| 18O2 PFHxS                          | 85        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:07 | 1       |

## Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|-----|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 3.5       | J D M     | 5.7      | 1.2 | ug/Kg | ☼ | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| Perfluorooctane Sulfonate (PFOS)    | 170       | D         | 5.7      | 1.4 | ug/Kg | ☼ | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| Perfluorobutanesulfonic acid (PFBS) | 3.4       | U         | 4.6      | 1.2 | ug/Kg | ☼ | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |     |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 136       |           | 25 - 150 |     |       |   | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| 13C4 PFOS                           | 90        |           | 25 - 150 |     |       |   | 11/28/16 11:03 | 12/07/16 17:33 | 10      |
| 18O2 PFHxS                          | 106       |           | 25 - 150 |     |       |   | 11/28/16 11:03 | 12/07/16 17:33 | 10      |

TestAmerica Sacramento

# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-19-SO-17-18**

**Date Collected: 11/22/16 11:30**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-6**

**Matrix: Solid**

**Percent Solids: 79.7**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.37      | J         | 0.62     | 0.13 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 6.5       | M         | 0.62     | 0.16 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.37      | U         | 0.50     | 0.13 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 69        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| 13C4 PFOS                           | 64        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:44 | 1       |
| 18O2 PFHxS                          | 73        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:44 | 1       |

**Client Sample ID: DPT-16-32-SO-14-15**

**Date Collected: 11/21/16 09:36**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-7**

**Matrix: Solid**

**Percent Solids: 82.3**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 1.1       |           | 0.60     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 46        | M         | 0.60     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.36      | U         | 0.48     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 96        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| 13C4 PFOS                           | 62        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:52 | 1       |
| 18O2 PFHxS                          | 70        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:52 | 1       |

**Client Sample ID: DPT-16-31-SO-14-15**

**Date Collected: 11/21/16 10:12**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-8**

**Matrix: Solid**

**Percent Solids: 83.8**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.27      | J         | 0.60     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 11        | M         | 0.60     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.36      | U         | 0.48     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 108       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| 13C4 PFOS                           | 82        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:59 | 1       |
| 18O2 PFHxS                          | 93        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 16:59 | 1       |

**Client Sample ID: DPT-16-30-SO-14-15**

**Date Collected: 11/21/16 10:46**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-9**

**Matrix: Solid**

**Percent Solids: 83.8**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 5.5       |           | 0.59     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 57        | M         | 0.59     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.36      | U         | 0.48     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 101       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| 13C4 PFOS                           | 63        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:07 | 1       |
| 18O2 PFHxS                          | 90        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:07 | 1       |

TestAmerica Sacramento

# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-28-SO-14-15**

**Date Collected: 11/21/16 11:54**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-10**

**Matrix: Solid**

**Percent Solids: 85.2**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.45      | J         | 0.58     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 10        | M         | 0.58     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.35      | U         | 0.47     | 0.12 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 105       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| 13C4 PFOS                           | 61        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:14 | 1       |
| 18O2 PFHxS                          | 89        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:14 | 1       |

**Client Sample ID: DPT-16-15-SO-14-15**

**Date Collected: 11/21/16 12:50**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-11**

**Matrix: Solid**

**Percent Solids: 80.6**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.51      | J         | 0.61     | 0.13 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 11        | M         | 0.61     | 0.15 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.37      | U         | 0.49     | 0.13 | ug/Kg | ☼ | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 101       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| 13C4 PFOS                           | 66        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:22 | 1       |
| 18O2 PFHxS                          | 89        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 17:22 | 1       |

**Client Sample ID: DPT-16-15-GW-18-22**

**Date Collected: 11/21/16 13:30**

**Date Received: 11/23/16 08:46**

**Lab Sample ID: 320-23783-12**

**Matrix: Water**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|---------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 5.8       | E M       | 0.0025   | 0.00075 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 6.5       | E M       | 0.0040   | 0.0013  | ug/L | — | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 1.2       | E         | 0.0025   | 0.00092 | ug/L | — | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 23        | Q         | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| 13C4 PFOS                           | 29        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:41 | 1       |
| 18O2 PFHxS                          | 21        | Q         | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:41 | 1       |

## Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL   | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|-------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 15        | D         | 0.25     | 0.075 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| Perfluorooctane Sulfonate (PFOS)    | 12        | D         | 0.40     | 0.13  | ug/L | — | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| Perfluorobutanesulfonic acid (PFBS) | 0.54      | D         | 0.25     | 0.092 | ug/L | — | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |       |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 83        |           | 25 - 150 |       |      |   | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| 13C4 PFOS                           | 94        |           | 25 - 150 |       |      |   | 11/28/16 16:55 | 12/07/16 17:03 | 100     |
| 18O2 PFHxS                          | 104       |           | 25 - 150 |       |      |   | 11/28/16 16:55 | 12/07/16 17:03 | 100     |

TestAmerica Sacramento



# Client Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

**Client Sample ID: DPT-16-15-GW-31-35**

**Lab Sample ID: 320-23783-13**

**Date Collected: 11/21/16 14:00**

**Matrix: Water**

**Date Received: 11/23/16 08:46**

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte                             | Result    | Qualifier | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|---------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.27      | M         | 0.0025   | 0.00076 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 0.46      | E         | 0.0041   | 0.0013  | ug/L |   | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.048     |           | 0.0025   | 0.00093 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 22        | Q         | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| 13C4 PFOS                           | 82        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:48 | 1       |
| 18O2 PFHxS                          | 66        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:48 | 1       |

## Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte                             | Result    | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|--------|------|---|----------------|----------------|---------|
| Perfluorooctanoic acid (PFOA)       | 0.27      | D         | 0.025    | 0.0076 | ug/L |   | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| Perfluorooctane Sulfonate (PFOS)    | 0.45      | D         | 0.041    | 0.013  | ug/L |   | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| Perfluorobutanesulfonic acid (PFBS) | 0.035     | D         | 0.025    | 0.0093 | ug/L |   | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| Isotope Dilution                    | %Recovery | Qualifier | Limits   |        |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C4 PFOA                           | 33        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| 13C4 PFOS                           | 95        |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:25 | 10      |
| 18O2 PFHxS                          | 101       |           | 25 - 150 |        |      |   | 11/28/16 16:55 | 12/07/16 17:25 | 10      |

## Default Detection Limits

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Prep: 3535

| Analyte                             | RL     | MDL     | Units | Method         |
|-------------------------------------|--------|---------|-------|----------------|
| Perfluorobutanesulfonic acid (PFBS) | 0.0025 | 0.00092 | ug/L  | 537 (Modified) |
| Perfluorooctane Sulfonate (PFOS)    | 0.0040 | 0.0013  | ug/L  | 537 (Modified) |
| Perfluorooctanoic acid (PFOA)       | 0.0025 | 0.00075 | ug/L  | 537 (Modified) |

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Prep: SHAKE

| Analyte                             | RL   | MDL  | Units | Method         |
|-------------------------------------|------|------|-------|----------------|
| Perfluorobutanesulfonic acid (PFBS) | 0.40 | 0.10 | ug/Kg | 537 (Modified) |
| Perfluorooctane Sulfonate (PFOS)    | 0.50 | 0.13 | ug/Kg | 537 (Modified) |
| Perfluorooctanoic acid (PFOA)       | 0.50 | 0.10 | ug/Kg | 537 (Modified) |

# Isotope Dilution Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Solid

Prep Type: Total/NA

| Lab Sample ID      | Client Sample ID   | Percent Isotope Dilution Recovery (Acceptance Limits) |                      |                      |
|--------------------|--------------------|-------------------------------------------------------|----------------------|----------------------|
|                    |                    | 3C4 PFO/<br>(25-150)                                  | 3C4 PFO/<br>(25-150) | 3O2 PFHx<br>(25-150) |
| 320-23783-1        | DPT-16-35-SO-00-01 | 93                                                    | 73                   | 86                   |
| 320-23783-2        | DPT-16-35-SO-19-20 | 112                                                   | 101                  | 108                  |
| 320-23783-5        | DPT-16-19-SO-00-01 | 96                                                    | 54                   | 85                   |
| 320-23783-5 - DL   | DPT-16-19-SO-00-01 | 136                                                   | 90                   | 106                  |
| 320-23783-6        | DPT-16-19-SO-17-18 | 69                                                    | 64                   | 73                   |
| 320-23783-7        | DPT-16-32-SO-14-15 | 96                                                    | 62                   | 70                   |
| 320-23783-8        | DPT-16-31-SO-14-15 | 108                                                   | 82                   | 93                   |
| 320-23783-9        | DPT-16-30-SO-14-15 | 101                                                   | 63                   | 90                   |
| 320-23783-10       | DPT-16-28-SO-14-15 | 105                                                   | 61                   | 89                   |
| 320-23783-11       | DPT-16-15-SO-14-15 | 101                                                   | 66                   | 89                   |
| LCS 320-139627/2-A | Lab Control Sample | 119                                                   | 112                  | 120                  |
| MB 320-139627/1-A  | Method Blank       | 108                                                   | 94                   | 104                  |

### Surrogate Legend

13C4 PFOA = 13C4 PFOA  
13C4 PFOS = 13C4 PFOS  
18O2 PFHxS = 18O2 PFHxS

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

| Lab Sample ID       | Client Sample ID       | Percent Isotope Dilution Recovery (Acceptance Limits) |                      |                      |
|---------------------|------------------------|-------------------------------------------------------|----------------------|----------------------|
|                     |                        | 3C4 PFO/<br>(25-150)                                  | 3C4 PFO/<br>(25-150) | 3O2 PFHx<br>(25-150) |
| 320-23783-3         | DPT-16-35-GW-21-25     | 70                                                    | 58                   | 43                   |
| 320-23783-3 - DL    | DPT-16-35-GW-21-25     | 91                                                    | 87                   | 83                   |
| 320-23783-4         | DPT-16-35-GW-31-35     | 52                                                    | 76                   | 30                   |
| 320-23783-4 - DL    | DPT-16-35-GW-31-35     | 78                                                    | 91                   | 73                   |
| 320-23783-12        | DPT-16-15-GW-18-22     | 23 Q                                                  | 29                   | 21 Q                 |
| 320-23783-12 - DL   | DPT-16-15-GW-18-22     | 83                                                    | 94                   | 104                  |
| 320-23783-13        | DPT-16-15-GW-31-35     | 22 Q                                                  | 82                   | 66                   |
| 320-23783-13 - DL   | DPT-16-15-GW-31-35     | 33                                                    | 95                   | 101                  |
| LCS 320-139749/2-A  | Lab Control Sample     | 108                                                   | 104                  | 105                  |
| LCSD 320-139749/3-A | Lab Control Sample Dup | 116                                                   | 104                  | 104                  |
| MB 320-139749/1-A   | Method Blank           | 93                                                    | 85                   | 86                   |

### Surrogate Legend

13C4 PFOA = 13C4 PFOA  
13C4 PFOS = 13C4 PFOS  
18O2 PFHxS = 18O2 PFHxS

# QC Sample Results

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-139627/1-A

Matrix: Solid

Analysis Batch: 140429

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 139627

| Analyte                             | MB MB     |           | RL       | MDL  | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|------|-------|---|----------------|----------------|---------|
|                                     | Result    | Qualifier |          |      |       |   |                |                |         |
| Perfluorooctanoic acid (PFOA)       | 0.30      | U         | 0.50     | 0.10 | ug/Kg |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 0.30      | U         | 0.50     | 0.13 | ug/Kg |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.30      | U         | 0.40     | 0.10 | ug/Kg |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| Isotope Dilution                    | MB MB     |           | Limits   |      |       |   | Prepared       | Analyzed       | Dil Fac |
|                                     | %Recovery | Qualifier |          |      |       |   |                |                |         |
| 13C4 PFOA                           | 108       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| 13C4 PFOS                           | 94        |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |
| 18O2 PFHxS                          | 104       |           | 25 - 150 |      |       |   | 11/28/16 11:03 | 12/02/16 14:59 | 1       |

Lab Sample ID: LCS 320-139627/2-A

Matrix: Solid

Analysis Batch: 140429

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 139627

| Analyte                             | Spike Added | LCS Result | LCS Qualifier | Unit  | D | %Rec | Limits   |
|-------------------------------------|-------------|------------|---------------|-------|---|------|----------|
|                                     |             |            |               |       |   |      |          |
| Perfluorooctanoic acid (PFOA)       | 4.00        | 4.25       |               | ug/Kg |   | 106  | 60 - 140 |
| Perfluorooctane Sulfonate (PFOS)    | 3.71        | 3.66       |               | ug/Kg |   | 99   | 60 - 140 |
| Perfluorobutanesulfonic acid (PFBS) | 3.54        | 4.03       |               | ug/Kg |   | 114  | 50 - 150 |
| Isotope Dilution                    | LCS LCS     |            | Limits        |       |   |      |          |
|                                     | %Recovery   | Qualifier  |               |       |   |      |          |
| 13C4 PFOA                           | 119         |            | 25 - 150      |       |   |      |          |
| 13C4 PFOS                           | 112         |            | 25 - 150      |       |   |      |          |
| 18O2 PFHxS                          | 120         |            | 25 - 150      |       |   |      |          |

Lab Sample ID: MB 320-139749/1-A

Matrix: Water

Analysis Batch: 140564

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 139749

| Analyte                             | MB MB     |           | RL       | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------------------|-----------|-----------|----------|---------|------|---|----------------|----------------|---------|
|                                     | Result    | Qualifier |          |         |      |   |                |                |         |
| Perfluorooctanoic acid (PFOA)       | 0.0020    | U         | 0.0025   | 0.00075 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| Perfluorooctane Sulfonate (PFOS)    | 0.0030    | U         | 0.0040   | 0.0013  | ug/L |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| Perfluorobutanesulfonic acid (PFBS) | 0.0020    | U         | 0.0025   | 0.00092 | ug/L |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| Isotope Dilution                    | MB MB     |           | Limits   |         |      |   | Prepared       | Analyzed       | Dil Fac |
|                                     | %Recovery | Qualifier |          |         |      |   |                |                |         |
| 13C4 PFOA                           | 93        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| 13C4 PFOS                           | 85        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |
| 18O2 PFHxS                          | 86        |           | 25 - 150 |         |      |   | 11/28/16 16:55 | 12/03/16 16:03 | 1       |

Lab Sample ID: LCS 320-139749/2-A

Matrix: Water

Analysis Batch: 140564

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 139749

| Analyte                             | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits   |
|-------------------------------------|-------------|------------|---------------|------|---|------|----------|
|                                     |             |            |               |      |   |      |          |
| Perfluorooctanoic acid (PFOA)       | 0.0400      | 0.0296     |               | ug/L |   | 74   | 60 - 140 |
| Perfluorooctane Sulfonate (PFOS)    | 0.0371      | 0.0261     |               | ug/L |   | 70   | 60 - 140 |
| Perfluorobutanesulfonic acid (PFBS) | 0.0354      | 0.0289     |               | ug/L |   | 82   | 50 - 150 |

TestAmerica Sacramento

# QC Sample Results

Client: AECOM Technical Services Inc.

TestAmerica Job ID: 320-23783-1

Project/Site: Former Bay Head Road Annex (RFP JU06-01)

## LCS LCS

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|-------------------------|------------------|------------------|---------------|
| 13C4 PFOA               | 108              |                  | 25 - 150      |
| 13C4 PFOS               | 104              |                  | 25 - 150      |
| 18O2 PFHxS              | 105              |                  | 25 - 150      |

Lab Sample ID: LCSD 320-139749/3-A

Matrix: Water

Analysis Batch: 140564

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 139749

| <i>Analyte</i>                      | <i>Spike Added</i> | <i>LCSD Result</i> | <i>LCSD Qualifier</i> | <i>Unit</i> | <i>D</i> | <i>%Rec</i> | <i>%Rec. Limits</i> | <i>RPD</i> | <i>RPD Limit</i> |
|-------------------------------------|--------------------|--------------------|-----------------------|-------------|----------|-------------|---------------------|------------|------------------|
| Perfluorooctanoic acid (PFOA)       | 0.0400             | 0.0314             |                       | ug/L        |          | 79          | 60 - 140            | 6          | 30               |
| Perfluorooctane Sulfonate (PFOS)    | 0.0371             | 0.0289             |                       | ug/L        |          | 78          | 60 - 140            | 10         | 30               |
| Perfluorobutanesulfonic acid (PFBS) | 0.0354             | 0.0325             |                       | ug/L        |          | 92          | 50 - 150            | 12         | 30               |

## LCSD LCSD

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|-------------------------|------------------|------------------|---------------|
| 13C4 PFOA               | 116              |                  | 25 - 150      |
| 13C4 PFOS               | 104              |                  | 25 - 150      |
| 18O2 PFHxS              | 104              |                  | 25 - 150      |

# QC Association Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## LCMS

### Prep Batch: 139627

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 320-23783-1        | DPT-16-35-SO-00-01 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-2        | DPT-16-35-SO-19-20 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-5 - DL   | DPT-16-19-SO-00-01 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-5        | DPT-16-19-SO-00-01 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-6        | DPT-16-19-SO-17-18 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-7        | DPT-16-32-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-8        | DPT-16-31-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-9        | DPT-16-30-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-10       | DPT-16-28-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| 320-23783-11       | DPT-16-15-SO-14-15 | Total/NA  | Solid  | SHAKE  |            |
| MB 320-139627/1-A  | Method Blank       | Total/NA  | Solid  | SHAKE  |            |
| LCS 320-139627/2-A | Lab Control Sample | Total/NA  | Solid  | SHAKE  |            |

### Prep Batch: 139749

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-23783-3         | DPT-16-35-GW-21-25     | Total/NA  | Water  | 3535   |            |
| 320-23783-3 - DL    | DPT-16-35-GW-21-25     | Total/NA  | Water  | 3535   |            |
| 320-23783-4         | DPT-16-35-GW-31-35     | Total/NA  | Water  | 3535   |            |
| 320-23783-4 - DL    | DPT-16-35-GW-31-35     | Total/NA  | Water  | 3535   |            |
| 320-23783-12        | DPT-16-15-GW-18-22     | Total/NA  | Water  | 3535   |            |
| 320-23783-12 - DL   | DPT-16-15-GW-18-22     | Total/NA  | Water  | 3535   |            |
| 320-23783-13        | DPT-16-15-GW-31-35     | Total/NA  | Water  | 3535   |            |
| 320-23783-13 - DL   | DPT-16-15-GW-31-35     | Total/NA  | Water  | 3535   |            |
| MB 320-139749/1-A   | Method Blank           | Total/NA  | Water  | 3535   |            |
| LCS 320-139749/2-A  | Lab Control Sample     | Total/NA  | Water  | 3535   |            |
| LCSD 320-139749/3-A | Lab Control Sample Dup | Total/NA  | Water  | 3535   |            |

### Analysis Batch: 140429

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method         | Prep Batch |
|--------------------|--------------------|-----------|--------|----------------|------------|
| 320-23783-1        | DPT-16-35-SO-00-01 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-2        | DPT-16-35-SO-19-20 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-5        | DPT-16-19-SO-00-01 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-6        | DPT-16-19-SO-17-18 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-7        | DPT-16-32-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-8        | DPT-16-31-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-9        | DPT-16-30-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-10       | DPT-16-28-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-11       | DPT-16-15-SO-14-15 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| MB 320-139627/1-A  | Method Blank       | Total/NA  | Solid  | 537 (Modified) | 139627     |
| LCS 320-139627/2-A | Lab Control Sample | Total/NA  | Solid  | 537 (Modified) | 139627     |

### Analysis Batch: 140564

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method         | Prep Batch |
|---------------------|------------------------|-----------|--------|----------------|------------|
| 320-23783-3         | DPT-16-35-GW-21-25     | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-4         | DPT-16-35-GW-31-35     | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-12        | DPT-16-15-GW-18-22     | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-13        | DPT-16-15-GW-31-35     | Total/NA  | Water  | 537 (Modified) | 139749     |
| MB 320-139749/1-A   | Method Blank           | Total/NA  | Water  | 537 (Modified) | 139749     |
| LCS 320-139749/2-A  | Lab Control Sample     | Total/NA  | Water  | 537 (Modified) | 139749     |
| LCSD 320-139749/3-A | Lab Control Sample Dup | Total/NA  | Water  | 537 (Modified) | 139749     |

TestAmerica Sacramento

## QC Association Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

### LCMS (Continued)

#### Analysis Batch: 141062

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method         | Prep Batch |
|-------------------|--------------------|-----------|--------|----------------|------------|
| 320-23783-3 - DL  | DPT-16-35-GW-21-25 | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-4 - DL  | DPT-16-35-GW-31-35 | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-5 - DL  | DPT-16-19-SO-00-01 | Total/NA  | Solid  | 537 (Modified) | 139627     |
| 320-23783-12 - DL | DPT-16-15-GW-18-22 | Total/NA  | Water  | 537 (Modified) | 139749     |
| 320-23783-13 - DL | DPT-16-15-GW-31-35 | Total/NA  | Water  | 537 (Modified) | 139749     |

### General Chemistry

#### Analysis Batch: 140129

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 320-23783-1   | DPT-16-35-SO-00-01 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-2   | DPT-16-35-SO-19-20 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-5   | DPT-16-19-SO-00-01 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-6   | DPT-16-19-SO-17-18 | Total/NA  | Solid  | D 2216 |            |

#### Analysis Batch: 140181

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 320-23783-7   | DPT-16-32-SO-14-15 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-8   | DPT-16-31-SO-14-15 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-9   | DPT-16-30-SO-14-15 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-10  | DPT-16-28-SO-14-15 | Total/NA  | Solid  | D 2216 |            |
| 320-23783-11  | DPT-16-15-SO-14-15 | Total/NA  | Solid  | D 2216 |            |



# Lab Chronicle

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-35-SO-00-01

Date Collected: 11/22/16 09:24

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-1

Matrix: Solid

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1               | 140129       | 12/01/16 09:31       | CRM     | TAL SAC |

## Client Sample ID: DPT-16-35-SO-00-01

Date Collected: 11/22/16 09:24

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-1

Matrix: Solid

Percent Solids: 86.4

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140429       | 12/02/16 15:52       | SBC     | TAL SAC |

## Client Sample ID: DPT-16-35-SO-19-20

Date Collected: 11/22/16 09:36

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-2

Matrix: Solid

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1               | 140129       | 12/01/16 09:31       | CRM     | TAL SAC |

## Client Sample ID: DPT-16-35-SO-19-20

Date Collected: 11/22/16 09:36

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-2

Matrix: Solid

Percent Solids: 82.8

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140429       | 12/02/16 15:59       | SBC     | TAL SAC |

## Client Sample ID: DPT-16-35-GW-21-25

Date Collected: 11/22/16 10:10

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-3

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           |     |                 | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140564       | 12/03/16 16:26       | SBC     | TAL SAC |
| Total/NA  | Prep       | 3535           | DL  |                 | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 10              | 141062       | 12/07/16 17:10       | CBW     | TAL SAC |

## Client Sample ID: DPT-16-35-GW-31-35

Date Collected: 11/22/16 10:30

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-4

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           |     |                 | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140564       | 12/03/16 16:33       | SBC     | TAL SAC |

TestAmerica Sacramento

# Lab Chronicle

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-35-GW-31-35

Date Collected: 11/22/16 10:30

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-4

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           | DL  |                 | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 10              | 141062       | 12/07/16 17:18       | CBW     | TAL SAC |

## Client Sample ID: DPT-16-19-SO-00-01

Date Collected: 11/22/16 11:20

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-5

Matrix: Solid

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1               | 140129       | 12/01/16 09:31       | CRM     | TAL SAC |

## Client Sample ID: DPT-16-19-SO-00-01

Date Collected: 11/22/16 11:20

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-5

Matrix: Solid

Percent Solids: 86.7

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140429       | 12/02/16 16:07       | SBC     | TAL SAC |
| Total/NA  | Prep       | SHAKE          | DL  |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 10              | 141062       | 12/07/16 17:33       | CBW     | TAL SAC |

## Client Sample ID: DPT-16-19-SO-17-18

Date Collected: 11/22/16 11:30

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-6

Matrix: Solid

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1               | 140129       | 12/01/16 09:31       | CRM     | TAL SAC |

## Client Sample ID: DPT-16-19-SO-17-18

Date Collected: 11/22/16 11:30

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-6

Matrix: Solid

Percent Solids: 79.7

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140429       | 12/02/16 16:44       | SBC     | TAL SAC |

## Client Sample ID: DPT-16-32-SO-14-15

Date Collected: 11/21/16 09:36

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-7

Matrix: Solid

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1               | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

# Lab Chronicle

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-32-SO-14-15

Date Collected: 11/21/16 09:36

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-7

Matrix: Solid

Percent Solids: 82.3

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140429       | 12/02/16 16:52       | SBC     | TAL SAC |

## Client Sample ID: DPT-16-31-SO-14-15

Date Collected: 11/21/16 10:12

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-8

Matrix: Solid

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1               | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

## Client Sample ID: DPT-16-31-SO-14-15

Date Collected: 11/21/16 10:12

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-8

Matrix: Solid

Percent Solids: 83.8

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140429       | 12/02/16 16:59       | SBC     | TAL SAC |

## Client Sample ID: DPT-16-30-SO-14-15

Date Collected: 11/21/16 10:46

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-9

Matrix: Solid

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1               | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

## Client Sample ID: DPT-16-30-SO-14-15

Date Collected: 11/21/16 10:46

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-9

Matrix: Solid

Percent Solids: 83.8

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140429       | 12/02/16 17:07       | SBC     | TAL SAC |

## Client Sample ID: DPT-16-28-SO-14-15

Date Collected: 11/21/16 11:54

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-10

Matrix: Solid

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1               | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

# Lab Chronicle

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

## Client Sample ID: DPT-16-28-SO-14-15

Date Collected: 11/21/16 11:54

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-10

Matrix: Solid

Percent Solids: 85.2

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140429       | 12/02/16 17:14       | SBC     | TAL SAC |

## Client Sample ID: DPT-16-15-SO-14-15

Date Collected: 11/21/16 12:50

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-11

Matrix: Solid

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | D 2216       |     | 1               | 140181       | 12/01/16 11:23       | KSL     | TAL SAC |

## Client Sample ID: DPT-16-15-SO-14-15

Date Collected: 11/21/16 12:50

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-11

Matrix: Solid

Percent Solids: 80.6

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | SHAKE          |     |                 | 139627       | 11/28/16 11:03       | HJA     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140429       | 12/02/16 17:22       | SBC     | TAL SAC |

## Client Sample ID: DPT-16-15-GW-18-22

Date Collected: 11/21/16 13:30

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-12

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           |     |                 | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140564       | 12/03/16 16:41       | SBC     | TAL SAC |
| Total/NA  | Prep       | 3535           | DL  |                 | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 100             | 141062       | 12/07/16 17:03       | CBW     | TAL SAC |

## Client Sample ID: DPT-16-15-GW-31-35

Date Collected: 11/21/16 14:00

Date Received: 11/23/16 08:46

## Lab Sample ID: 320-23783-13

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3535           |     |                 | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) |     | 1               | 140564       | 12/03/16 16:48       | SBC     | TAL SAC |
| Total/NA  | Prep       | 3535           | DL  |                 | 139749       | 11/28/16 16:55       | VPM     | TAL SAC |
| Total/NA  | Analysis   | 537 (Modified) | DL  | 10              | 141062       | 12/07/16 17:25       | CBW     | TAL SAC |

### Laboratory References:

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

## Certification Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

### Laboratory: TestAmerica Sacramento

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

| Authority | Program  | EPA Region | Certification ID | Expiration Date |
|-----------|----------|------------|------------------|-----------------|
| A2LA      | DoD ELAP |            | 2928-01          | 01-31-17        |

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

| Analysis Method | Prep Method | Matrix | Analyte                          |
|-----------------|-------------|--------|----------------------------------|
| 537 (Modified)  | SHAKE       | Solid  | Perfluorooctane Sulfonate (PFOS) |
| D 2216          |             | Solid  | Percent Moisture                 |
| D 2216          |             | Solid  | Percent Solids                   |

## Method Summary

Client: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

| Method         | Method Description          | Protocol | Laboratory |
|----------------|-----------------------------|----------|------------|
| 537 (Modified) | Perfluorinated Hydrocarbons | EPA      | TAL SAC    |
| D 2216         | Percent Moisture            | ASTM     | TAL SAC    |

### Protocol References:

ASTM = ASTM International

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: AECOM Technical Services Inc.  
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23783-1

| Lab Sample ID | Client Sample ID   | Matrix | Collected      | Received       |
|---------------|--------------------|--------|----------------|----------------|
| 320-23783-1   | DPT-16-35-SO-00-01 | Solid  | 11/22/16 09:24 | 11/23/16 08:46 |
| 320-23783-2   | DPT-16-35-SO-19-20 | Solid  | 11/22/16 09:36 | 11/23/16 08:46 |
| 320-23783-3   | DPT-16-35-GW-21-25 | Water  | 11/22/16 10:10 | 11/23/16 08:46 |
| 320-23783-4   | DPT-16-35-GW-31-35 | Water  | 11/22/16 10:30 | 11/23/16 08:46 |
| 320-23783-5   | DPT-16-19-SO-00-01 | Solid  | 11/22/16 11:20 | 11/23/16 08:46 |
| 320-23783-6   | DPT-16-19-SO-17-18 | Solid  | 11/22/16 11:30 | 11/23/16 08:46 |
| 320-23783-7   | DPT-16-32-SO-14-15 | Solid  | 11/21/16 09:36 | 11/23/16 08:46 |
| 320-23783-8   | DPT-16-31-SO-14-15 | Solid  | 11/21/16 10:12 | 11/23/16 08:46 |
| 320-23783-9   | DPT-16-30-SO-14-15 | Solid  | 11/21/16 10:46 | 11/23/16 08:46 |
| 320-23783-10  | DPT-16-28-SO-14-15 | Solid  | 11/21/16 11:54 | 11/23/16 08:46 |
| 320-23783-11  | DPT-16-15-SO-14-15 | Solid  | 11/21/16 12:50 | 11/23/16 08:46 |
| 320-23783-12  | DPT-16-15-GW-18-22 | Water  | 11/21/16 13:30 | 11/23/16 08:46 |
| 320-23783-13  | DPT-16-15-GW-31-35 | Water  | 11/21/16 14:00 | 11/23/16 08:46 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

Instrument ID: A8\_N Analysis Batch Number: 140382Lab Sample ID: IC 320-140382/4 Client Sample ID: \_\_\_\_\_Date Analyzed: 12/02/16 10:29 Lab File ID: 02DEC2016A\_004.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                          | RETENTION<br>TIME | MANUAL INTEGRATION     |                  |                |
|----------------------------------------|-------------------|------------------------|------------------|----------------|
|                                        |                   | REASON                 | ANALYST          | DATE           |
| Perfluorotetradecanoic acid<br>(PFTeA) | 4.94              | Incomplete Integration | chandrase<br>nas | 12/02/16 13:37 |

Lab Sample ID: IC 320-140382/5 Client Sample ID: \_\_\_\_\_Date Analyzed: 12/02/16 10:37 Lab File ID: 02DEC2016A\_005.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctane Sulfonate (PFOS) | 3.38              | Isomers            | chandrase<br>nas | 12/02/16 13:38 |

Lab Sample ID: IC 320-140382/10 Client Sample ID: \_\_\_\_\_Date Analyzed: 12/02/16 11:14 Lab File ID: 02DEC2016A\_010.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                         | RETENTION<br>TIME | MANUAL INTEGRATION     |                  |                |
|---------------------------------------|-------------------|------------------------|------------------|----------------|
|                                       |                   | REASON                 | ANALYST          | DATE           |
| Perfluorotridecanoic Acid<br>(PFTriA) | 4.61              | Incomplete Integration | chandrase<br>nas | 12/02/16 13:42 |



## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

Instrument ID: A8\_N Analysis Batch Number: 140429Lab Sample ID: 320-23783-1 Client Sample ID: DPT-16-35-SO-00-01Date Analyzed: 12/02/16 15:52 Lab File ID: 02DEC2016C\_008.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|-------------------------------|-------------------|--------------------|------------------|----------------|
|                               |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctanoic acid (PFOA) | 2.89              | Baseline           | chandrase<br>nas | 12/04/16 18:22 |

Lab Sample ID: 320-23783-2 Client Sample ID: DPT-16-35-SO-19-20Date Analyzed: 12/02/16 15:59 Lab File ID: 02DEC2016C\_009.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctane Sulfonate (PFOS) | 3.27              | Baseline           | chandrase<br>nas | 12/04/16 18:23 |

Lab Sample ID: 320-23783-5 Client Sample ID: DPT-16-19-SO-00-01Date Analyzed: 12/02/16 16:07 Lab File ID: 02DEC2016C\_010.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctane Sulfonate (PFOS) | 3.27              | Baseline           | chandrase<br>nas | 12/04/16 18:25 |

Lab Sample ID: 320-23783-6 Client Sample ID: DPT-16-19-SO-17-18Date Analyzed: 12/02/16 16:44 Lab File ID: 02DEC2016C\_015.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctane Sulfonate (PFOS) | 3.26              | Baseline           | chandrase<br>nas | 12/04/16 18:27 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

Instrument ID: A8\_N Analysis Batch Number: 140429Lab Sample ID: 320-23783-7 Client Sample ID: DPT-16-32-SO-14-15Date Analyzed: 12/02/16 16:52 Lab File ID: 02DEC2016C\_016.d GC Column: Acquity ID: 2.1(mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctane Sulfonate (PFOS) | 3.25              | Baseline           | chandrase<br>nas | 12/04/16 18:28 |

Lab Sample ID: 320-23783-8 Client Sample ID: DPT-16-31-SO-14-15Date Analyzed: 12/02/16 16:59 Lab File ID: 02DEC2016C\_017.d GC Column: Acquity ID: 2.1(mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctane Sulfonate (PFOS) | 3.26              | Baseline           | chandrase<br>nas | 12/04/16 18:29 |

Lab Sample ID: 320-23783-9 Client Sample ID: DPT-16-30-SO-14-15Date Analyzed: 12/02/16 17:07 Lab File ID: 02DEC2016C\_018.d GC Column: Acquity ID: 2.1(mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctane Sulfonate (PFOS) | 3.26              | Baseline           | chandrase<br>nas | 12/04/16 18:29 |

Lab Sample ID: 320-23783-10 Client Sample ID: DPT-16-28-SO-14-15Date Analyzed: 12/02/16 17:14 Lab File ID: 02DEC2016C\_019.d GC Column: Acquity ID: 2.1(mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctane Sulfonate (PFOS) | 3.26              | Baseline           | chandrase<br>nas | 12/04/16 18:30 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

Instrument ID: A8\_N Analysis Batch Number: 140429Lab Sample ID: 320-23783-11 Client Sample ID: DPT-16-15-SO-14-15Date Analyzed: 12/02/16 17:22 Lab File ID: 02DEC2016C\_020.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctane Sulfonate (PFOS) | 3.26              | Baseline           | chandrase<br>nas | 12/04/16 18:31 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

Instrument ID: A8\_N Analysis Batch Number: 140564Lab Sample ID: IC 320-140564/4 Client Sample ID: \_\_\_\_\_Date Analyzed: 12/03/16 13:48 Lab File ID: 03DEC2016A\_004.d GC Column: Acquity ID: 2.1(mm)

| COMPOUND NAME                    | RETENTION TIME | MANUAL INTEGRATION     |               |                |
|----------------------------------|----------------|------------------------|---------------|----------------|
|                                  |                | REASON                 | ANALYST       | DATE           |
| Perfluorononanoic acid (PFNA)    | 3.28           | Incomplete Integration | chandrase nas | 12/05/16 09:42 |
| Perfluoroundecanoic acid (PFUnA) | 3.97           | Incomplete Integration | chandrase nas | 12/05/16 09:42 |

Lab Sample ID: IC 320-140564/7 Client Sample ID: \_\_\_\_\_Date Analyzed: 12/03/16 14:11 Lab File ID: 03DEC2016A\_007.d GC Column: Acquity ID: 2.1(mm)

| COMPOUND NAME                        | RETENTION TIME | MANUAL INTEGRATION |               |                |
|--------------------------------------|----------------|--------------------|---------------|----------------|
|                                      |                | REASON             | ANALYST       | DATE           |
| Perfluorohexanesulfonic acid (PFHxS) | 2.53           | Baseline           | chandrase nas | 12/05/16 09:41 |
| Perfluorooctanoic acid (PFOA)        | 2.89           | Baseline           | chandrase nas | 12/05/16 09:41 |

Lab Sample ID: IC 320-140564/9 Client Sample ID: \_\_\_\_\_Date Analyzed: 12/03/16 14:26 Lab File ID: 03DEC2016A\_009.d GC Column: Acquity ID: 2.1(mm)

| COMPOUND NAME                      | RETENTION TIME | MANUAL INTEGRATION     |               |                |
|------------------------------------|----------------|------------------------|---------------|----------------|
|                                    |                | REASON                 | ANALYST       | DATE           |
| Perfluorotridecanoic Acid (PFTriA) | 4.50           | Incomplete Integration | chandrase nas | 12/05/16 09:44 |

Lab Sample ID: 320-23783-3 Client Sample ID: DPT-16-35-GW-21-25Date Analyzed: 12/03/16 16:26 Lab File ID: 03DEC2016B\_004.d GC Column: Acquity ID: 2.1(mm)

| COMPOUND NAME                    | RETENTION TIME | MANUAL INTEGRATION |               |                |
|----------------------------------|----------------|--------------------|---------------|----------------|
|                                  |                | REASON             | ANALYST       | DATE           |
| Perfluorooctanoic acid (PFOA)    | 2.85           | Baseline           | chandrase nas | 12/05/16 10:31 |
| Perfluorooctane Sulfonate (PFOS) | 3.23           | Baseline           | chandrase nas | 12/05/16 10:31 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

Instrument ID: A8\_N Analysis Batch Number: 140564Lab Sample ID: 320-23783-4 Client Sample ID: DPT-16-35-GW-31-35Date Analyzed: 12/03/16 16:33 Lab File ID: 03DEC2016B\_005.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|-------------------------------|-------------------|--------------------|------------------|----------------|
|                               |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctanoic acid (PFOA) | 2.85              | Baseline           | chandrase<br>nas | 12/05/16 10:34 |

Lab Sample ID: 320-23783-12 Client Sample ID: DPT-16-15-GW-18-22Date Analyzed: 12/03/16 16:41 Lab File ID: 03DEC2016B\_006.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                    | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|----------------------------------|-------------------|--------------------|------------------|----------------|
|                                  |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctanoic acid (PFOA)    | 2.82              | Baseline           | chandrase<br>nas | 12/05/16 10:35 |
| Perfluorooctane Sulfonate (PFOS) | 3.19              | Baseline           | chandrase<br>nas | 12/05/16 10:35 |

Lab Sample ID: 320-23783-13 Client Sample ID: DPT-16-15-GW-31-35Date Analyzed: 12/03/16 16:48 Lab File ID: 03DEC2016B\_007.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |                  |                |
|-------------------------------|-------------------|--------------------|------------------|----------------|
|                               |                   | REASON             | ANALYST          | DATE           |
| Perfluorooctanoic acid (PFOA) | 2.86              | Baseline           | chandrase<br>nas | 12/05/16 10:36 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

Instrument ID: A8\_N Analysis Batch Number: 141062Lab Sample ID: 320-23783-5 DL Client Sample ID: DPT-16-19-SO-00-01 DLDate Analyzed: 12/07/16 17:33 Lab File ID: 07DEC2016B\_009.d GC Column: Acquity ID: 2.1 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |                 |                |
|-------------------------------|-------------------|--------------------|-----------------|----------------|
|                               |                   | REASON             | ANALYST         | DATE           |
| Perfluorooctanoic acid (PFOA) | 2.80              | Baseline           | westendor<br>fc | 12/08/16 08:55 |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID        | Exp Date | Prep Date                                 | Dilutant Used              | Reagent Final Volume | Parent Reagent      |              | Analyte     | Concentration |
|-------------------|----------|-------------------------------------------|----------------------------|----------------------|---------------------|--------------|-------------|---------------|
|                   |          |                                           |                            |                      | Reagent ID          | Volume Added |             |               |
| LCMPFCSU_00046    | 03/01/17 | 11/03/16                                  | Methanol, Lot Baker 144541 | 50000 uL             | LCM2PFHxDA_00008    | 1000 uL      | 13C2-PFHxDA | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCM2PFTeDA_00007    | 1000 uL      | 13C2-PFTeDA | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCM4PFHFA_00007     | 1000 uL      | 13C4-PFHpA  | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCM5PFPEA_00008     | 1000 uL      | 13C5-PFPeA  | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCM8FOSA_00011      | 1000 uL      | 13C8_FOSA   | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCMPFBA_00008       | 1000 uL      | 13C4_PFBA   | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCMPFDA_00011       | 1000 uL      | 13C2_PFDA   | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCMPFDoA_00008      | 1000 uL      | 13C2_PFDoA  | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCMPFHxA_00012      | 1000 uL      | 13C2_PFHxA  | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCMPFHxS_00008      | 1000 uL      | 1802_PFHxS  | 0.946 ug/mL   |
|                   |          |                                           |                            |                      | LCMPFNA_00008       | 1000 uL      | 13C5_PFNA   | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCMPFOA_00012       | 1000 uL      | 13C4_PFOA   | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCMPFOS_00017       | 1000 uL      | 13C4_PFOS   | 0.956 ug/mL   |
|                   |          |                                           |                            |                      | LCMPFUdA_00009      | 1000 uL      | 13C2_PFUdA  | 1 ug/mL       |
| .LCM2PFHxDA_00008 | 01/07/21 | Wellington Laboratories, Lot M2PFHxDA1112 |                            |                      | (Purchased Reagent) |              | 13C2-PFHxDA | 50 ug/mL      |
| .LCM2PFTeDA_00007 | 12/07/20 | Wellington Laboratories, Lot M2PFTeDA1115 |                            |                      | (Purchased Reagent) |              | 13C2-PFTeDA | 50 ug/mL      |
| .LCM4PFHFA_00007  | 05/27/21 | Wellington Laboratories, Lot M4PFHFA0516  |                            |                      | (Purchased Reagent) |              | 13C4-PFHpA  | 50 ug/mL      |
| .LCM5PFPEA_00008  | 05/22/20 | Wellington Laboratories, Lot M5PFPeA0515  |                            |                      | (Purchased Reagent) |              | 13C5-PFPeA  | 50 ug/mL      |
| .LCM8FOSA_00011   | 12/22/17 | Wellington Laboratories, Lot M8FOSA1215I  |                            |                      | (Purchased Reagent) |              | 13C8_FOSA   | 50 ug/mL      |
| .LCMPFBA_00008    | 05/24/21 | Wellington Laboratories, Lot MPFBA0516    |                            |                      | (Purchased Reagent) |              | 13C4_PFBA   | 50 ug/mL      |
| .LCMPFDA_00011    | 08/19/20 | Wellington Laboratories, Lot MPFDA0815    |                            |                      | (Purchased Reagent) |              | 13C2_PFDA   | 50 ug/mL      |
| .LCMPFDoA_00008   | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416   |                            |                      | (Purchased Reagent) |              | 13C2_PFDoA  | 50 ug/mL      |
| .LCMPFHxA_00012   | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416   |                            |                      | (Purchased Reagent) |              | 13C2_PFHxA  | 50 ug/mL      |
| .LCMPFHxS_00008   | 10/23/20 | Wellington Laboratories, Lot MPFHxS1015   |                            |                      | (Purchased Reagent) |              | 1802_PFHxS  | 47.3 ug/mL    |
| .LCMPFNA_00008    | 04/13/19 | Wellington Laboratories, Lot MPFNA0414    |                            |                      | (Purchased Reagent) |              | 13C5_PFNA   | 50 ug/mL      |
| .LCMPFOA_00012    | 01/22/21 | Wellington Laboratories, Lot MPFOA0116    |                            |                      | (Purchased Reagent) |              | 13C4_PFOA   | 50 ug/mL      |
| .LCMPFOS_00017    | 08/03/21 | Wellington Laboratories, Lot MPFOS0816    |                            |                      | (Purchased Reagent) |              | 13C4_PFOS   | 47.8 ug/mL    |
| .LCMPFUdA_00009   | 02/12/21 | Wellington Laboratories, Lot MPFUdA0216   |                            |                      | (Purchased Reagent) |              | 13C2_PFUdA  | 50 ug/mL      |
| LCPFC-L0_00002    | 03/01/17 | 10/14/16                                  | MeOH/H2O, Lot 144541       | 10 mL                | LCMPFCSU_00045      | 500 uL       | 13C2-PFHxDA | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C2-PFTeDA | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C4-PFHpA  | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C5-PFPeA  | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C8_FOSA   | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C4_PFBA   | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C2_PFDA   | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C2_PFDoA  | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C2_PFHxA  | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 1802_PFHxS  | 47.3 ng/mL    |
|                   |          |                                           |                            |                      |                     |              | 13C5_PFNA   | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C4_PFOA   | 50 ng/mL      |
|                   |          |                                           |                            |                      |                     |              | 13C4_PFOS   | 47.8 ng/mL    |
|                   |          |                                           |                            |                      |                     |              | 13C2_PFUdA  | 50 ng/mL      |
| .LCMPFCSU_00045   | 03/01/17 | 08/31/16                                  | Methanol, Lot Baker 115935 | 50000 uL             | LCM2PFHxDA_00006    | 1000 uL      | 13C2-PFHxDA | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCM2PFTeDA_00006    | 1000 uL      | 13C2-PFTeDA | 1 ug/mL       |
|                   |          |                                           |                            |                      | LCM4PFHFA_00006     | 1000 uL      | 13C4-PFHpA  | 1 ug/mL       |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date                                 | Dilutant Used       | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|--------------------|----------|-------------------------------------------|---------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                    |          |                                           |                     |                      | Reagent ID          | Volume Added |                                     |               |
|                    |          |                                           |                     |                      | LCM5PFPEA_00007     | 1000 uL      | 13C5-PFPeA                          | 1 ug/mL       |
|                    |          |                                           |                     |                      | LCM8FOSA_00010      | 1000 uL      | 13C8 FOSA                           | 1 ug/mL       |
|                    |          |                                           |                     |                      | LCMPFBA_00007       | 1000 uL      | 13C4 PFBA                           | 1 ug/mL       |
|                    |          |                                           |                     |                      | LCMPFDA_00010       | 1000 uL      | 13C2 PFDA                           | 1 ug/mL       |
|                    |          |                                           |                     |                      | LCMPFDoA_00007      | 1000 uL      | 13C2 PFDoA                          | 1 ug/mL       |
|                    |          |                                           |                     |                      | LCMPFHxA_00011      | 1000 uL      | 13C2 PFHxA                          | 1 ug/mL       |
|                    |          |                                           |                     |                      | LCMPFHxS_00007      | 1000 uL      | 18O2 PFHxS                          | 0.946 ug/mL   |
|                    |          |                                           |                     |                      | LCMPFNA_00007       | 1000 uL      | 13C5 PFNA                           | 1 ug/mL       |
|                    |          |                                           |                     |                      | LCMPFOA_00011       | 1000 uL      | 13C4 PFOA                           | 1 ug/mL       |
|                    |          |                                           |                     |                      | LCMPFOS_00015       | 1000 uL      | 13C4 PFOS                           | 0.956 ug/mL   |
|                    |          |                                           |                     |                      | LCMPFUDa_00008      | 1000 uL      | 13C2 PFUnA                          | 1 ug/mL       |
| ..LCM2PFHxDA_00006 | 01/07/21 | Wellington Laboratories, Lot M2PFHxDA1112 |                     |                      | (Purchased Reagent) |              | 13C2-PFHxDA                         | 50 ug/mL      |
| ..LCM2PFTeDA_00006 | 12/07/20 | Wellington Laboratories, Lot M2PFTeDA1115 |                     |                      | (Purchased Reagent) |              | 13C2-PFTeDA                         | 50 ug/mL      |
| ..LCM4PFHPA_00006  | 05/22/20 | Wellington Laboratories, Lot M4PFHPA0515  |                     |                      | (Purchased Reagent) |              | 13C4-PFHpA                          | 50 ug/mL      |
| ..LCM5PFPEA_00007  | 05/22/20 | Wellington Laboratories, Lot M5PFPeA0515  |                     |                      | (Purchased Reagent) |              | 13C5-PFPeA                          | 50 ug/mL      |
| ..LCM8FOSA_00010   | 12/22/17 | Wellington Laboratories, Lot M8FOSA1215I  |                     |                      | (Purchased Reagent) |              | 13C8 FOSA                           | 50 ug/mL      |
| ..LCMPFBA_00007    | 05/24/21 | Wellington Laboratories, Lot MPFBA0516    |                     |                      | (Purchased Reagent) |              | 13C4 PFBA                           | 50 ug/mL      |
| ..LCMPFDA_00010    | 08/19/20 | Wellington Laboratories, Lot MPFDA0815    |                     |                      | (Purchased Reagent) |              | 13C2 PFDA                           | 50 ug/mL      |
| ..LCMPFDoA_00007   | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416   |                     |                      | (Purchased Reagent) |              | 13C2 PFDoA                          | 50 ug/mL      |
| ..LCMPFHxA_00011   | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416   |                     |                      | (Purchased Reagent) |              | 13C2 PFHxA                          | 50 ug/mL      |
| ..LCMPFHxS_00007   | 10/23/20 | Wellington Laboratories, Lot MPFHxS1015   |                     |                      | (Purchased Reagent) |              | 18O2 PFHxS                          | 47.3 ug/mL    |
| ..LCMPFNA_00007    | 04/13/19 | Wellington Laboratories, Lot MPFNA0414    |                     |                      | (Purchased Reagent) |              | 13C5 PFNA                           | 50 ug/mL      |
| ..LCMPFOA_00011    | 01/22/21 | Wellington Laboratories, Lot MPFOA0116    |                     |                      | (Purchased Reagent) |              | 13C4 PFOA                           | 50 ug/mL      |
| ..LCMPFOS_00015    | 01/22/21 | Wellington Laboratories, Lot MPFOS0116    |                     |                      | (Purchased Reagent) |              | 13C4 PFOS                           | 47.8 ug/mL    |
| ..LCMPFUDa_00008   | 10/31/19 | Wellington Laboratories, Lot MPFUDa1014   |                     |                      | (Purchased Reagent) |              | 13C2 PFUnA                          | 50 ug/mL      |
| LCPFCL-L1_00021    | 12/28/16 | 08/03/16                                  | MeOH/H2O, Lot 90285 | 5 mL                 | LCMPFCSU_00044      | 250 uL       | 13C2-PFHxDA                         | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C2-PFTeDA                         | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C4-PFHpA                          | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C5-PFPeA                          | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C8 FOSA                           | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C4 PFBA                           | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C2 PFDA                           | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C2 PFDoA                          | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C2 PFHxA                          | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 18O2 PFHxS                          | 47.3 ng/mL    |
|                    |          |                                           |                     |                      |                     |              | 13C5 PFNA                           | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C4 PFOA                           | 50 ng/mL      |
|                    |          |                                           |                     |                      |                     |              | 13C4 PFOS                           | 47.8 ng/mL    |
|                    |          |                                           |                     |                      |                     |              | 13C2 PFUnA                          | 50 ng/mL      |
|                    |          |                                           |                     |                      | LCPFCLSP_00057      | 25 uL        | Perfluorobutyric acid               | 0.5 ng/mL     |
|                    |          |                                           |                     |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 0.442 ng/mL   |
|                    |          |                                           |                     |                      |                     |              | Perfluorodecanoic acid              | 0.5 ng/mL     |
|                    |          |                                           |                     |                      |                     |              | Perfluorododecanoic acid            | 0.5 ng/mL     |
|                    |          |                                           |                     |                      |                     |              | Perfluorodecane Sulfonic acid       | 0.482 ng/mL   |
|                    |          |                                           |                     |                      |                     |              | Perfluoroheptanoic acid             | 0.5 ng/mL     |
|                    |          |                                           |                     |                      |                     |              | Perfluoroheptanesulfonic Acid       | 0.476 ng/mL   |
|                    |          |                                           |                     |                      |                     |              | Perfluorohexanoic acid              | 0.5 ng/mL     |



# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date                                 | Dilutant Used              | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|--------------------|----------|-------------------------------------------|----------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                    |          |                                           |                            |                      | Reagent ID          | Volume Added |                                     |               |
|                    |          |                                           |                            |                      |                     |              | Perfluorohexadecanoic acid          | 0.5 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorohexanesulfonic acid        | 0.455 ng/mL   |
|                    |          |                                           |                            |                      |                     |              | Perfluorononanoic acid              | 0.5 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 0.5 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctadecanoic acid          | 0.5 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctane Sulfonate (PFOS)    | 0.464 ng/mL   |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctane Sulfonamide         | 0.5 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluoropentanoic acid             | 0.5 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorotetradecanoic acid         | 0.5 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorotridecanoic acid           | 0.5 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluoroundecanoic acid            | 0.5 ng/mL     |
| .LCMPFCSU_00044    | 12/28/16 | 06/28/16                                  | Methanol, Lot Baker 115935 | 50000 uL             | LCM2PFHxDA_00006    | 1000 uL      | 13C2-PFHxDA                         | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM2PFTeDA_00006    | 1000 uL      | 13C2-PFTeDA                         | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM4PFHFA_00006     | 1000 uL      | 13C4-PFHFA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM5PFPEA_00007     | 1000 uL      | 13C5-PFPeA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM8FOSA_00010      | 1000 uL      | 13C8 FOSA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFBA_00007       | 1000 uL      | 13C4 PFBA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFDA_00010       | 1000 uL      | 13C2 PFDA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFDoA_00007      | 1000 uL      | 13C2 PFDoA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFHxA_00011      | 1000 uL      | 13C2 PFHxA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFHxS_00007      | 1000 uL      | 1802 PFHxS                          | 0.946 ug/mL   |
|                    |          |                                           |                            |                      | LCMPFNA_00007       | 1000 uL      | 13C5 PFNA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFOA_00011       | 1000 uL      | 13C4 PFOA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFOS_00015       | 1000 uL      | 13C4 PFOS                           | 0.956 ug/mL   |
|                    |          |                                           |                            |                      | LCMPFUDa_00008      | 1000 uL      | 13C2 PFUnA                          | 1 ug/mL       |
| ..LCM2PFHxDA_00006 | 01/07/21 | Wellington Laboratories, Lot M2PFHxDA1112 |                            |                      | (Purchased Reagent) |              | 13C2-PFHxDA                         | 50 ug/mL      |
| ..LCM2PFTeDA_00006 | 12/07/20 | Wellington Laboratories, Lot M2PFTeDA1115 |                            |                      | (Purchased Reagent) |              | 13C2-PFTeDA                         | 50 ug/mL      |
| ..LCM4PFHFA_00006  | 05/22/20 | Wellington Laboratories, Lot M4PFHFA0515  |                            |                      | (Purchased Reagent) |              | 13C4-PFHFA                          | 50 ug/mL      |
| ..LCM5PFPEA_00007  | 05/22/20 | Wellington Laboratories, Lot M5PFPeA0515  |                            |                      | (Purchased Reagent) |              | 13C5-PFPeA                          | 50 ug/mL      |
| ..LCM8FOSA_00010   | 12/22/17 | Wellington Laboratories, Lot M8FOSA1215I  |                            |                      | (Purchased Reagent) |              | 13C8 FOSA                           | 50 ug/mL      |
| ..LCMPFBA_00007    | 05/24/21 | Wellington Laboratories, Lot MPFBA0516    |                            |                      | (Purchased Reagent) |              | 13C4 PFBA                           | 50 ug/mL      |
| ..LCMPFDA_00010    | 08/19/20 | Wellington Laboratories, Lot MPFDA0815    |                            |                      | (Purchased Reagent) |              | 13C2 PFDA                           | 50 ug/mL      |
| ..LCMPFDoA_00007   | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416   |                            |                      | (Purchased Reagent) |              | 13C2 PFDoA                          | 50 ug/mL      |
| ..LCMPFHxA_00011   | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416   |                            |                      | (Purchased Reagent) |              | 13C2 PFHxA                          | 50 ug/mL      |
| ..LCMPFHxS_00007   | 10/23/20 | Wellington Laboratories, Lot MPFHxS1015   |                            |                      | (Purchased Reagent) |              | 1802 PFHxS                          | 47.3 ug/mL    |
| ..LCMPFNA_00007    | 04/13/19 | Wellington Laboratories, Lot MPFNA0414    |                            |                      | (Purchased Reagent) |              | 13C5 PFNA                           | 50 ug/mL      |
| ..LCMPFOA_00011    | 01/22/21 | Wellington Laboratories, Lot MPFOA0116    |                            |                      | (Purchased Reagent) |              | 13C4 PFOA                           | 50 ug/mL      |
| ..LCMPFOS_00015    | 01/22/21 | Wellington Laboratories, Lot MPFOS0116    |                            |                      | (Purchased Reagent) |              | 13C4 PFOS                           | 47.8 ug/mL    |
| ..LCMPFUDa_00008   | 10/31/19 | Wellington Laboratories, Lot MPFUDa1014   |                            |                      | (Purchased Reagent) |              | 13C2 PFUnA                          | 50 ug/mL      |
| .LCPFCSP_00057     | 02/01/17 | 08/03/16                                  | Methanol, Lot 090285       | 10000 uL             | LCPFCSP_00056       | 1000 uL      | Perfluorobutyric acid               | 0.1 ug/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 0.0884 ug/mL  |
|                    |          |                                           |                            |                      |                     |              | Perfluorodecanoic acid              | 0.1 ug/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorododecanoic acid            | 0.1 ug/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorodecane Sulfonic acid       | 0.0964 ug/mL  |
|                    |          |                                           |                            |                      |                     |              | Perfluoroheptanoic acid             | 0.1 ug/mL     |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID          | Exp Date | Prep Date                                 | Dilutant Used        | Reagent Final Volume | Parent Reagent   |                                     | Analyte                             | Concentration |
|---------------------|----------|-------------------------------------------|----------------------|----------------------|------------------|-------------------------------------|-------------------------------------|---------------|
|                     |          |                                           |                      |                      | Reagent ID       | Volume Added                        |                                     |               |
|                     |          |                                           |                      |                      |                  |                                     | Perfluoroheptanesulfonic Acid       | 0.0952 ug/mL  |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorohexanoic acid              | 0.1 ug/mL     |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorohexadecanoic acid          | 0.1 ug/mL     |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorohexanesulfonic acid        | 0.091 ug/mL   |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorononanoic acid              | 0.1 ug/mL     |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorooctanoic acid (PFOA)       | 0.1 ug/mL     |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorooctadecanoic acid          | 0.1 ug/mL     |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorooctane Sulfonate (PFOS)    | 0.0928 ug/mL  |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorooctane Sulfonamide         | 0.1 ug/mL     |
|                     |          |                                           |                      |                      |                  |                                     | Perfluoropentanoic acid             | 0.1 ug/mL     |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorotetradecanoic acid         | 0.1 ug/mL     |
|                     |          |                                           |                      |                      |                  |                                     | Perfluorotridecanoic acid           | 0.1 ug/mL     |
|                     |          |                                           |                      |                      |                  |                                     | Perfluoroundecanoic acid            | 0.1 ug/mL     |
| ..LCPFCSP_00056     | 02/01/17 | 08/01/16                                  | Methanol, Lot 090285 | 10000 uL             | LCPFBA_00004     | 200 uL                              | Perfluorobutyric acid               | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFBS_00004     | 200 uL                              | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL   |
|                     |          |                                           |                      |                      | LCPFDA_00005     | 200 uL                              | Perfluorodecanoic acid              | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFDoA_00005    | 200 uL                              | Perfluorododecanoic acid            | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFDS_00005     | 200 uL                              | Perfluorodecane Sulfonic acid       | 0.964 ug/mL   |
|                     |          |                                           |                      |                      | LCPFHpA_00005    | 200 uL                              | Perfluoroheptanoic acid             | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFHpS_00008    | 200 uL                              | Perfluoroheptanesulfonic Acid       | 0.952 ug/mL   |
|                     |          |                                           |                      |                      | LCPFHxA_00004    | 200 uL                              | Perfluorohexanoic acid              | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFHxDA_00004   | 200 uL                              | Perfluorohexadecanoic acid          | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFHxS-br_00001 | 200 uL                              | Perfluorohexanesulfonic acid        | 0.91 ug/mL    |
|                     |          |                                           |                      |                      | LCPFNA_00005     | 200 uL                              | Perfluorononanoic acid              | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFOA_00006     | 200 uL                              | Perfluorooctanoic acid (PFOA)       | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFOA_00005     | 200 uL                              | Perfluorooctadecanoic acid          | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFOS-br_00001  | 200 uL                              | Perfluorooctane Sulfonate (PFOS)    | 0.928 ug/mL   |
|                     |          |                                           |                      |                      | LCPFOSA_00006    | 200 uL                              | Perfluorooctane Sulfonamide         | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFPeA_00005    | 200 uL                              | Perfluoropentanoic acid             | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFTeDA_00004   | 200 uL                              | Perfluorotetradecanoic acid         | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFTTrDA_00004  | 200 uL                              | Perfluorotridecanoic acid           | 1 ug/mL       |
|                     |          |                                           |                      |                      | LCPFUDa_00004    | 200 uL                              | Perfluoroundecanoic acid            | 1 ug/mL       |
| ...LCPFBA_00004     | 01/30/20 | Wellington Laboratories, Lot PFBA0115     |                      | (Purchased Reagent)  |                  | Perfluorobutyric acid               | 50 ug/mL                            |               |
| ...LCPFBS_00004     | 10/09/19 | Wellington Laboratories, Lot LFPBS1014    |                      | (Purchased Reagent)  |                  | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL                          |               |
| ...LCPFDA_00005     | 07/02/20 | Wellington Laboratories, Lot PFDA0615     |                      | (Purchased Reagent)  |                  | Perfluorodecanoic acid              | 50 ug/mL                            |               |
| ...LCPFDoA_00005    | 01/30/20 | Wellington Laboratories, Lot PFDoA0115    |                      | (Purchased Reagent)  |                  | Perfluorododecanoic acid            | 50 ug/mL                            |               |
| ...LCPFDS_00005     | 07/02/20 | Wellington Laboratories, Lot LFPDS0615    |                      | (Purchased Reagent)  |                  | Perfluorodecane Sulfonic acid       | 48.2 ug/mL                          |               |
| ...LCPFHpA_00005    | 01/22/21 | Wellington Laboratories, Lot PFHpA0116    |                      | (Purchased Reagent)  |                  | Perfluoroheptanoic acid             | 50 ug/mL                            |               |
| ...LCPFHpS_00008    | 11/06/20 | Wellington Laboratories, Lot LFPHpS1115   |                      | (Purchased Reagent)  |                  | Perfluoroheptanesulfonic Acid       | 47.6 ug/mL                          |               |
| ...LCPFHxA_00004    | 12/22/20 | Wellington Laboratories, Lot PFHxA1215    |                      | (Purchased Reagent)  |                  | Perfluorohexanoic acid              | 50 ug/mL                            |               |
| ...LCPFHxDA_00004   | 11/28/17 | Wellington Laboratories, Lot PFHxDA0707   |                      | (Purchased Reagent)  |                  | Perfluorohexadecanoic acid          | 50 ug/mL                            |               |
| ...LCPFHxS-br_00001 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 |                      | (Purchased Reagent)  |                  | Perfluorohexanesulfonic acid        | 45.5 ug/mL                          |               |
| ...LCPFNA_00005     | 10/23/20 | Wellington Laboratories, Lot PFNA1015     |                      | (Purchased Reagent)  |                  | Perfluorononanoic acid              | 50 ug/mL                            |               |
| ...LCPFOA_00006     | 11/06/20 | Wellington Laboratories, Lot PFOA1115     |                      | (Purchased Reagent)  |                  | Perfluorooctanoic acid (PFOA)       | 50 ug/mL                            |               |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                            | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|-----------------------|----------|-----------|------------------------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                       |          |           |                                          |                      | Reagent ID          | Volume Added |                                     |               |
| ...LCPFODA 00005      | 01/30/20 |           | Wellington Laboratories, Lot PFODA0115   |                      | (Purchased Reagent) |              | Perfluorooctadecanoic acid          | 50 ug/mL      |
| ...LCPFOS-br_00001    | 10/14/20 |           | Wellington Laboratories, Lot brPFOSK1015 |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ug/mL    |
| ...LCPFOSA 00006      | 09/02/17 |           | Wellington Laboratories, Lot FOSA0815I   |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonamide         | 50 ug/mL      |
| ...LCPFPeA 00005      | 01/30/20 |           | Wellington Laboratories, Lot PFPeA0115   |                      | (Purchased Reagent) |              | Perfluoropentanoic acid             | 50 ug/mL      |
| ...LCPFTeDA 00004     | 12/09/20 |           | Wellington Laboratories, Lot PFTeDA1215  |                      | (Purchased Reagent) |              | Perfluorotetradecanoic acid         | 50 ug/mL      |
| ...LCPFTTrDA 00004    | 12/10/18 |           | Wellington Laboratories, Lot PFTTrDA1213 |                      | (Purchased Reagent) |              | Perfluorotridecanoic acid           | 50 ug/mL      |
| ...LCPFUDa 00004      | 08/19/20 |           | Wellington Laboratories, Lot PFUDa0815   |                      | (Purchased Reagent) |              | Perfluoroundecanoic acid            | 50 ug/mL      |
| <b>LCPFC-L2_00022</b> | 12/28/16 | 08/03/16  | MeOH/H2O, Lot 090285                     | 5 mL                 | LCMPFCSU_00044      | 250 uL       | 13C2-PFHxDA                         | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C2-PFTeDA                         | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C4-PFHpA                          | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C5-PFPeA                          | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C8 FOSA                           | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C4 PFBA                           | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C2 PFDA                           | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C2 PFDoA                          | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C2 PFHxA                          | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 18O2 PFHxS                          | 47.3 ng/mL    |
|                       |          |           |                                          |                      |                     |              | 13C5 PFNA                           | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C4 PFOA                           | 50 ng/mL      |
|                       |          |           |                                          |                      |                     |              | 13C4 PFOS                           | 47.8 ng/mL    |
|                       |          |           |                                          |                      |                     |              | 13C2 PFUnA                          | 50 ng/mL      |
|                       |          |           |                                          |                      | LCPFCSP_00057       | 50 uL        | Perfluorobutyric acid               | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 0.884 ng/mL   |
|                       |          |           |                                          |                      |                     |              | Perfluorodecanoic acid              | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorododecanoic acid            | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorodecane Sulfonic acid       | 0.964 ng/mL   |
|                       |          |           |                                          |                      |                     |              | Perfluoroheptanoic acid             | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluoroheptanesulfonic Acid       | 0.952 ng/mL   |
|                       |          |           |                                          |                      |                     |              | Perfluorohexanoic acid              | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorohexadecanoic acid          | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorohexanesulfonic acid        | 0.91 ng/mL    |
|                       |          |           |                                          |                      |                     |              | Perfluorononanoic acid              | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorooctadecanoic acid          | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorooctane Sulfonate (PFOS)    | 0.928 ng/mL   |
|                       |          |           |                                          |                      |                     |              | Perfluorooctane Sulfonamide         | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluoropentanoic acid             | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorotetradecanoic acid         | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluorotridecanoic acid           | 1 ng/mL       |
|                       |          |           |                                          |                      |                     |              | Perfluoroundecanoic acid            | 1 ng/mL       |
| .LCMPFCSU_00044       | 12/28/16 | 06/28/16  | Methanol, Lot Baker 115935               | 50000 uL             | LCM2PFHxDA_00006    | 1000 uL      | 13C2-PFHxDA                         | 1 ug/mL       |
|                       |          |           |                                          |                      | LCM2PFTeDA_00006    | 1000 uL      | 13C2-PFTeDA                         | 1 ug/mL       |
|                       |          |           |                                          |                      | LCM4PFHPA_00006     | 1000 uL      | 13C4-PFHpA                          | 1 ug/mL       |
|                       |          |           |                                          |                      | LCM5PFPEA_00007     | 1000 uL      | 13C5-PFPeA                          | 1 ug/mL       |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date                                 | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|--------------------|----------|-------------------------------------------|----------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                    |          |                                           |                      |                      | Reagent ID          | Volume Added |                                     |               |
|                    |          |                                           |                      |                      | LCM8FOSA_00010      | 1000 uL      | 13C8 FOSA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFBA_00007       | 1000 uL      | 13C4 PFBA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFDA_00010       | 1000 uL      | 13C2 PFDA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFDoA_00007      | 1000 uL      | 13C2 PFDoA                          | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFHxA_00011      | 1000 uL      | 13C2 PFHxA                          | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFHxS_00007      | 1000 uL      | 1802 PFHxS                          | 0.946 ug/mL   |
|                    |          |                                           |                      |                      | LCMPFNA_00007       | 1000 uL      | 13C5 PFNA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFOA_00011       | 1000 uL      | 13C4 PFOA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFOS_00015       | 1000 uL      | 13C4 PFOS                           | 0.956 ug/mL   |
|                    |          |                                           |                      |                      | LCMPFUDa_00008      | 1000 uL      | 13C2 PFUnA                          | 1 ug/mL       |
| ..LCM2PFHxDA_00006 | 01/07/21 | Wellington Laboratories, Lot M2PFHxDA1112 |                      |                      | (Purchased Reagent) |              | 13C2-PFHxDA                         | 50 ug/mL      |
| ..LCM2PFTeDA_00006 | 12/07/20 | Wellington Laboratories, Lot M2PFTeDA1115 |                      |                      | (Purchased Reagent) |              | 13C2-PFTeDA                         | 50 ug/mL      |
| ..LCM4PFHPA_00006  | 05/22/20 | Wellington Laboratories, Lot M4PFHPA0515  |                      |                      | (Purchased Reagent) |              | 13C4-PFHpA                          | 50 ug/mL      |
| ..LCM5PFPEA_00007  | 05/22/20 | Wellington Laboratories, Lot M5PFPeA0515  |                      |                      | (Purchased Reagent) |              | 13C5-PFPeA                          | 50 ug/mL      |
| ..LCM8FOSA_00010   | 12/22/17 | Wellington Laboratories, Lot M8FOSA1215I  |                      |                      | (Purchased Reagent) |              | 13C8 FOSA                           | 50 ug/mL      |
| ..LCMPFBA_00007    | 05/24/21 | Wellington Laboratories, Lot MPFBA0516    |                      |                      | (Purchased Reagent) |              | 13C4 PFBA                           | 50 ug/mL      |
| ..LCMPFDA_00010    | 08/19/20 | Wellington Laboratories, Lot MPFDA0815    |                      |                      | (Purchased Reagent) |              | 13C2 PFDA                           | 50 ug/mL      |
| ..LCMPFDoA_00007   | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416   |                      |                      | (Purchased Reagent) |              | 13C2 PFDoA                          | 50 ug/mL      |
| ..LCMPFHxA_00011   | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416   |                      |                      | (Purchased Reagent) |              | 13C2 PFHxA                          | 50 ug/mL      |
| ..LCMPFHxS_00007   | 10/23/20 | Wellington Laboratories, Lot MPFHxS1015   |                      |                      | (Purchased Reagent) |              | 1802 PFHxS                          | 47.3 ug/mL    |
| ..LCMPFNA_00007    | 04/13/19 | Wellington Laboratories, Lot MPFNA0414    |                      |                      | (Purchased Reagent) |              | 13C5 PFNA                           | 50 ug/mL      |
| ..LCMPFOA_00011    | 01/22/21 | Wellington Laboratories, Lot MPFOA0116    |                      |                      | (Purchased Reagent) |              | 13C4 PFOA                           | 50 ug/mL      |
| ..LCMPFOS_00015    | 01/22/21 | Wellington Laboratories, Lot MPFOS0116    |                      |                      | (Purchased Reagent) |              | 13C4 PFOS                           | 47.8 ug/mL    |
| ..LCMPFUDa_00008   | 10/31/19 | Wellington Laboratories, Lot MPFUDa1014   |                      |                      | (Purchased Reagent) |              | 13C2 PFUnA                          | 50 ug/mL      |
| ..LCPFCSP_00057    | 02/01/17 | 08/03/16                                  | Methanol, Lot 090285 | 10000 uL             | LCPFCSP_00056       | 1000 uL      | Perfluorobutyric acid               | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 0.0884 ug/mL  |
|                    |          |                                           |                      |                      |                     |              | Perfluorodecanoic acid              | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorododecanoic acid            | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorodecane Sulfonic acid       | 0.0964 ug/mL  |
|                    |          |                                           |                      |                      |                     |              | Perfluoroheptanoic acid             | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluoroheptanesulfonic Acid       | 0.0952 ug/mL  |
|                    |          |                                           |                      |                      |                     |              | Perfluorohexanoic acid              | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorohexadecanoic acid          | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorohexanesulfonic acid        | 0.091 ug/mL   |
|                    |          |                                           |                      |                      |                     |              | Perfluorononanoic acid              | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorooctadecanoic acid          | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorooctane Sulfonate (PFOS)    | 0.0928 ug/mL  |
|                    |          |                                           |                      |                      |                     |              | Perfluorooctane Sulfonamide         | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluoropentanoic acid             | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorotetradecanoic acid         | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorotridecanoic acid           | 0.1 ug/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluoroundecanoic acid            | 0.1 ug/mL     |
| ..LCPFCSP_00056    | 02/01/17 | 08/01/16                                  | Methanol, Lot 090285 | 10000 uL             | LCPFBA_00004        | 200 uL       | Perfluorobutyric acid               | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFBS_00004        | 200 uL       | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL   |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID            | Exp Date | Prep Date                                 | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|-----------------------|----------|-------------------------------------------|----------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                       |          |                                           |                      |                      | Reagent ID          | Volume Added |                                     |               |
|                       |          |                                           |                      |                      | LCPFDA_00005        | 200 uL       | Perfluorodecanoic acid              | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFDoA_00005       | 200 uL       | Perfluorododecanoic acid            | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFDS_00005        | 200 uL       | Perfluorodecane Sulfonic acid       | 0.964 ug/mL   |
|                       |          |                                           |                      |                      | LCPFHpA_00005       | 200 uL       | Perfluoroheptanoic acid             | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFHpS_00008       | 200 uL       | Perfluoroheptanesulfonic Acid       | 0.952 ug/mL   |
|                       |          |                                           |                      |                      | LCPFHxA_00004       | 200 uL       | Perfluorohexanoic acid              | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFHxDA_00004      | 200 uL       | Perfluorohexadecanoic acid          | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFHxS-br_00001    | 200 uL       | Perfluorohexanesulfonic acid        | 0.91 ug/mL    |
|                       |          |                                           |                      |                      | LCPFNA_00005        | 200 uL       | Perfluorononanoic acid              | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFOA_00006        | 200 uL       | Perfluorooctanoic acid (PFOA)       | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFODA_00005       | 200 uL       | Perfluorooctadecanoic acid          | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFOS-br_00001     | 200 uL       | Perfluorooctane Sulfonate (PFOS)    | 0.928 ug/mL   |
|                       |          |                                           |                      |                      | LCPFOSA_00006       | 200 uL       | Perfluorooctane Sulfonamide         | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFPeA_00005       | 200 uL       | Perfluoropentanoic acid             | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFTeDA_00004      | 200 uL       | Perfluorotetradecanoic acid         | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFTTrDA_00004     | 200 uL       | Perfluorotridecanoic acid           | 1 ug/mL       |
|                       |          |                                           |                      |                      | LCPFUdA_00004       | 200 uL       | Perfluoroundecanoic acid            | 1 ug/mL       |
| ...LCPFBA_00004       | 01/30/20 | Wellington Laboratories, Lot PFBA0115     |                      |                      | (Purchased Reagent) |              | Perfluorobutyric acid               | 50 ug/mL      |
| ...LCPFBS_00004       | 10/09/19 | Wellington Laboratories, Lot LPFBS1014    |                      |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL    |
| ...LCPFDA_00005       | 07/02/20 | Wellington Laboratories, Lot PFDA0615     |                      |                      | (Purchased Reagent) |              | Perfluorodecanoic acid              | 50 ug/mL      |
| ...LCPFDoA_00005      | 01/30/20 | Wellington Laboratories, Lot PFDoA0115    |                      |                      | (Purchased Reagent) |              | Perfluorododecanoic acid            | 50 ug/mL      |
| ...LCPFDS_00005       | 07/02/20 | Wellington Laboratories, Lot LPFDS0615    |                      |                      | (Purchased Reagent) |              | Perfluorodecane Sulfonic acid       | 48.2 ug/mL    |
| ...LCPFHpA_00005      | 01/22/21 | Wellington Laboratories, Lot PFHpA0116    |                      |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid             | 50 ug/mL      |
| ...LCPFHpS_00008      | 11/06/20 | Wellington Laboratories, Lot LPFHpS1115   |                      |                      | (Purchased Reagent) |              | Perfluoroheptanesulfonic Acid       | 47.6 ug/mL    |
| ...LCPFHxA_00004      | 12/22/20 | Wellington Laboratories, Lot PFHxA1215    |                      |                      | (Purchased Reagent) |              | Perfluorohexanoic acid              | 50 ug/mL      |
| ...LCPFHxDA_00004     | 11/28/17 | Wellington Laboratories, Lot PFHxDA0707   |                      |                      | (Purchased Reagent) |              | Perfluorohexadecanoic acid          | 50 ug/mL      |
| ...LCPFHxS-br_00001   | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 |                      |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid        | 45.5 ug/mL    |
| ...LCPFNA_00005       | 10/23/20 | Wellington Laboratories, Lot PFNA1015     |                      |                      | (Purchased Reagent) |              | Perfluorononanoic acid              | 50 ug/mL      |
| ...LCPFOA_00006       | 11/06/20 | Wellington Laboratories, Lot PFOA1115     |                      |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)       | 50 ug/mL      |
| ...LCPFODA_00005      | 01/30/20 | Wellington Laboratories, Lot PFODA0115    |                      |                      | (Purchased Reagent) |              | Perfluorooctadecanoic acid          | 50 ug/mL      |
| ...LCPFOS-br_00001    | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015  |                      |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ug/mL    |
| ...LCPFOSA_00006      | 09/02/17 | Wellington Laboratories, Lot FOSA0815I    |                      |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonamide         | 50 ug/mL      |
| ...LCPFPeA_00005      | 01/30/20 | Wellington Laboratories, Lot PFPeA0115    |                      |                      | (Purchased Reagent) |              | Perfluoropentanoic acid             | 50 ug/mL      |
| ...LCPFTeDA_00004     | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215   |                      |                      | (Purchased Reagent) |              | Perfluorotetradecanoic acid         | 50 ug/mL      |
| ...LCPFTTrDA_00004    | 12/10/18 | Wellington Laboratories, Lot PFTrDA1213   |                      |                      | (Purchased Reagent) |              | Perfluorotridecanoic acid           | 50 ug/mL      |
| ...LCPFUdA_00004      | 08/19/20 | Wellington Laboratories, Lot PFUdA0815    |                      |                      | (Purchased Reagent) |              | Perfluoroundecanoic acid            | 50 ug/mL      |
| <b>LCPFC-L3_00019</b> | 12/28/16 | 08/03/16                                  | MeOH/H2O, Lot 090285 | 5 mL                 | LCMPFCSU_00044      | 250 uL       | 13C2-PFHxDA                         | 50 ng/mL      |
|                       |          |                                           |                      |                      |                     |              | 13C2-PFTeDA                         | 50 ng/mL      |
|                       |          |                                           |                      |                      |                     |              | 13C4-PFHpA                          | 50 ng/mL      |
|                       |          |                                           |                      |                      |                     |              | 13C5-PFPeA                          | 50 ng/mL      |
|                       |          |                                           |                      |                      |                     |              | 13C8 FOSA                           | 50 ng/mL      |
|                       |          |                                           |                      |                      |                     |              | 13C4 PFBA                           | 50 ng/mL      |
|                       |          |                                           |                      |                      |                     |              | 13C2 PFDA                           | 50 ng/mL      |
|                       |          |                                           |                      |                      |                     |              | 13C2 PFDoA                          | 50 ng/mL      |
|                       |          |                                           |                      |                      |                     |              | 13C2 PFHxA                          | 50 ng/mL      |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID                  | Exp Date | Prep Date                                 | Dilutant Used              | Reagent Final Volume | Parent Reagent      |              | Analyte                                   | Concentration |
|-----------------------------|----------|-------------------------------------------|----------------------------|----------------------|---------------------|--------------|-------------------------------------------|---------------|
|                             |          |                                           |                            |                      | Reagent ID          | Volume Added |                                           |               |
|                             |          |                                           |                            |                      |                     |              | 1802 PFHxS                                | 47.3 ng/mL    |
|                             |          |                                           |                            |                      |                     |              | 13C5 PFNA                                 | 50 ng/mL      |
|                             |          |                                           |                            |                      |                     |              | 13C4 PFOA                                 | 50 ng/mL      |
|                             |          |                                           |                            |                      |                     |              | 13C4 PFOS                                 | 47.8 ng/mL    |
|                             |          |                                           |                            |                      |                     |              | 13C2 PFUnA                                | 50 ng/mL      |
|                             |          |                                           |                            |                      | LCPFCSP_00057       | 250 uL       | Perfluorobutyric acid                     | 5 ng/mL       |
|                             |          |                                           |                            |                      |                     |              | Perfluorobutanesulfonic acid (PFBS)       | 4.42 ng/mL    |
|                             |          |                                           |                            |                      |                     |              | Perfluorodecanoic acid                    | 5 ng/mL       |
|                             |          |                                           |                            |                      |                     |              | Perfluorododecanoic acid                  | 5 ng/mL       |
|                             |          |                                           |                            |                      |                     |              | Perfluorodecane Sulfonic acid             | 4.82 ng/mL    |
|                             |          |                                           |                            |                      |                     |              | Perfluoroheptanoic acid                   | 5 ng/mL       |
|                             |          |                                           |                            |                      |                     |              | Perfluoroheptanesulfonic Acid             | 4.76 ng/mL    |
|                             |          |                                           |                            |                      |                     |              | Perfluorohexanoic acid                    | 5 ng/mL       |
|                             |          |                                           |                            |                      |                     |              | Perfluorohexadecanoic acid                | 5 ng/mL       |
|                             |          |                                           |                            |                      |                     |              | Perfluorohexanesulfonic acid              | 4.55 ng/mL    |
|                             |          |                                           |                            |                      |                     |              | Perfluorononanoic acid                    | 5 ng/mL       |
|                             |          |                                           |                            |                      |                     |              | Perfluorooctanoic acid (PFOA)             | 5 ng/mL       |
|                             |          |                                           |                            |                      |                     |              | Perfluorooctadecanoic acid                | 5 ng/mL       |
|                             |          |                                           |                            |                      |                     |              | Perfluorooctane Sulfonate (PFOS)          | 4.64 ng/mL    |
|                             |          |                                           |                            |                      |                     |              | Perfluorooctane Sulfonamide               | 5 ng/mL       |
| Perfluoropentanoic acid     | 5 ng/mL  |                                           |                            |                      |                     |              |                                           |               |
| Perfluorotetradecanoic acid | 5 ng/mL  |                                           |                            |                      |                     |              |                                           |               |
| Perfluorotridecanoic acid   | 5 ng/mL  |                                           |                            |                      |                     |              |                                           |               |
| Perfluoroundecanoic acid    | 5 ng/mL  |                                           |                            |                      |                     |              |                                           |               |
| .LCMPFCSU_00044             | 12/28/16 | 06/28/16                                  | Methanol, Lot Baker 115935 | 50000 uL             | LCM2PFHxDA_00006    | 1000 uL      | 13C2-PFHxDA                               | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCM2PFTeDA_00006    | 1000 uL      | 13C2-PFTeDA                               | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCM4PFHPA_00006     | 1000 uL      | 13C4-PFHpA                                | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCM5PFPEA_00007     | 1000 uL      | 13C5-PFPeA                                | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCM8FOSA_00010      | 1000 uL      | 13C8 FOSA                                 | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCMPFBA_00007       | 1000 uL      | 13C4 PFBA                                 | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCMPFDA_00010       | 1000 uL      | 13C2 PFDA                                 | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCMPFDoA_00007      | 1000 uL      | 13C2 PFDoA                                | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCMPFHxA_00011      | 1000 uL      | 13C2 PFHxA                                | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCMPFHxS_00007      | 1000 uL      | 1802 PFHxS                                | 0.946 ug/mL   |
|                             |          |                                           |                            |                      | LCMPFNA_00007       | 1000 uL      | 13C5 PFNA                                 | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCMPFOA_00011       | 1000 uL      | 13C4 PFOA                                 | 1 ug/mL       |
|                             |          |                                           |                            |                      | LCMPFOS_00015       | 1000 uL      | 13C4 PFOS                                 | 0.956 ug/mL   |
|                             |          |                                           |                            |                      | LCMPFUDa_00008      | 1000 uL      | 13C2 PFUnA                                | 1 ug/mL       |
|                             |          |                                           |                            |                      | ..LCM2PFHxDA_00006  | 01/07/21     | Wellington Laboratories, Lot M2PFHxDA1112 |               |
| ..LCM2PFTeDA_00006          | 12/07/20 | Wellington Laboratories, Lot M2PFTeDA1115 |                            |                      | (Purchased Reagent) |              | 13C2-PFTeDA                               | 50 ug/mL      |
| ..LCM4PFHPA_00006           | 05/22/20 | Wellington Laboratories, Lot M4PFHpA0515  |                            |                      | (Purchased Reagent) |              | 13C4-PFHpA                                | 50 ug/mL      |
| ..LCM5PFPEA_00007           | 05/22/20 | Wellington Laboratories, Lot M5PFPeA0515  |                            |                      | (Purchased Reagent) |              | 13C5-PFPeA                                | 50 ug/mL      |
| ..LCM8FOSA_00010            | 12/22/17 | Wellington Laboratories, Lot M8FOSA1215I  |                            |                      | (Purchased Reagent) |              | 13C8 FOSA                                 | 50 ug/mL      |
| ..LCMPFBA_00007             | 05/24/21 | Wellington Laboratories, Lot MPFBA0516    |                            |                      | (Purchased Reagent) |              | 13C4 PFBA                                 | 50 ug/mL      |
| ..LCMPFDA_00010             | 08/19/20 | Wellington Laboratories, Lot MPFDA0815    |                            |                      | (Purchased Reagent) |              | 13C2 PFDA                                 | 50 ug/mL      |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID       | Exp Date | Prep Date | Dilutant Used                           | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|------------------|----------|-----------|-----------------------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                  |          |           |                                         |                      | Reagent ID          | Volume Added |                                     |               |
| ..LCMPFDoA_00007 | 04/08/21 |           | Wellington Laboratories, Lot MPFDoA0416 |                      | (Purchased Reagent) |              | 13C2 PFDoA                          | 50 ug/mL      |
| ..LCMPFHxA_00011 | 04/08/21 |           | Wellington Laboratories, Lot MPFHxA0416 |                      | (Purchased Reagent) |              | 13C2 PFHxA                          | 50 ug/mL      |
| ..LCMPFHxS_00007 | 10/23/20 |           | Wellington Laboratories, Lot MPFHxS1015 |                      | (Purchased Reagent) |              | 18O2 PFHxS                          | 47.3 ug/mL    |
| ..LCMPFNA_00007  | 04/13/19 |           | Wellington Laboratories, Lot MPFNA0414  |                      | (Purchased Reagent) |              | 13C5 PFNA                           | 50 ug/mL      |
| ..LCMPFOA_00011  | 01/22/21 |           | Wellington Laboratories, Lot MPFOA0116  |                      | (Purchased Reagent) |              | 13C4 PFOA                           | 50 ug/mL      |
| ..LCMPFOS_00015  | 01/22/21 |           | Wellington Laboratories, Lot MPFOS0116  |                      | (Purchased Reagent) |              | 13C4 PFOS                           | 47.8 ug/mL    |
| ..LCMPFUDa_00008 | 10/31/19 |           | Wellington Laboratories, Lot MPFUDa1014 |                      | (Purchased Reagent) |              | 13C2 PFUnA                          | 50 ug/mL      |
| .LCPFCSP_00057   | 02/01/17 | 08/03/16  | Methanol, Lot 090285                    | 10000 uL             | LCPFCSP_00056       | 1000 uL      | Perfluorobutyric acid               | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 0.0884 ug/mL  |
|                  |          |           |                                         |                      |                     |              | Perfluorodecanoic acid              | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluorododecanoic acid            | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluorodecane Sulfonic acid       | 0.0964 ug/mL  |
|                  |          |           |                                         |                      |                     |              | Perfluoroheptanoic acid             | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluoroheptanesulfonic Acid       | 0.0952 ug/mL  |
|                  |          |           |                                         |                      |                     |              | Perfluorohexanoic acid              | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluorohexadecanoic acid          | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluorohexanesulfonic acid        | 0.091 ug/mL   |
|                  |          |           |                                         |                      |                     |              | Perfluorononanoic acid              | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluorooctadecanoic acid          | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluorooctane Sulfonate (PFOS)    | 0.0928 ug/mL  |
|                  |          |           |                                         |                      |                     |              | Perfluorooctane Sulfonamide         | 0.1 ug/mL     |
|                  |          |           |                                         |                      |                     |              | Perfluoropentanoic acid             | 0.1 ug/mL     |
| ..LCPFCSP_00056  | 02/01/17 | 08/01/16  | Methanol, Lot 090285                    | 10000 uL             | LCPFCSP_00056       | 1000 uL      | Perfluorobutyric acid               | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorobutanesulfonic acid (PFBS) | 0.0884 ug/mL  |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorodecanoic acid              | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorododecanoic acid            | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorodecane Sulfonic acid       | 0.0964 ug/mL  |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluoroheptanoic acid             | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluoroheptanesulfonic Acid       | 0.0952 ug/mL  |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorohexanoic acid              | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorohexadecanoic acid          | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorohexanesulfonic acid        | 0.091 ug/mL   |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorononanoic acid              | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorooctanoic acid (PFOA)       | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorooctadecanoic acid          | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorooctane Sulfonate (PFOS)    | 0.0928 ug/mL  |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorooctane Sulfonamide         | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluoropentanoic acid             | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorotetradecanoic acid         | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorotridecanoic acid           | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluoroundecanoic acid            | 0.1 ug/mL     |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorobutyric acid               | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL   |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorodecanoic acid              | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorododecanoic acid            | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorodecane Sulfonic acid       | 0.964 ug/mL   |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluoroheptanoic acid             | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluoroheptanesulfonic Acid       | 0.952 ug/mL   |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorohexanoic acid              | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorohexadecanoic acid          | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorohexanesulfonic acid        | 0.91 ug/mL    |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorononanoic acid              | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorooctanoic acid (PFOA)       | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorooctadecanoic acid          | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorooctane Sulfonate (PFOS)    | 0.928 ug/mL   |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorooctane Sulfonamide         | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluoropentanoic acid             | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorotetradecanoic acid         | 1 ug/mL       |
|                  |          |           |                                         |                      | LCPFCSP_00056       | 1000 uL      | Perfluorotridecanoic acid           | 1 ug/mL       |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID          | Exp Date | Prep Date | Dilutant Used                             | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|---------------------|----------|-----------|-------------------------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                     |          |           |                                           |                      | Reagent ID          | Volume Added |                                     |               |
|                     |          |           |                                           |                      | LCPFUDa 00004       | 200 uL       | Perfluoroundecanoic acid            | 1 ug/mL       |
| ...LCPFBFA 00004    | 01/30/20 |           | Wellington Laboratories, Lot PFBA0115     |                      | (Purchased Reagent) |              | Perfluorobutyric acid               | 50 ug/mL      |
| ...LCPFBFS_00004    | 10/09/19 |           | Wellington Laboratories, Lot LPFBS1014    |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL    |
| ...LCPFDA 00005     | 07/02/20 |           | Wellington Laboratories, Lot PFDA0615     |                      | (Purchased Reagent) |              | Perfluorodecanoic acid              | 50 ug/mL      |
| ...LCPFDoA 00005    | 01/30/20 |           | Wellington Laboratories, Lot PFDoA0115    |                      | (Purchased Reagent) |              | Perfluorododecanoic acid            | 50 ug/mL      |
| ...LCPFDS 00005     | 07/02/20 |           | Wellington Laboratories, Lot LPFDS0615    |                      | (Purchased Reagent) |              | Perfluorodecane Sulfonic acid       | 48.2 ug/mL    |
| ...LCPFHpa 00005    | 01/22/21 |           | Wellington Laboratories, Lot PFHpA0116    |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid             | 50 ug/mL      |
| ...LCPFHps 00008    | 11/06/20 |           | Wellington Laboratories, Lot LPFHps1115   |                      | (Purchased Reagent) |              | Perfluoroheptanesulfonic Acid       | 47.6 ug/mL    |
| ...LCPFHxA 00004    | 12/22/20 |           | Wellington Laboratories, Lot PFHxA1215    |                      | (Purchased Reagent) |              | Perfluorohexanoic acid              | 50 ug/mL      |
| ...LCPFHxDA 00004   | 11/28/17 |           | Wellington Laboratories, Lot PFHxDA0707   |                      | (Purchased Reagent) |              | Perfluorohexadecanoic acid          | 50 ug/mL      |
| ...LCPFHxS-br 00001 | 07/03/20 |           | Wellington Laboratories, Lot brPFHxSK0615 |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid        | 45.5 ug/mL    |
| ...LCPFNA 00005     | 10/23/20 |           | Wellington Laboratories, Lot PFNA1015     |                      | (Purchased Reagent) |              | Perfluorononanoic acid              | 50 ug/mL      |
| ...LCPFOA 00006     | 11/06/20 |           | Wellington Laboratories, Lot PFOA1115     |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)       | 50 ug/mL      |
| ...LCPFODA 00005    | 01/30/20 |           | Wellington Laboratories, Lot PFODA0115    |                      | (Purchased Reagent) |              | Perfluorooctadecanoic acid          | 50 ug/mL      |
| ...LCPFOS-br_00001  | 10/14/20 |           | Wellington Laboratories, Lot brPFOSK1015  |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ug/mL    |
| ...LCPFOSA 00006    | 09/02/17 |           | Wellington Laboratories, Lot FOSA0815I    |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonamide         | 50 ug/mL      |
| ...LCPFPeA 00005    | 01/30/20 |           | Wellington Laboratories, Lot PFPeA0115    |                      | (Purchased Reagent) |              | Perfluoropentanoic acid             | 50 ug/mL      |
| ...LCPFTeDA 00004   | 12/09/20 |           | Wellington Laboratories, Lot PFTeDA1215   |                      | (Purchased Reagent) |              | Perfluorotetradecanoic acid         | 50 ug/mL      |
| ...LCPFTTrDA 00004  | 12/10/18 |           | Wellington Laboratories, Lot PFTTrDA1213  |                      | (Purchased Reagent) |              | Perfluorotridecanoic acid           | 50 ug/mL      |
| ...LCPFUDa 00004    | 08/19/20 |           | Wellington Laboratories, Lot PFUDa0815    |                      | (Purchased Reagent) |              | Perfluoroundecanoic acid            | 50 ug/mL      |
| LCPFC-L4_00022      | 12/28/16 | 08/03/16  | MeOH/H2O, Lot 090285                      | 5 mL                 | LCMPFCSU_00044      | 250 uL       | 13C2-PFHxDA                         | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C2-PFTeDA                         | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C4-PFHpa                          | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C5-PFPeA                          | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C8 FOSA                           | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C4 PFBA                           | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C2 PFDA                           | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C2 PFDoA                          | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C2 PFHxA                          | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 18O2 PFHxS                          | 47.3 ng/mL    |
|                     |          |           |                                           |                      |                     |              | 13C5 PFNA                           | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C4 PFOA                           | 50 ng/mL      |
|                     |          |           |                                           |                      |                     |              | 13C4 PFOS                           | 47.8 ng/mL    |
|                     |          |           |                                           |                      |                     |              | 13C2 PFUnA                          | 50 ng/mL      |
|                     |          |           |                                           |                      | LCPFCSP_00056       | 100 uL       | Perfluorobutyric acid               | 20 ng/mL      |
|                     |          |           |                                           |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 17.68 ng/mL   |
|                     |          |           |                                           |                      |                     |              | Perfluorodecanoic acid              | 20 ng/mL      |
|                     |          |           |                                           |                      |                     |              | Perfluorododecanoic acid            | 20 ng/mL      |
|                     |          |           |                                           |                      |                     |              | Perfluorodecane Sulfonic acid       | 19.28 ng/mL   |
|                     |          |           |                                           |                      |                     |              | Perfluoroheptanoic acid             | 20 ng/mL      |
|                     |          |           |                                           |                      |                     |              | Perfluoroheptanesulfonic Acid       | 19.04 ng/mL   |
|                     |          |           |                                           |                      |                     |              | Perfluorohexanoic acid              | 20 ng/mL      |
|                     |          |           |                                           |                      |                     |              | Perfluorohexadecanoic acid          | 20 ng/mL      |
|                     |          |           |                                           |                      |                     |              | Perfluorohexanesulfonic acid        | 18.2 ng/mL    |
|                     |          |           |                                           |                      |                     |              | Perfluorononanoic acid              | 20 ng/mL      |



# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date | Dilutant Used                             | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|--------------------|----------|-----------|-------------------------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                    |          |           |                                           |                      | Reagent ID          | Volume Added |                                     |               |
|                    |          |           |                                           |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 20 ng/mL      |
|                    |          |           |                                           |                      |                     |              | Perfluorooctadecanoic acid          | 20 ng/mL      |
|                    |          |           |                                           |                      |                     |              | Perfluorooctane Sulfonate (PFOS)    | 18.56 ng/mL   |
|                    |          |           |                                           |                      |                     |              | Perfluorooctane Sulfonamide         | 20 ng/mL      |
|                    |          |           |                                           |                      |                     |              | Perfluoropentanoic acid             | 20 ng/mL      |
|                    |          |           |                                           |                      |                     |              | Perfluorotetradecanoic acid         | 20 ng/mL      |
|                    |          |           |                                           |                      |                     |              | Perfluorotridecanoic acid           | 20 ng/mL      |
|                    |          |           |                                           |                      |                     |              | Perfluoroundecanoic acid            | 20 ng/mL      |
| .LCMPFCSU_00044    | 12/28/16 | 06/28/16  | Methanol, Lot Baker 115935                | 50000 uL             | LCM2PFHxDA_00006    | 1000 uL      | 13C2-PFHxDA                         | 1 ug/mL       |
|                    |          |           |                                           |                      | LCM2PFTeDA_00006    | 1000 uL      | 13C2-PFTeDA                         | 1 ug/mL       |
|                    |          |           |                                           |                      | LCM4PFHPA_00006     | 1000 uL      | 13C4-PFHpA                          | 1 ug/mL       |
|                    |          |           |                                           |                      | LCM5PFPEA_00007     | 1000 uL      | 13C5-PFPeA                          | 1 ug/mL       |
|                    |          |           |                                           |                      | LCM8FOSA_00010      | 1000 uL      | 13C8 FOSA                           | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFBA_00007       | 1000 uL      | 13C4 PFBA                           | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFDA_00010       | 1000 uL      | 13C2 PFDA                           | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFDoA_00007      | 1000 uL      | 13C2 PFDoA                          | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFHxA_00011      | 1000 uL      | 13C2 PFHxA                          | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFHxS_00007      | 1000 uL      | 1802 PFHxS                          | 0.946 ug/mL   |
|                    |          |           |                                           |                      | LCMPFNA_00007       | 1000 uL      | 13C5 PFNA                           | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFOA_00011       | 1000 uL      | 13C4 PFOA                           | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFOS_00015       | 1000 uL      | 13C4 PFOS                           | 0.956 ug/mL   |
|                    |          |           |                                           |                      | LCMPFUDa_00008      | 1000 uL      | 13C2 PFUnA                          | 1 ug/mL       |
| ..LCM2PFHxDA_00006 | 01/07/21 |           | Wellington Laboratories, Lot M2PFHxDA1112 |                      | (Purchased Reagent) |              | 13C2-PFHxDA                         | 50 ug/mL      |
| ..LCM2PFTeDA_00006 | 12/07/20 |           | Wellington Laboratories, Lot M2PFTeDA1115 |                      | (Purchased Reagent) |              | 13C2-PFTeDA                         | 50 ug/mL      |
| ..LCM4PFHPA_00006  | 05/22/20 |           | Wellington Laboratories, Lot M4PFHpA0515  |                      | (Purchased Reagent) |              | 13C4-PFHpA                          | 50 ug/mL      |
| ..LCM5PFPEA_00007  | 05/22/20 |           | Wellington Laboratories, Lot M5PFPeA0515  |                      | (Purchased Reagent) |              | 13C5-PFPeA                          | 50 ug/mL      |
| ..LCM8FOSA_00010   | 12/22/17 |           | Wellington Laboratories, Lot M8FOSA1215I  |                      | (Purchased Reagent) |              | 13C8 FOSA                           | 50 ug/mL      |
| ..LCMPFBA_00007    | 05/24/21 |           | Wellington Laboratories, Lot MPFBA0516    |                      | (Purchased Reagent) |              | 13C4 PFBA                           | 50 ug/mL      |
| ..LCMPFDA_00010    | 08/19/20 |           | Wellington Laboratories, Lot MPFDA0815    |                      | (Purchased Reagent) |              | 13C2 PFDA                           | 50 ug/mL      |
| ..LCMPFDoA_00007   | 04/08/21 |           | Wellington Laboratories, Lot MPFDoA0416   |                      | (Purchased Reagent) |              | 13C2 PFDoA                          | 50 ug/mL      |
| ..LCMPFHxA_00011   | 04/08/21 |           | Wellington Laboratories, Lot MPFHxA0416   |                      | (Purchased Reagent) |              | 13C2 PFHxA                          | 50 ug/mL      |
| ..LCMPFHxS_00007   | 10/23/20 |           | Wellington Laboratories, Lot MPFHxS1015   |                      | (Purchased Reagent) |              | 1802 PFHxS                          | 47.3 ug/mL    |
| ..LCMPFNA_00007    | 04/13/19 |           | Wellington Laboratories, Lot MPFNA0414    |                      | (Purchased Reagent) |              | 13C5 PFNA                           | 50 ug/mL      |
| ..LCMPFOA_00011    | 01/22/21 |           | Wellington Laboratories, Lot MPFOA0116    |                      | (Purchased Reagent) |              | 13C4 PFOA                           | 50 ug/mL      |
| ..LCMPFOS_00015    | 01/22/21 |           | Wellington Laboratories, Lot MPFOS0116    |                      | (Purchased Reagent) |              | 13C4 PFOS                           | 47.8 ug/mL    |
| ..LCMPFUDa_00008   | 10/31/19 |           | Wellington Laboratories, Lot MPFUDa1014   |                      | (Purchased Reagent) |              | 13C2 PFUnA                          | 50 ug/mL      |
| .LCPFCSP_00056     | 02/01/17 | 08/01/16  | Methanol, Lot 090285                      | 10000 uL             | LCPFBA_00004        | 200 uL       | Perfluorobutyric acid               | 1 ug/mL       |
|                    |          |           |                                           |                      | LCPFBS_00004        | 200 uL       | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL   |
|                    |          |           |                                           |                      | LCPFDA_00005        | 200 uL       | Perfluorodecanoic acid              | 1 ug/mL       |
|                    |          |           |                                           |                      | LCPFDoA_00005       | 200 uL       | Perfluorododecanoic acid            | 1 ug/mL       |
|                    |          |           |                                           |                      | LCPFDS_00005        | 200 uL       | Perfluorodecane Sulfonic acid       | 0.964 ug/mL   |
|                    |          |           |                                           |                      | LCPFHpA_00005       | 200 uL       | Perfluoroheptanoic acid             | 1 ug/mL       |
|                    |          |           |                                           |                      | LCPFHpS_00008       | 200 uL       | Perfluoroheptanesulfonic Acid       | 0.952 ug/mL   |
|                    |          |           |                                           |                      | LCPFHxA_00004       | 200 uL       | Perfluorohexanoic acid              | 1 ug/mL       |
|                    |          |           |                                           |                      | LCPFHxDA_00004      | 200 uL       | Perfluorohexadecanoic acid          | 1 ug/mL       |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date                                 | Dilutant Used              | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |           |             |
|--------------------|----------|-------------------------------------------|----------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|-----------|-------------|
|                    |          |                                           |                            |                      | Reagent ID          | Volume Added |                                     |               |           |             |
|                    |          |                                           |                            |                      | LCPFHxS-br_00001    | 200 uL       | Perfluorohexanesulfonic acid        | 0.91 ug/mL    |           |             |
|                    |          |                                           |                            |                      | LCPFNA_00005        | 200 uL       | Perfluorononanoic acid              | 1 ug/mL       |           |             |
|                    |          |                                           |                            |                      | LCPFOA_00006        | 200 uL       | Perfluorooctanoic acid (PFOA)       | 1 ug/mL       |           |             |
|                    |          |                                           |                            |                      | LCPFODA_00005       | 200 uL       | Perfluorooctadecanoic acid          | 1 ug/mL       |           |             |
|                    |          |                                           |                            |                      | LCPFOS-br_00001     | 200 uL       | Perfluorooctane Sulfonate (PFOS)    | 0.928 ug/mL   |           |             |
|                    |          |                                           |                            |                      | LCPFOSA_00006       | 200 uL       | Perfluorooctane Sulfonamide         | 1 ug/mL       |           |             |
|                    |          |                                           |                            |                      | LCPFPeA_00005       | 200 uL       | Perfluoropentanoic acid             | 1 ug/mL       |           |             |
|                    |          |                                           |                            |                      | LCPFTeDA_00004      | 200 uL       | Perfluorotetradecanoic acid         | 1 ug/mL       |           |             |
|                    |          |                                           |                            |                      | LCPFTrDA_00004      | 200 uL       | Perfluorotridecanoic acid           | 1 ug/mL       |           |             |
|                    |          |                                           |                            |                      | LCPFUDa_00004       | 200 uL       | Perfluoroundecanoic acid            | 1 ug/mL       |           |             |
| ..LCPFBA_00004     | 01/30/20 | Wellington Laboratories, Lot PFBA0115     |                            |                      | (Purchased Reagent) |              | Perfluorobutyric acid               | 50 ug/mL      |           |             |
| ..LCPFBS_00004     | 10/09/19 | Wellington Laboratories, Lot LPFBS1014    |                            |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL    |           |             |
| ..LCPFDA_00005     | 07/02/20 | Wellington Laboratories, Lot PFDA0615     |                            |                      | (Purchased Reagent) |              | Perfluorodecanoic acid              | 50 ug/mL      |           |             |
| ..LCPFDoA_00005    | 01/30/20 | Wellington Laboratories, Lot PFDoA0115    |                            |                      | (Purchased Reagent) |              | Perfluorododecanoic acid            | 50 ug/mL      |           |             |
| ..LCPFDS_00005     | 07/02/20 | Wellington Laboratories, Lot LPFDS0615    |                            |                      | (Purchased Reagent) |              | Perfluorodecane Sulfonic acid       | 48.2 ug/mL    |           |             |
| ..LCPFHpA_00005    | 01/22/21 | Wellington Laboratories, Lot PFHpA0116    |                            |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid             | 50 ug/mL      |           |             |
| ..LCPFHpS_00008    | 11/06/20 | Wellington Laboratories, Lot LPFHps1115   |                            |                      | (Purchased Reagent) |              | Perfluoroheptanesulfonic Acid       | 47.6 ug/mL    |           |             |
| ..LCPFHxA_00004    | 12/22/20 | Wellington Laboratories, Lot PFHxA1215    |                            |                      | (Purchased Reagent) |              | Perfluorohexanoic acid              | 50 ug/mL      |           |             |
| ..LCPFHxDA_00004   | 11/28/17 | Wellington Laboratories, Lot PFHxDA0707   |                            |                      | (Purchased Reagent) |              | Perfluorohexadecanoic acid          | 50 ug/mL      |           |             |
| ..LCPFHxS-br_00001 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 |                            |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid        | 45.5 ug/mL    |           |             |
| ..LCPFNA_00005     | 10/23/20 | Wellington Laboratories, Lot PFNA1015     |                            |                      | (Purchased Reagent) |              | Perfluorononanoic acid              | 50 ug/mL      |           |             |
| ..LCPFOA_00006     | 11/06/20 | Wellington Laboratories, Lot PFOA1115     |                            |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)       | 50 ug/mL      |           |             |
| ..LCPFODA_00005    | 01/30/20 | Wellington Laboratories, Lot PFODA0115    |                            |                      | (Purchased Reagent) |              | Perfluorooctadecanoic acid          | 50 ug/mL      |           |             |
| ..LCPFOS-br_00001  | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015  |                            |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ug/mL    |           |             |
| ..LCPFOSA_00006    | 09/02/17 | Wellington Laboratories, Lot FOSA0815I    |                            |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonamide         | 50 ug/mL      |           |             |
| ..LCPFPeA_00005    | 01/30/20 | Wellington Laboratories, Lot PFPeA0115    |                            |                      | (Purchased Reagent) |              | Perfluoropentanoic acid             | 50 ug/mL      |           |             |
| ..LCPFTeDA_00004   | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215   |                            |                      | (Purchased Reagent) |              | Perfluorotetradecanoic acid         | 50 ug/mL      |           |             |
| ..LCPFTrDA_00004   | 12/10/18 | Wellington Laboratories, Lot PFTrDA1213   |                            |                      | (Purchased Reagent) |              | Perfluorotridecanoic acid           | 50 ug/mL      |           |             |
| ..LCPFUDa_00004    | 08/19/20 | Wellington Laboratories, Lot PFUDa0815    |                            |                      | (Purchased Reagent) |              | Perfluoroundecanoic acid            | 50 ug/mL      |           |             |
| LCPFC-L4_00023     | 02/01/17 | 09/30/16                                  | MeOH/H2O, Lot 090285       | 5 mL                 | LCMPFCSU_00045      | 250 uL       | 13C2 PFHxA                          | 50 ng/mL      |           |             |
|                    |          |                                           |                            |                      |                     |              | 13C4 PFOA                           | 50 ng/mL      |           |             |
|                    |          |                                           |                            |                      |                     |              | 13C4 PFOS                           | 47.8 ng/mL    |           |             |
|                    |          |                                           |                            |                      | LCPFCSP_00056       | 100 uL       | Perfluorobutanesulfonic acid (PFBS) | 17.68 ng/mL   |           |             |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 20 ng/mL      |           |             |
| .LCMPFCSU_00045    | 03/01/17 | 08/31/16                                  | Methanol, Lot Baker 115935 | 50000 uL             | LCMPFHxA_00011      | 1000 uL      | 13C2 PFHxA                          | 1 ug/mL       |           |             |
|                    |          |                                           |                            |                      |                     |              | LCMPFOA_00011                       | 1000 uL       | 13C4 PFOA | 1 ug/mL     |
|                    |          |                                           |                            |                      |                     |              | LCMPFOS_00015                       | 1000 uL       | 13C4 PFOS | 0.956 ug/mL |
| ..LCMPFHxA_00011   | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416   |                            |                      | (Purchased Reagent) |              | 13C2 PFHxA                          | 50 ug/mL      |           |             |
| ..LCMPFOA_00011    | 01/22/21 | Wellington Laboratories, Lot MPFOA0116    |                            |                      | (Purchased Reagent) |              | 13C4 PFOA                           | 50 ug/mL      |           |             |
| ..LCMPFOS_00015    | 01/22/21 | Wellington Laboratories, Lot MPFOS0116    |                            |                      | (Purchased Reagent) |              | 13C4 PFOS                           | 47.8 ug/mL    |           |             |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

| Reagent ID        | Exp Date | Prep Date                                | Dilutant Used              | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|-------------------|----------|------------------------------------------|----------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                   |          |                                          |                            |                      | Reagent ID          | Volume Added |                                     |               |
| .LCPFCSP_00056    | 02/01/17 | 08/01/16                                 | Methanol, Lot 090285       | 10000 uL             | LCPFBS_00004        | 200 uL       | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL   |
|                   |          |                                          |                            |                      | LCPFOA 00006        | 200 uL       | Perfluorooctanoic acid (PFOA)       | 1 ug/mL       |
|                   |          |                                          |                            |                      | LCPFOS-br_00001     | 200 uL       | Perfluorooctane Sulfonate (PFOS)    | 0.928 ug/mL   |
| ..LCPFBS_00004    | 10/09/19 | Wellington Laboratories, Lot LPFBS1014   |                            |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL    |
| ..LCPFOA 00006    | 11/06/20 | Wellington Laboratories, Lot PFOA1115    |                            |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)       | 50 ug/mL      |
| ..LCPFOS-br_00001 | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015 |                            |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ug/mL    |
| LCPFC-L5_00020    | 12/28/16 | 08/03/16                                 | MeOH/H2O, Lot 090285       | 5 mL                 | LCMPFCSU_00044      | 250 uL       | 13C2-PFHxDA                         | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C2-PFTeDA                         | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C4-PFHpA                          | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C5-PFPeA                          | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C8 FOSA                           | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C4 PFBA                           | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C2 PFDA                           | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C2 PFDoA                          | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C2 PFHxA                          | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 18O2 PFHxS                          | 47.3 ng/mL    |
|                   |          |                                          |                            |                      |                     |              | 13C5 PFNA                           | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C4 PFOA                           | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | 13C4 PFOS                           | 47.8 ng/mL    |
|                   |          |                                          |                            |                      |                     |              | 13C2 PFUnA                          | 50 ng/mL      |
|                   |          |                                          |                            |                      | LCPFCSP_00056       | 250 uL       | Perfluorobutyric acid               | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 44.2 ng/mL    |
|                   |          |                                          |                            |                      |                     |              | Perfluorodecanoic acid              | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorododecanoic acid            | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorodecane Sulfonic acid       | 48.2 ng/mL    |
|                   |          |                                          |                            |                      |                     |              | Perfluoroheptanoic acid             | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluoroheptanesulfonic Acid       | 47.6 ng/mL    |
|                   |          |                                          |                            |                      |                     |              | Perfluorohexanoic acid              | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorohexadecanoic acid          | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorohexanesulfonic acid        | 45.5 ng/mL    |
|                   |          |                                          |                            |                      |                     |              | Perfluorononanoic acid              | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorooctadecanoic acid          | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ng/mL    |
|                   |          |                                          |                            |                      |                     |              | Perfluorooctane Sulfonamide         | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluoropentanoic acid             | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorotetradecanoic acid         | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluorotridecanoic acid           | 50 ng/mL      |
|                   |          |                                          |                            |                      |                     |              | Perfluoroundecanoic acid            | 50 ng/mL      |
| .LCMPFCSU_00044   | 12/28/16 | 06/28/16                                 | Methanol, Lot Baker 115935 | 50000 uL             | LCM2PFHxDA_00006    | 1000 uL      | 13C2-PFHxDA                         | 1 ug/mL       |
|                   |          |                                          |                            |                      | LCM2PFTeDA 00006    | 1000 uL      | 13C2-PFTeDA                         | 1 ug/mL       |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date                                 | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|--------------------|----------|-------------------------------------------|----------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                    |          |                                           |                      |                      | Reagent ID          | Volume Added |                                     |               |
|                    |          |                                           |                      |                      | LCM4PFHPA_00006     | 1000 uL      | 13C4-PFHpA                          | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCM5PFPEA_00007     | 1000 uL      | 13C5-PFPeA                          | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCM8FOSA_00010      | 1000 uL      | 13C8 FOSA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFBA_00007       | 1000 uL      | 13C4 PFBA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFDA_00010       | 1000 uL      | 13C2 PFDA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFDoA_00007      | 1000 uL      | 13C2 PFDoA                          | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFHxA_00011      | 1000 uL      | 13C2 PFHxA                          | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFHxS_00007      | 1000 uL      | 1802 PFHxS                          | 0.946 ug/mL   |
|                    |          |                                           |                      |                      | LCMPFNA_00007       | 1000 uL      | 13C5 PFNA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFOA_00011       | 1000 uL      | 13C4 PFOA                           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCMPFOS_00015       | 1000 uL      | 13C4 PFOS                           | 0.956 ug/mL   |
|                    |          |                                           |                      |                      | LCMPFUdA_00008      | 1000 uL      | 13C2 PFUnA                          | 1 ug/mL       |
| ..LCM2PFHxDA_00006 | 01/07/21 | Wellington Laboratories, Lot M2PFHxDA1112 |                      |                      | (Purchased Reagent) |              | 13C2-PFHxDA                         | 50 ug/mL      |
| ..LCM2PFTEdA_00006 | 12/07/20 | Wellington Laboratories, Lot M2PFTEdA1115 |                      |                      | (Purchased Reagent) |              | 13C2-PFTEdA                         | 50 ug/mL      |
| ..LCM4PFHPA_00006  | 05/22/20 | Wellington Laboratories, Lot M4PFHPA0515  |                      |                      | (Purchased Reagent) |              | 13C4-PFHpA                          | 50 ug/mL      |
| ..LCM5PFPEA_00007  | 05/22/20 | Wellington Laboratories, Lot M5PFPeA0515  |                      |                      | (Purchased Reagent) |              | 13C5-PFPeA                          | 50 ug/mL      |
| ..LCM8FOSA_00010   | 12/22/17 | Wellington Laboratories, Lot M8FOSA1215I  |                      |                      | (Purchased Reagent) |              | 13C8 FOSA                           | 50 ug/mL      |
| ..LCMPFBA_00007    | 05/24/21 | Wellington Laboratories, Lot MPFBA0516    |                      |                      | (Purchased Reagent) |              | 13C4 PFBA                           | 50 ug/mL      |
| ..LCMPFDA_00010    | 08/19/20 | Wellington Laboratories, Lot MPFDA0815    |                      |                      | (Purchased Reagent) |              | 13C2 PFDA                           | 50 ug/mL      |
| ..LCMPFDoA_00007   | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416   |                      |                      | (Purchased Reagent) |              | 13C2 PFDoA                          | 50 ug/mL      |
| ..LCMPFHxA_00011   | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416   |                      |                      | (Purchased Reagent) |              | 13C2 PFHxA                          | 50 ug/mL      |
| ..LCMPFHxS_00007   | 10/23/20 | Wellington Laboratories, Lot MPFHxS1015   |                      |                      | (Purchased Reagent) |              | 1802 PFHxS                          | 47.3 ug/mL    |
| ..LCMPFNA_00007    | 04/13/19 | Wellington Laboratories, Lot MPFNA0414    |                      |                      | (Purchased Reagent) |              | 13C5 PFNA                           | 50 ug/mL      |
| ..LCMPFOA_00011    | 01/22/21 | Wellington Laboratories, Lot MPFOA0116    |                      |                      | (Purchased Reagent) |              | 13C4 PFOA                           | 50 ug/mL      |
| ..LCMPFOS_00015    | 01/22/21 | Wellington Laboratories, Lot MPFOS0116    |                      |                      | (Purchased Reagent) |              | 13C4 PFOS                           | 47.8 ug/mL    |
| ..LCMPFUdA_00008   | 10/31/19 | Wellington Laboratories, Lot MPFUdA1014   |                      |                      | (Purchased Reagent) |              | 13C2 PFUnA                          | 50 ug/mL      |
| ..LCPFCSP_00056    | 02/01/17 | 08/01/16                                  | Methanol, Lot 090285 | 10000 uL             | LCPFBA_00004        | 200 uL       | Perfluorobutyric acid               | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFBS_00004        | 200 uL       | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL   |
|                    |          |                                           |                      |                      | LCPFDA_00005        | 200 uL       | Perfluorodecanoic acid              | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFDoA_00005       | 200 uL       | Perfluorododecanoic acid            | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFDS_00005        | 200 uL       | Perfluorodecane Sulfonic acid       | 0.964 ug/mL   |
|                    |          |                                           |                      |                      | LCPFHpA_00005       | 200 uL       | Perfluoroheptanoic acid             | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFHpS_00008       | 200 uL       | Perfluoroheptanesulfonic Acid       | 0.952 ug/mL   |
|                    |          |                                           |                      |                      | LCPFHxA_00004       | 200 uL       | Perfluorohexanoic acid              | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFHxDA_00004      | 200 uL       | Perfluorohexadecanoic acid          | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFHxS-br_00001    | 200 uL       | Perfluorohexanesulfonic acid        | 0.91 ug/mL    |
|                    |          |                                           |                      |                      | LCPFNA_00005        | 200 uL       | Perfluorononanoic acid              | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFOA_00006        | 200 uL       | Perfluorooctanoic acid (PFOA)       | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFODA_00005       | 200 uL       | Perfluorooctadecanoic acid          | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFOS-br_00001     | 200 uL       | Perfluorooctane Sulfonate (PFOS)    | 0.928 ug/mL   |
|                    |          |                                           |                      |                      | LCPFOSA_00006       | 200 uL       | Perfluorooctane Sulfonamide         | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFPeA_00005       | 200 uL       | Perfluoropentanoic acid             | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFTeDA_00004      | 200 uL       | Perfluorotetradecanoic acid         | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFTrDA_00004      | 200 uL       | Perfluorotridecanoic acid           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFUdA_00004       | 200 uL       | Perfluoroundecanoic acid            | 1 ug/mL       |
| ..LCPFBA_00004     | 01/30/20 | Wellington Laboratories, Lot PFBA0115     |                      |                      | (Purchased Reagent) |              | Perfluorobutyric acid               | 50 ug/mL      |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date                                 | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|--------------------|----------|-------------------------------------------|----------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                    |          |                                           |                      |                      | Reagent ID          | Volume Added |                                     |               |
| ..LCPFBS_00004     | 10/09/19 | Wellington Laboratories, Lot LPFBS1014    |                      |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL    |
| ..LCPFDA 00005     | 07/02/20 | Wellington Laboratories, Lot PFDA0615     |                      |                      | (Purchased Reagent) |              | Perfluorodecanoic acid              | 50 ug/mL      |
| ..LCPFDoA 00005    | 01/30/20 | Wellington Laboratories, Lot PFDoA0115    |                      |                      | (Purchased Reagent) |              | Perfluorododecanoic acid            | 50 ug/mL      |
| ..LCPFDS 00005     | 07/02/20 | Wellington Laboratories, Lot LPFDS0615    |                      |                      | (Purchased Reagent) |              | Perfluorodecane Sulfonic acid       | 48.2 ug/mL    |
| ..LCPFHpA 00005    | 01/22/21 | Wellington Laboratories, Lot PFHpA0116    |                      |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid             | 50 ug/mL      |
| ..LCPFHpS 00008    | 11/06/20 | Wellington Laboratories, Lot LPFHpS1115   |                      |                      | (Purchased Reagent) |              | Perfluoroheptanesulfonic Acid       | 47.6 ug/mL    |
| ..LCPFHxA 00004    | 12/22/20 | Wellington Laboratories, Lot PFHxA1215    |                      |                      | (Purchased Reagent) |              | Perfluorohexanoic acid              | 50 ug/mL      |
| ..LCPFHxDA 00004   | 11/28/17 | Wellington Laboratories, Lot PFHxDA0707   |                      |                      | (Purchased Reagent) |              | Perfluorohexadecanoic acid          | 50 ug/mL      |
| ..LCPFHxS-br 00001 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 |                      |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid        | 45.5 ug/mL    |
| ..LCPFNA 00005     | 10/23/20 | Wellington Laboratories, Lot PFNA1015     |                      |                      | (Purchased Reagent) |              | Perfluorononanoic acid              | 50 ug/mL      |
| ..LCPFOA 00006     | 11/06/20 | Wellington Laboratories, Lot PFOA1115     |                      |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)       | 50 ug/mL      |
| ..LCPFODA 00005    | 01/30/20 | Wellington Laboratories, Lot PFODA0115    |                      |                      | (Purchased Reagent) |              | Perfluorooctadecanoic acid          | 50 ug/mL      |
| ..LCPFOS-br_00001  | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015  |                      |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ug/mL    |
| ..LCPFOSA 00006    | 09/02/17 | Wellington Laboratories, Lot FOSA0815I    |                      |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonamide         | 50 ug/mL      |
| ..LCPFPeA 00005    | 01/30/20 | Wellington Laboratories, Lot PFPeA0115    |                      |                      | (Purchased Reagent) |              | Perfluoropentanoic acid             | 50 ug/mL      |
| ..LCPFTeDA 00004   | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215   |                      |                      | (Purchased Reagent) |              | Perfluorotetradecanoic acid         | 50 ug/mL      |
| ..LCPFTrDA 00004   | 12/10/18 | Wellington Laboratories, Lot PFTrDA1213   |                      |                      | (Purchased Reagent) |              | Perfluorotridecanoic acid           | 50 ug/mL      |
| ..LCPFUdA 00004    | 08/19/20 | Wellington Laboratories, Lot PFUdA0815    |                      |                      | (Purchased Reagent) |              | Perfluoroundecanoic acid            | 50 ug/mL      |
| LCPFC-L6_00019     | 12/28/16 | 08/03/16                                  | MeOH/H2O, Lot 090285 | 5 mL                 | LCMPFCSU_00044      | 250 uL       | 13C2-PFHxDA                         | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C2-PFTeDA                         | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C4-PFHpA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C5-PFPeA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C8 FOSA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C4 PFBA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C2 PFDA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C2 PFDoA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C2 PFHxA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 18O2 PFHxS                          | 47.3 ng/mL    |
|                    |          |                                           |                      |                      |                     |              | 13C5 PFNA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C4 PFOA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C4 PFOS                           | 47.8 ng/mL    |
|                    |          |                                           |                      |                      |                     |              | 13C2 PFUnA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      | LCPFCSP_00056       | 1000 uL      | Perfluorobutyric acid               | 200 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 176.8 ng/mL   |
|                    |          |                                           |                      |                      |                     |              | Perfluorodecanoic acid              | 200 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorododecanoic acid            | 200 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorodecane Sulfonic acid       | 192.8 ng/mL   |
|                    |          |                                           |                      |                      |                     |              | Perfluoroheptanoic acid             | 200 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluoroheptanesulfonic Acid       | 190.4 ng/mL   |
|                    |          |                                           |                      |                      |                     |              | Perfluorohexanoic acid              | 200 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorohexadecanoic acid          | 200 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorohexanesulfonic acid        | 182 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorononanoic acid              | 200 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 200 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorooctadecanoic acid          | 200 ng/mL     |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date                                 | Dilutant Used              | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|--------------------|----------|-------------------------------------------|----------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                    |          |                                           |                            |                      | Reagent ID          | Volume Added |                                     |               |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctane Sulfonate (PFOS)    | 185.6 ng/mL   |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctane Sulfonamide         | 200 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluoropentanoic acid             | 200 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorotetradecanoic acid         | 200 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluorotridecanoic acid           | 200 ng/mL     |
|                    |          |                                           |                            |                      |                     |              | Perfluoroundecanoic acid            | 200 ng/mL     |
| .LCMPFCSU_00044    | 12/28/16 | 06/28/16                                  | Methanol, Lot Baker 115935 | 50000 uL             | LCM2PFHxDA_00006    | 1000 uL      | 13C2-PFHxDA                         | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM2PFTeDA_00006    | 1000 uL      | 13C2-PFTeDA                         | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM4PFHFA_00006     | 1000 uL      | 13C4-PFHFA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM5PFPEA_00007     | 1000 uL      | 13C5-PFPeA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM8FOSA_00010      | 1000 uL      | 13C8 FOSA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFBA_00007       | 1000 uL      | 13C4 PFBA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFDA_00010       | 1000 uL      | 13C2 PFDA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFDoA_00007      | 1000 uL      | 13C2 PFDoA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFHxA_00011      | 1000 uL      | 13C2 PFHxA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFHxS_00007      | 1000 uL      | 1802 PFHxS                          | 0.946 ug/mL   |
|                    |          |                                           |                            |                      | LCMPFNA_00007       | 1000 uL      | 13C5 PFNA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFOA_00011       | 1000 uL      | 13C4 PFOA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFOS_00015       | 1000 uL      | 13C4 PFOS                           | 0.956 ug/mL   |
|                    |          |                                           |                            |                      | LCMPFUDa_00008      | 1000 uL      | 13C2 PFUnA                          | 1 ug/mL       |
| ..LCM2PFHxDA_00006 | 01/07/21 | Wellington Laboratories, Lot M2PFHxDA1112 |                            |                      | (Purchased Reagent) |              | 13C2-PFHxDA                         | 50 ug/mL      |
| ..LCM2PFTeDA_00006 | 12/07/20 | Wellington Laboratories, Lot M2PFTeDA1115 |                            |                      | (Purchased Reagent) |              | 13C2-PFTeDA                         | 50 ug/mL      |
| ..LCM4PFHFA_00006  | 05/22/20 | Wellington Laboratories, Lot M4PFHFA0515  |                            |                      | (Purchased Reagent) |              | 13C4-PFHFA                          | 50 ug/mL      |
| ..LCM5PFPEA_00007  | 05/22/20 | Wellington Laboratories, Lot M5PFPeA0515  |                            |                      | (Purchased Reagent) |              | 13C5-PFPeA                          | 50 ug/mL      |
| ..LCM8FOSA_00010   | 12/22/17 | Wellington Laboratories, Lot M8FOSA1215I  |                            |                      | (Purchased Reagent) |              | 13C8 FOSA                           | 50 ug/mL      |
| ..LCMPFBA_00007    | 05/24/21 | Wellington Laboratories, Lot MPFBA0516    |                            |                      | (Purchased Reagent) |              | 13C4 PFBA                           | 50 ug/mL      |
| ..LCMPFDA_00010    | 08/19/20 | Wellington Laboratories, Lot MPFDA0815    |                            |                      | (Purchased Reagent) |              | 13C2 PFDA                           | 50 ug/mL      |
| ..LCMPFDoA_00007   | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416   |                            |                      | (Purchased Reagent) |              | 13C2 PFDoA                          | 50 ug/mL      |
| ..LCMPFHxA_00011   | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416   |                            |                      | (Purchased Reagent) |              | 13C2 PFHxA                          | 50 ug/mL      |
| ..LCMPFHxS_00007   | 10/23/20 | Wellington Laboratories, Lot MPFHxS1015   |                            |                      | (Purchased Reagent) |              | 1802 PFHxS                          | 47.3 ug/mL    |
| ..LCMPFNA_00007    | 04/13/19 | Wellington Laboratories, Lot MPFNA0414    |                            |                      | (Purchased Reagent) |              | 13C5 PFNA                           | 50 ug/mL      |
| ..LCMPFOA_00011    | 01/22/21 | Wellington Laboratories, Lot MPFOA0116    |                            |                      | (Purchased Reagent) |              | 13C4 PFOA                           | 50 ug/mL      |
| ..LCMPFOS_00015    | 01/22/21 | Wellington Laboratories, Lot MPFOS0116    |                            |                      | (Purchased Reagent) |              | 13C4 PFOS                           | 47.8 ug/mL    |
| ..LCMPFUDa_00008   | 10/31/19 | Wellington Laboratories, Lot MPFUDa1014   |                            |                      | (Purchased Reagent) |              | 13C2 PFUnA                          | 50 ug/mL      |
| .LCPFCSP_00056     | 02/01/17 | 08/01/16                                  | Methanol, Lot 090285       | 10000 uL             | LCPFBA_00004        | 200 uL       | Perfluorobutyric acid               | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCPFBS_00004        | 200 uL       | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL   |
|                    |          |                                           |                            |                      | LCPFDA_00005        | 200 uL       | Perfluorodecanoic acid              | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCPFDoA_00005       | 200 uL       | Perfluorododecanoic acid            | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCPFDS_00005        | 200 uL       | Perfluorodecane Sulfonic acid       | 0.964 ug/mL   |
|                    |          |                                           |                            |                      | LCPFHFA_00005       | 200 uL       | Perfluoroheptanoic acid             | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCPFHFS_00008       | 200 uL       | Perfluoroheptanesulfonic Acid       | 0.952 ug/mL   |
|                    |          |                                           |                            |                      | LCPFHxA_00004       | 200 uL       | Perfluorohexanoic acid              | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCPFHxDA_00004      | 200 uL       | Perfluorohexadecanoic acid          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCPFHxS-br_00001    | 200 uL       | Perfluorohexanesulfonic acid        | 0.91 ug/mL    |
|                    |          |                                           |                            |                      | LCPFNA_00005        | 200 uL       | Perfluorononanoic acid              | 1 ug/mL       |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date                                 | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|--------------------|----------|-------------------------------------------|----------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                    |          |                                           |                      |                      | Reagent ID          | Volume Added |                                     |               |
|                    |          |                                           |                      |                      | LCPFOA_00006        | 200 uL       | Perfluorooctanoic acid (PFOA)       | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFODA_00005       | 200 uL       | Perfluorooctadecanoic acid          | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFOS-br_00001     | 200 uL       | Perfluorooctane Sulfonate (PFOS)    | 0.928 ug/mL   |
|                    |          |                                           |                      |                      | LCPFOSA_00006       | 200 uL       | Perfluorooctane Sulfonamide         | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFPeA_00005       | 200 uL       | Perfluoropentanoic acid             | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFTeDA_00004      | 200 uL       | Perfluorotetradecanoic acid         | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFTrDA_00004      | 200 uL       | Perfluorotridecanoic acid           | 1 ug/mL       |
|                    |          |                                           |                      |                      | LCPFUDa_00004       | 200 uL       | Perfluoroundecanoic acid            | 1 ug/mL       |
| ..LCPFBA_00004     | 01/30/20 | Wellington Laboratories, Lot PFBA0115     |                      |                      | (Purchased Reagent) |              | Perfluorobutyric acid               | 50 ug/mL      |
| ..LCPFBS_00004     | 10/09/19 | Wellington Laboratories, Lot LPFBS1014    |                      |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL    |
| ..LCPFDA_00005     | 07/02/20 | Wellington Laboratories, Lot PFDA0615     |                      |                      | (Purchased Reagent) |              | Perfluorodecanoic acid              | 50 ug/mL      |
| ..LCPFDoA_00005    | 01/30/20 | Wellington Laboratories, Lot PFDoA0115    |                      |                      | (Purchased Reagent) |              | Perfluorododecanoic acid            | 50 ug/mL      |
| ..LCPFDS_00005     | 07/02/20 | Wellington Laboratories, Lot LPFDS0615    |                      |                      | (Purchased Reagent) |              | Perfluorodecane Sulfonic acid       | 48.2 ug/mL    |
| ..LCPFHpA_00005    | 01/22/21 | Wellington Laboratories, Lot PFHpA0116    |                      |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid             | 50 ug/mL      |
| ..LCPFHps_00008    | 11/06/20 | Wellington Laboratories, Lot LPFHps1115   |                      |                      | (Purchased Reagent) |              | Perfluoroheptanesulfonic Acid       | 47.6 ug/mL    |
| ..LCPFHxA_00004    | 12/22/20 | Wellington Laboratories, Lot PFHxA1215    |                      |                      | (Purchased Reagent) |              | Perfluorohexanoic acid              | 50 ug/mL      |
| ..LCPFHxDA_00004   | 11/28/17 | Wellington Laboratories, Lot PFHxDA0707   |                      |                      | (Purchased Reagent) |              | Perfluorohexadecanoic acid          | 50 ug/mL      |
| ..LCPFHxS-br_00001 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 |                      |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid        | 45.5 ug/mL    |
| ..LCPFNA_00005     | 10/23/20 | Wellington Laboratories, Lot PFNA1015     |                      |                      | (Purchased Reagent) |              | Perfluorononanoic acid              | 50 ug/mL      |
| ..LCPFOA_00006     | 11/06/20 | Wellington Laboratories, Lot PFOA1115     |                      |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)       | 50 ug/mL      |
| ..LCPFODA_00005    | 01/30/20 | Wellington Laboratories, Lot PFODA0115    |                      |                      | (Purchased Reagent) |              | Perfluorooctadecanoic acid          | 50 ug/mL      |
| ..LCPFOS-br_00001  | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015  |                      |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ug/mL    |
| ..LCPFOSA_00006    | 09/02/17 | Wellington Laboratories, Lot FOSA0815I    |                      |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonamide         | 50 ug/mL      |
| ..LCPFPeA_00005    | 01/30/20 | Wellington Laboratories, Lot PFPeA0115    |                      |                      | (Purchased Reagent) |              | Perfluoropentanoic acid             | 50 ug/mL      |
| ..LCPFTeDA_00004   | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215   |                      |                      | (Purchased Reagent) |              | Perfluorotetradecanoic acid         | 50 ug/mL      |
| ..LCPFTrDA_00004   | 12/10/18 | Wellington Laboratories, Lot PFTrDA1213   |                      |                      | (Purchased Reagent) |              | Perfluorotridecanoic acid           | 50 ug/mL      |
| ..LCPFUDa_00004    | 08/19/20 | Wellington Laboratories, Lot PFUDa0815    |                      |                      | (Purchased Reagent) |              | Perfluoroundecanoic acid            | 50 ug/mL      |
| LCPFC-L7_00019     | 12/28/16 | 08/03/16                                  | MeOH/H2O, Lot 090285 | 5 mL                 | LCMPFCSU_00044      | 250 uL       | 13C2-PFHxDA                         | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C2-PFTeDA                         | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C4-PFHpA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C5-PFPeA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C8 FOSA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C4 PFBA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C2 PFDA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C2 PFDoA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C2 PFHxA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 18O2 PFHxS                          | 47.3 ng/mL    |
|                    |          |                                           |                      |                      |                     |              | 13C5 PFNA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C4 PFOA                           | 50 ng/mL      |
|                    |          |                                           |                      |                      |                     |              | 13C4 PFOS                           | 47.8 ng/mL    |
|                    |          |                                           |                      |                      |                     |              | 13C2 PFUnA                          | 50 ng/mL      |
|                    |          |                                           |                      |                      | LCPFCSP_00056       | 2000 uL      | Perfluorobutyric acid               | 400 ng/mL     |
|                    |          |                                           |                      |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 353.6 ng/mL   |
|                    |          |                                           |                      |                      |                     |              | Perfluorodecanoic acid              | 400 ng/mL     |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date | Dilutant Used                             | Reagent Final Volume | Parent Reagent      |              | Analyte                          | Concentration |
|--------------------|----------|-----------|-------------------------------------------|----------------------|---------------------|--------------|----------------------------------|---------------|
|                    |          |           |                                           |                      | Reagent ID          | Volume Added |                                  |               |
|                    |          |           |                                           |                      |                     |              | Perfluorododecanoic acid         | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluorodecane Sulfonic acid    | 385.6 ng/mL   |
|                    |          |           |                                           |                      |                     |              | Perfluoroheptanoic acid          | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluoroheptanesulfonic Acid    | 380.8 ng/mL   |
|                    |          |           |                                           |                      |                     |              | Perfluorohexanoic acid           | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluorohexadecanoic acid       | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluorohexanesulfonic acid     | 364 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluorononanoic acid           | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluorooctanoic acid (PFOA)    | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluorooctadecanoic acid       | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluorooctane Sulfonate (PFOS) | 371.2 ng/mL   |
|                    |          |           |                                           |                      |                     |              | Perfluorooctane Sulfonamide      | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluoropentanoic acid          | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluorotetradecanoic acid      | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluorotridecanoic acid        | 400 ng/mL     |
|                    |          |           |                                           |                      |                     |              | Perfluoroundecanoic acid         | 400 ng/mL     |
| .LCMPFCSU_00044    | 12/28/16 | 06/28/16  | Methanol, Lot Baker 115935                | 50000 uL             | LCM2PFHxDA_00006    | 1000 uL      | 13C2-PFHxDA                      | 1 ug/mL       |
|                    |          |           |                                           |                      | LCM2PFTeDA_00006    | 1000 uL      | 13C2-PFTeDA                      | 1 ug/mL       |
|                    |          |           |                                           |                      | LCM4PFHFA_00006     | 1000 uL      | 13C4-PFHFA                       | 1 ug/mL       |
|                    |          |           |                                           |                      | LCM5PFPEA_00007     | 1000 uL      | 13C5-PFPeA                       | 1 ug/mL       |
|                    |          |           |                                           |                      | LCM8FOSA_00010      | 1000 uL      | 13C8 FOSA                        | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFBA_00007       | 1000 uL      | 13C4 PFBA                        | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFDA_00010       | 1000 uL      | 13C2 PFDA                        | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFDoA_00007      | 1000 uL      | 13C2 PFDoA                       | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFHxA_00011      | 1000 uL      | 13C2 PFHxA                       | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFHxS_00007      | 1000 uL      | 1802 PFHxS                       | 0.946 ug/mL   |
|                    |          |           |                                           |                      | LCMPFNA_00007       | 1000 uL      | 13C5 PFNA                        | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFOA_00011       | 1000 uL      | 13C4 PFOA                        | 1 ug/mL       |
|                    |          |           |                                           |                      | LCMPFOS_00015       | 1000 uL      | 13C4 PFOS                        | 0.956 ug/mL   |
|                    |          |           |                                           |                      | LCMPFUDa_00008      | 1000 uL      | 13C2 PFUnA                       | 1 ug/mL       |
|                    |          |           |                                           |                      | (Purchased Reagent) |              | 13C2-PFHxDA                      | 50 ug/mL      |
| ..LCM2PFTeDA_00006 | 12/07/20 |           | Wellington Laboratories, Lot M2PFTeDA1115 |                      | (Purchased Reagent) |              | 13C2-PFTeDA                      | 50 ug/mL      |
| ..LCM4PFHFA_00006  | 05/22/20 |           | Wellington Laboratories, Lot M4PFHFA0515  |                      | (Purchased Reagent) |              | 13C4-PFHFA                       | 50 ug/mL      |
| ..LCM5PFPEA_00007  | 05/22/20 |           | Wellington Laboratories, Lot M5PFPeA0515  |                      | (Purchased Reagent) |              | 13C5-PFPeA                       | 50 ug/mL      |
| ..LCM8FOSA_00010   | 12/22/17 |           | Wellington Laboratories, Lot M8FOSA1215I  |                      | (Purchased Reagent) |              | 13C8 FOSA                        | 50 ug/mL      |
| ..LCMPFBA_00007    | 05/24/21 |           | Wellington Laboratories, Lot MPFBA0516    |                      | (Purchased Reagent) |              | 13C4 PFBA                        | 50 ug/mL      |
| ..LCMPFDA_00010    | 08/19/20 |           | Wellington Laboratories, Lot MPFDA0815    |                      | (Purchased Reagent) |              | 13C2 PFDA                        | 50 ug/mL      |
| ..LCMPFDoA_00007   | 04/08/21 |           | Wellington Laboratories, Lot MPFDoA0416   |                      | (Purchased Reagent) |              | 13C2 PFDoA                       | 50 ug/mL      |
| ..LCMPFHxA_00011   | 04/08/21 |           | Wellington Laboratories, Lot MPFHxA0416   |                      | (Purchased Reagent) |              | 13C2 PFHxA                       | 50 ug/mL      |
| ..LCMPFHxS_00007   | 10/23/20 |           | Wellington Laboratories, Lot MPFHxS1015   |                      | (Purchased Reagent) |              | 1802 PFHxS                       | 47.3 ug/mL    |
| ..LCMPFNA_00007    | 04/13/19 |           | Wellington Laboratories, Lot MPFNA0414    |                      | (Purchased Reagent) |              | 13C5 PFNA                        | 50 ug/mL      |
| ..LCMPFOA_00011    | 01/22/21 |           | Wellington Laboratories, Lot MPFOA0116    |                      | (Purchased Reagent) |              | 13C4 PFOA                        | 50 ug/mL      |
| ..LCMPFOS_00015    | 01/22/21 |           | Wellington Laboratories, Lot MPFOS0116    |                      | (Purchased Reagent) |              | 13C4 PFOS                        | 47.8 ug/mL    |
| ..LCMPFUDa_00008   | 10/31/19 |           | Wellington Laboratories, Lot MPFUDa1014   |                      | (Purchased Reagent) |              | 13C2 PFUnA                       | 50 ug/mL      |
| .LCPFCSP_00056     | 02/01/17 | 08/01/16  | Methanol, Lot 090285                      | 10000 uL             | LCPFBA_00004        | 200 uL       | Perfluorobutyric acid            | 1 ug/mL       |



# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID             | Exp Date | Prep Date | Dilutant Used                             | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|------------------------|----------|-----------|-------------------------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                        |          |           |                                           |                      | Reagent ID          | Volume Added |                                     |               |
|                        |          |           |                                           |                      | LCPFBS_00004        | 200 uL       | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL   |
|                        |          |           |                                           |                      | LCPFDA 00005        | 200 uL       | Perfluorodecanoic acid              | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFDoA 00005       | 200 uL       | Perfluorododecanoic acid            | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFDS 00005        | 200 uL       | Perfluorodecane Sulfonic acid       | 0.964 ug/mL   |
|                        |          |           |                                           |                      | LCPFHpA 00005       | 200 uL       | Perfluoroheptanoic acid             | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFHps 00008       | 200 uL       | Perfluoroheptanesulfonic Acid       | 0.952 ug/mL   |
|                        |          |           |                                           |                      | LCPFHxA 00004       | 200 uL       | Perfluorohexanoic acid              | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFHxDA 00004      | 200 uL       | Perfluorohexadecanoic acid          | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFHxS-br 00001    | 200 uL       | Perfluorohexanesulfonic acid        | 0.91 ug/mL    |
|                        |          |           |                                           |                      | LCPFNA 00005        | 200 uL       | Perfluorononanoic acid              | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFOA 00006        | 200 uL       | Perfluorooctanoic acid (PFOA)       | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFODA 00005       | 200 uL       | Perfluorooctadecanoic acid          | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFOS-br_00001     | 200 uL       | Perfluorooctane Sulfonate (PFOS)    | 0.928 ug/mL   |
|                        |          |           |                                           |                      | LCPFOSA 00006       | 200 uL       | Perfluorooctane Sulfonamide         | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFPeA 00005       | 200 uL       | Perfluoropentanoic acid             | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFTeDA 00004      | 200 uL       | Perfluorotetradecanoic acid         | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFTrDA 00004      | 200 uL       | Perfluorotridecanoic acid           | 1 ug/mL       |
|                        |          |           |                                           |                      | LCPFUDA 00004       | 200 uL       | Perfluoroundecanoic acid            | 1 ug/mL       |
| ..LCPFBA 00004         | 01/30/20 |           | Wellington Laboratories, Lot PFBA0115     |                      | (Purchased Reagent) |              | Perfluorobutyric acid               | 50 ug/mL      |
| ..LCPFBS_00004         | 10/09/19 |           | Wellington Laboratories, Lot LPFBS1014    |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL    |
| ..LCPFDA 00005         | 07/02/20 |           | Wellington Laboratories, Lot PFDA0615     |                      | (Purchased Reagent) |              | Perfluorodecanoic acid              | 50 ug/mL      |
| ..LCPFDoA 00005        | 01/30/20 |           | Wellington Laboratories, Lot PFDoA0115    |                      | (Purchased Reagent) |              | Perfluorododecanoic acid            | 50 ug/mL      |
| ..LCPFDS 00005         | 07/02/20 |           | Wellington Laboratories, Lot LPFDS0615    |                      | (Purchased Reagent) |              | Perfluorodecane Sulfonic acid       | 48.2 ug/mL    |
| ..LCPFHpA 00005        | 01/22/21 |           | Wellington Laboratories, Lot PFHpA0116    |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid             | 50 ug/mL      |
| ..LCPFHps 00008        | 11/06/20 |           | Wellington Laboratories, Lot LPFHpS1115   |                      | (Purchased Reagent) |              | Perfluoroheptanesulfonic Acid       | 47.6 ug/mL    |
| ..LCPFHxA 00004        | 12/22/20 |           | Wellington Laboratories, Lot PFHxA1215    |                      | (Purchased Reagent) |              | Perfluorohexanoic acid              | 50 ug/mL      |
| ..LCPFHxDA 00004       | 11/28/17 |           | Wellington Laboratories, Lot PFHxDA0707   |                      | (Purchased Reagent) |              | Perfluorohexadecanoic acid          | 50 ug/mL      |
| ..LCPFHxS-br 00001     | 07/03/20 |           | Wellington Laboratories, Lot brPFHxSK0615 |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid        | 45.5 ug/mL    |
| ..LCPFNA 00005         | 10/23/20 |           | Wellington Laboratories, Lot PFNA1015     |                      | (Purchased Reagent) |              | Perfluorononanoic acid              | 50 ug/mL      |
| ..LCPFOA 00006         | 11/06/20 |           | Wellington Laboratories, Lot PFOA1115     |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)       | 50 ug/mL      |
| ..LCPFODA 00005        | 01/30/20 |           | Wellington Laboratories, Lot PFODA0115    |                      | (Purchased Reagent) |              | Perfluorooctadecanoic acid          | 50 ug/mL      |
| ..LCPFOS-br_00001      | 10/14/20 |           | Wellington Laboratories, Lot brPFOSK1015  |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ug/mL    |
| ..LCPFOSA 00006        | 09/02/17 |           | Wellington Laboratories, Lot FOSA0815I    |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonamide         | 50 ug/mL      |
| ..LCPFPeA 00005        | 01/30/20 |           | Wellington Laboratories, Lot PFPeA0115    |                      | (Purchased Reagent) |              | Perfluoropentanoic acid             | 50 ug/mL      |
| ..LCPFTeDA 00004       | 12/09/20 |           | Wellington Laboratories, Lot PFTeDA1215   |                      | (Purchased Reagent) |              | Perfluorotetradecanoic acid         | 50 ug/mL      |
| ..LCPFTrDA 00004       | 12/10/18 |           | Wellington Laboratories, Lot PFTTrDA1213  |                      | (Purchased Reagent) |              | Perfluorotridecanoic acid           | 50 ug/mL      |
| ..LCPFUDA 00004        | 08/19/20 |           | Wellington Laboratories, Lot PFUDA0815    |                      | (Purchased Reagent) |              | Perfluoroundecanoic acid            | 50 ug/mL      |
| <b>LCPFC2-L1_00002</b> | 01/08/17 | 07/20/16  | MeOH/H2O, Lot 104453                      | 5 mL                 | LCMPFC2SU_00005     | 250 uL       | d-N-EtFOSA-M                        | 50 ng/mL      |
|                        |          |           |                                           |                      |                     |              | d-N-MeFOSA-M                        | 50 ng/mL      |
|                        |          |           |                                           |                      |                     |              | d3-NMeFOSAA                         | 50 ng/mL      |
|                        |          |           |                                           |                      |                     |              | d5-NMeFOSAA                         | 50 ng/mL      |
|                        |          |           |                                           |                      |                     |              | M2-6:2FTS                           | 47.5 ng/mL    |
|                        |          |           |                                           |                      |                     |              | M2-8:2FTS                           | 47.9 ng/mL    |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                  | Reagent Final Volume | Parent Reagent      |              | Analyte                                            | Concentration |
|-----------------------|----------|-----------|--------------------------------|----------------------|---------------------|--------------|----------------------------------------------------|---------------|
|                       |          |           |                                |                      | Reagent ID          | Volume Added |                                                    |               |
|                       |          |           |                                |                      | LCPFC2SP_00014      | 25 uL        | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.474 ng/mL   |
|                       |          |           |                                |                      |                     |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.479 ng/mL   |
|                       |          |           |                                |                      |                     |              | N-ethylperfluoro-1-octanesulfo<br>namide           | 0.5 ng/mL     |
|                       |          |           |                                |                      |                     |              | N-ethyl perfluorooctane<br>sulfonamidoacetic acid  | 0.5 ng/mL     |
|                       |          |           |                                |                      |                     |              | MeFOSA                                             | 0.5 ng/mL     |
|                       |          |           |                                |                      |                     |              | N-methyl perfluorooctane<br>sulfonamidoacetic acid | 0.5 ng/mL     |
| .LCMPFC2SU_00005      | 01/08/17 | 07/08/16  | Methanol, Lot 104453           | 10000 uL             | LCd-NEtFOSA-M_00001 | 200 uL       | d-N-EtFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      | LCd-NMeFOSA-M_00001 | 200 uL       | d-N-MeFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      | LCd3-NMeFOSAA_00001 | 200 uL       | d3-NMeFOSAA                                        | 1 ug/mL       |
|                       |          |           |                                |                      | LCd5-NEtFOSAA_00001 | 200 uL       | d5-NEtFOSAA                                        | 1 ug/mL       |
|                       |          |           |                                |                      | LCM2-6:FTS_00001    | 200 uL       | M2-6:2FTS                                          | 0.95 ug/mL    |
|                       |          |           |                                |                      | LCM2-8:2FTS_00001   | 200 uL       | M2-8:2FTS                                          | 0.958 ug/mL   |
| ..LCd-NEtFOSA-M_00001 | 03/10/19 |           | WELLINGTON, Lot dNEtFOSA0314M  |                      | (Purchased Reagent) |              | d-N-EtFOSA-M                                       | 50 ug/mL      |
| ..LCd-NMeFOSA-M_00001 | 01/28/19 |           | WELLINGTON, Lot dNMeFOSA0114M  |                      | (Purchased Reagent) |              | d-N-MeFOSA-M                                       | 50 ug/mL      |
| ..LCd3-NMeFOSAA_00001 | 01/31/18 |           | WELLINGTON, Lot d3NMeFOSAA0113 |                      | (Purchased Reagent) |              | d3-NMeFOSAA                                        | 50 ug/mL      |
| ..LCd5-NEtFOSAA_00001 | 05/08/20 |           | WELLINGTON, Lot d5NEtFOSAA0515 |                      | (Purchased Reagent) |              | d5-NEtFOSAA                                        | 50 ug/mL      |
| ..LCM2-6:FTS_00001    | 07/15/17 |           | WELLINGTON, Lot M262FTS0714    |                      | (Purchased Reagent) |              | M2-6:2FTS                                          | 47.5 ug/mL    |
| ..LCM2-8:2FTS_00001   | 04/13/17 |           | WELLINGTON, Lot M282FTS0414    |                      | (Purchased Reagent) |              | M2-8:2FTS                                          | 47.9 ug/mL    |
| .LCPFC2SP_00014       | 01/20/17 | 07/20/16  | Methanol, Lot 104453           | 5000 uL              | LCPFC2SP_00013      | 500 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.0948 ug/mL  |
|                       |          |           |                                |                      |                     |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.0958 ug/mL  |
|                       |          |           |                                |                      |                     |              | N-ethylperfluoro-1-octanesulfo<br>namide           | 0.1 ug/mL     |
|                       |          |           |                                |                      |                     |              | N-ethyl perfluorooctane<br>sulfonamidoacetic acid  | 0.1 ug/mL     |
|                       |          |           |                                |                      |                     |              | MeFOSA                                             | 0.1 ug/mL     |
|                       |          |           |                                |                      |                     |              | N-methyl perfluorooctane<br>sulfonamidoacetic acid | 0.1 ug/mL     |
| ..LCPFC2SP_00013      | 01/20/17 | 07/20/16  | Methanol, Lot 104453           | 10000 uL             | LC6:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL   |
|                       |          |           |                                |                      | LC8:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.958 ug/mL   |
|                       |          |           |                                |                      | LCN-EtFOSA-M_00002  | 200 uL       | N-ethylperfluoro-1-octanesulfo<br>namide           | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-EtFOSAA_00001   | 200 uL       | N-ethyl perfluorooctane<br>sulfonamidoacetic acid  | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-MeFOSA-M_00001  | 200 uL       | MeFOSA                                             | 1 ug/mL       |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                  | Reagent Final Volume | Parent Reagent      |              | Analyte                                            | Concentration |
|-----------------------|----------|-----------|--------------------------------|----------------------|---------------------|--------------|----------------------------------------------------|---------------|
|                       |          |           |                                |                      | Reagent ID          | Volume Added |                                                    |               |
|                       |          |           |                                |                      | LCN-MeFOSAA_00001   | 200 uL       | N-methyl perfluorooctane sulfonamidoacetic acid    | 1 ug/mL       |
| ...LC6:2FTS_00001     | 10/03/17 |           | WELLINGTON, Lot 62FTS1014      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL    |
| ...LC8:2FTS_00001     | 10/03/17 |           | WELLINGTON, Lot 82FTS1014      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 47.9 ug/mL    |
| ...LCN-EtFOSA-M_00002 | 07/14/19 |           | WELLINGTON, Lot NtFOSA0714M    |                      | (Purchased Reagent) |              | N-ethylperfluoro-1-octanesulfo namide              | 50 ug/mL      |
| ...LCN-EtFOSAA_00001  | 01/29/18 |           | WELLINGTON, Lot NtFOSAA0113    |                      | (Purchased Reagent) |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 50 ug/mL      |
| ...LCN-MeFOSA-M_00001 | 07/15/19 |           | WELLINGTON, Lot NMeFOSA0714M   |                      | (Purchased Reagent) |              | MeFOSA                                             | 50 ug/mL      |
| ...LCN-MeFOSAA_00001  | 12/09/19 |           | WELLINGTON, Lot NMeFOSAA1214   |                      | (Purchased Reagent) |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 50 ug/mL      |
| LCPFC2-L2_00002       | 01/08/17 | 07/20/16  | MeOH/H2O, Lot 104453           | 5 mL                 | LCMPFC2SU_00005     | 250 uL       | d-N-EtFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d-N-MeFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d3-NMeFOSAA                                        | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d5-NtFOSAA                                         | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | M2-6:2FTS                                          | 47.5 ng/mL    |
|                       |          |           |                                |                      |                     |              | M2-8:2FTS                                          | 47.9 ng/mL    |
|                       |          |           |                                |                      | LCPFC2SP_00014      | 50 uL        | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ng/mL   |
|                       |          |           |                                |                      |                     |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.958 ng/mL   |
|                       |          |           |                                |                      |                     |              | N-ethylperfluoro-1-octanesulfo namide              | 1 ng/mL       |
|                       |          |           |                                |                      |                     |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 1 ng/mL       |
| .LCMPFC2SU_00005      | 01/08/17 | 07/08/16  | Methanol, Lot 104453           | 10000 uL             | LCd-NtFOSA-M_00001  | 200 uL       | MeFOSA                                             | 1 ng/mL       |
|                       |          |           |                                |                      |                     |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 1 ng/mL       |
|                       |          |           |                                |                      |                     |              | d-N-EtFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      |                     |              | d-N-MeFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      |                     |              | d3-NMeFOSAA                                        | 1 ug/mL       |
|                       |          |           |                                |                      |                     |              | d5-NtFOSAA                                         | 1 ug/mL       |
|                       |          |           |                                |                      |                     |              | M2-6:2FTS                                          | 0.95 ug/mL    |
| ..LCd-NtFOSA-M_00001  | 03/10/19 |           | WELLINGTON, Lot dNtFOSA0314M   |                      | LCd3-NMeFOSAA_00001 | 200 uL       | M2-8:2FTS                                          | 0.958 ug/mL   |
|                       |          |           |                                |                      |                     |              | (Purchased Reagent)                                |               |
|                       |          |           |                                |                      |                     |              | d-N-EtFOSA-M                                       | 50 ug/mL      |
|                       |          |           |                                |                      |                     |              | d-N-MeFOSA-M                                       | 50 ug/mL      |
|                       |          |           |                                |                      |                     |              | d3-NMeFOSAA                                        | 50 ug/mL      |
|                       |          |           |                                |                      |                     |              | d5-NtFOSAA                                         | 50 ug/mL      |
|                       |          |           |                                |                      |                     |              | M2-6:2FTS                                          | 47.5 ug/mL    |
|                       |          |           |                                |                      |                     |              | M2-8:2FTS                                          | 47.9 ug/mL    |
|                       |          |           |                                |                      |                     |              | (Purchased Reagent)                                |               |
|                       |          |           |                                |                      |                     |              | (Purchased Reagent)                                |               |
| ..LCd3-NMeFOSAA_00001 | 01/31/18 |           | WELLINGTON, Lot d3NMeFOSAA0113 |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.0948 ug/mL  |
| ..LCd5-NtFOSAA_00001  | 05/08/20 |           | WELLINGTON, Lot d5NtFOSAA0515  |                      | (Purchased Reagent) |              |                                                    |               |
| ..LCM2-6:FTS_00001    | 07/15/17 |           | WELLINGTON, Lot M262FTS0714    |                      | (Purchased Reagent) |              |                                                    |               |
| ..LCM2-8:2FTS_00001   | 04/13/17 |           | WELLINGTON, Lot M282FTS0414    |                      | (Purchased Reagent) |              |                                                    |               |
| .LCPFC2SP_00014       | 01/20/17 | 07/20/16  | Methanol, Lot 104453           | 5000 uL              | LCPFC2SP_00013      | 500 uL       |                                                    |               |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                | Reagent Final Volume | Parent Reagent      |              | Analyte                                            | Concentration |
|-----------------------|----------|-----------|------------------------------|----------------------|---------------------|--------------|----------------------------------------------------|---------------|
|                       |          |           |                              |                      | Reagent ID          | Volume Added |                                                    |               |
|                       |          |           |                              |                      |                     |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.0958 ug/mL  |
|                       |          |           |                              |                      |                     |              | N-ethylperfluoro-1-octanesulfo namide              | 0.1 ug/mL     |
|                       |          |           |                              |                      |                     |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 0.1 ug/mL     |
|                       |          |           |                              |                      |                     |              | MeFOSA                                             | 0.1 ug/mL     |
|                       |          |           |                              |                      |                     |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 0.1 ug/mL     |
| ..LCPFC2SP_00013      | 01/20/17 | 07/20/16  | Methanol, Lot 104453         | 10000 uL             | LC6:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL   |
|                       |          |           |                              |                      | LC8:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.958 ug/mL   |
|                       |          |           |                              |                      | LCN-EtFOSA-M_00002  | 200 uL       | N-ethylperfluoro-1-octanesulfo namide              | 1 ug/mL       |
|                       |          |           |                              |                      | LCN-EtFOSAA_00001   | 200 uL       | N-ethyl perfluorooctane sulfonamidoacetic acid     | 1 ug/mL       |
|                       |          |           |                              |                      | LCN-MeFOSA-M_00001  | 200 uL       | MeFOSA                                             | 1 ug/mL       |
|                       |          |           |                              |                      | LCN-MeFOSAA_00001   | 200 uL       | N-methyl perfluorooctane sulfonamidoacetic acid    | 1 ug/mL       |
| ...LC6:2FTS_00001     | 10/03/17 |           | WELLINGTON, Lot 62FTS1014    |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL    |
| ...LC8:2FTS_00001     | 10/03/17 |           | WELLINGTON, Lot 82FTS1014    |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 47.9 ug/mL    |
| ...LCN-EtFOSA-M_00002 | 07/14/19 |           | WELLINGTON, Lot NetFOSA0714M |                      | (Purchased Reagent) |              | N-ethylperfluoro-1-octanesulfo namide              | 50 ug/mL      |
| ...LCN-EtFOSAA_00001  | 01/29/18 |           | WELLINGTON, Lot NetFOSAA0113 |                      | (Purchased Reagent) |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 50 ug/mL      |
| ...LCN-MeFOSA-M_00001 | 07/15/19 |           | WELLINGTON, Lot NMeFOSA0714M |                      | (Purchased Reagent) |              | MeFOSA                                             | 50 ug/mL      |
| ...LCN-MeFOSAA_00001  | 12/09/19 |           | WELLINGTON, Lot NMeFOSAA1214 |                      | (Purchased Reagent) |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 50 ug/mL      |
| LCPFC2-L3_00002       | 01/08/17 | 07/20/16  | MeOH/H2O, Lot 104453         | 5 mL                 | LCMPFC2SU_00005     | 250 uL       | d-N-EtFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                              |                      |                     |              | d-N-MeFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                              |                      |                     |              | d3-NMeFOSAA                                        | 50 ng/mL      |
|                       |          |           |                              |                      |                     |              | d5-NETFOSAA                                        | 50 ng/mL      |
|                       |          |           |                              |                      |                     |              | M2-6:2FTS                                          | 47.5 ng/mL    |
|                       |          |           |                              |                      |                     |              | M2-8:2FTS                                          | 47.9 ng/mL    |
|                       |          |           |                              |                      | LCPFC2SP_00014      | 250 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 4.74 ng/mL    |
|                       |          |           |                              |                      |                     |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 4.79 ng/mL    |
|                       |          |           |                              |                      |                     |              | N-ethylperfluoro-1-octanesulfo namide              | 5 ng/mL       |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                  | Reagent Final Volume | Parent Reagent      |              | Analyte                                            | Concentration |
|-----------------------|----------|-----------|--------------------------------|----------------------|---------------------|--------------|----------------------------------------------------|---------------|
|                       |          |           |                                |                      | Reagent ID          | Volume Added |                                                    |               |
|                       |          |           |                                |                      |                     |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 5 ng/mL       |
|                       |          |           |                                |                      |                     |              | MeFOSA                                             | 5 ng/mL       |
|                       |          |           |                                |                      |                     |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 5 ng/mL       |
| .LCMPFC2SU_00005      | 01/08/17 | 07/08/16  | Methanol, Lot 104453           | 10000 uL             | LCd-NEtFOSA-M 00001 | 200 uL       | d-N-EtFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      | LCd-NMeFOSA-M 00001 | 200 uL       | d-N-MeFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      | LCd3-NMeFOSAA 00001 | 200 uL       | d3-NMeFOSAA                                        | 1 ug/mL       |
|                       |          |           |                                |                      | LCd5-NEtFOSAA 00001 | 200 uL       | d5-NEtFOSAA                                        | 1 ug/mL       |
|                       |          |           |                                |                      | LCM2-6:FTS 00001    | 200 uL       | M2-6:2FTS                                          | 0.95 ug/mL    |
|                       |          |           |                                |                      | LCM2-8:2FTS 00001   | 200 uL       | M2-8:2FTS                                          | 0.958 ug/mL   |
| ..LCd-NEtFOSA-M 00001 | 03/10/19 |           | WELLINGTON, Lot dNetFOSA0314M  |                      | (Purchased Reagent) |              | d-N-EtFOSA-M                                       | 50 ug/mL      |
| ..LCd-NMeFOSA-M 00001 | 01/28/19 |           | WELLINGTON, Lot dNMeFOSA0114M  |                      | (Purchased Reagent) |              | d-N-MeFOSA-M                                       | 50 ug/mL      |
| ..LCd3-NMeFOSAA 00001 | 01/31/18 |           | WELLINGTON, Lot d3NMeFOSAA0113 |                      | (Purchased Reagent) |              | d3-NMeFOSAA                                        | 50 ug/mL      |
| ..LCd5-NEtFOSAA 00001 | 05/08/20 |           | WELLINGTON, Lot d5NEtFOSAA0515 |                      | (Purchased Reagent) |              | d5-NEtFOSAA                                        | 50 ug/mL      |
| ..LCM2-6:FTS 00001    | 07/15/17 |           | WELLINGTON, Lot M262FTS0714    |                      | (Purchased Reagent) |              | M2-6:2FTS                                          | 47.5 ug/mL    |
| ..LCM2-8:2FTS 00001   | 04/13/17 |           | WELLINGTON, Lot M282FTS0414    |                      | (Purchased Reagent) |              | M2-8:2FTS                                          | 47.9 ug/mL    |
| .LCPFC2SP_00014       | 01/20/17 | 07/20/16  | Methanol, Lot 104453           | 5000 uL              | LCPFC2SP_00013      | 500 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.0948 ug/mL  |
|                       |          |           |                                |                      |                     |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.0958 ug/mL  |
|                       |          |           |                                |                      |                     |              | N-ethylperfluoro-1-octanesulfo namide              | 0.1 ug/mL     |
|                       |          |           |                                |                      |                     |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 0.1 ug/mL     |
|                       |          |           |                                |                      |                     |              | MeFOSA                                             | 0.1 ug/mL     |
|                       |          |           |                                |                      |                     |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 0.1 ug/mL     |
| ..LCPFC2SP_00013      | 01/20/17 | 07/20/16  | Methanol, Lot 104453           | 10000 uL             | LC6:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL   |
|                       |          |           |                                |                      | LC8:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.958 ug/mL   |
|                       |          |           |                                |                      | LCN-EtFOSA-M_00002  | 200 uL       | N-ethylperfluoro-1-octanesulfo namide              | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-EtFOSAA_00001   | 200 uL       | N-ethyl perfluorooctane sulfonamidoacetic acid     | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-MeFOSA-M_00001  | 200 uL       | MeFOSA                                             | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-MeFOSAA_00001   | 200 uL       | N-methyl perfluorooctane sulfonamidoacetic acid    | 1 ug/mL       |
| ...LC6:2FTS_00001     | 10/03/17 |           | WELLINGTON, Lot 62FTS1014      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL    |
| ...LC8:2FTS_00001     | 10/03/17 |           | WELLINGTON, Lot 82FTS1014      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 47.9 ug/mL    |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

SDG No.:

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                  | Reagent Final Volume | Parent Reagent      |              | Analyte                                                  | Concentration |
|-----------------------|----------|-----------|--------------------------------|----------------------|---------------------|--------------|----------------------------------------------------------|---------------|
|                       |          |           |                                |                      | Reagent ID          | Volume Added |                                                          |               |
| ...LCN-EtFOSA-M_00002 | 07/14/19 |           | WELLINGTON, Lot NETFOSA0714M   |                      | (Purchased Reagent) |              | N-ethylperfluoro-1-octanesulfo<br>namide                 | 50 ug/mL      |
| ...LCN-EtFOSAA_00001  | 01/29/18 |           | WELLINGTON, Lot NETFOSAA0113   |                      | (Purchased Reagent) |              | N-ethyl perfluorooctane<br>sulfonamidoacetic acid        | 50 ug/mL      |
| ...LCN-MeFOSA-M_00001 | 07/15/19 |           | WELLINGTON, Lot NMeFOSA0714M   |                      | (Purchased Reagent) |              | MeFOSA                                                   | 50 ug/mL      |
| ...LCN-MeFOSAA_00001  | 12/09/19 |           | WELLINGTON, Lot NMeFOSAA1214   |                      | (Purchased Reagent) |              | N-methyl perfluorooctane<br>sulfonamidoacetic acid       | 50 ug/mL      |
| LCPFC2-L4_00003       | 02/26/17 | 09/22/16  | MeOH/H2O, Lot 104453           | 5 mL                 | LCMPFC2SU_00008     | 250 uL       | d-N-EtFOSA-M                                             | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d-N-MeFOSA-M                                             | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d3-NMeFOSAA                                              | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d5-NETFOSAA                                              | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | M2-6:2FTS                                                | 47.5 ng/mL    |
|                       |          |           |                                |                      |                     |              | M2-8:2FTS                                                | 47.9 ng/mL    |
|                       |          |           |                                |                      | LCPFC2SP_00017      | 200 uL       | Sodium<br>1H,1H,2H,2H-perfluorooctane<br>sulfonate (6:2) | 18.96 ng/mL   |
|                       |          |           |                                |                      |                     |              | Sodium<br>1H,1H,2H,2H-perfluorooctane<br>sulfonate (8:2) | 19.16 ng/mL   |
|                       |          |           |                                |                      |                     |              | N-ethylperfluoro-1-octanesulfo<br>namide                 | 20 ng/mL      |
|                       |          |           |                                |                      |                     |              | N-ethyl perfluorooctane<br>sulfonamidoacetic acid        | 20 ng/mL      |
|                       |          |           |                                |                      |                     |              | MeFOSA                                                   | 20 ng/mL      |
| .LCMPFC2SU_00008      | 02/26/17 | 08/26/16  | Methanol, Lot 104453           | 10000 uL             | LCd-NETFOSA-M_00002 | 200 uL       | d-N-EtFOSA-M                                             | 1 ug/mL       |
|                       |          |           |                                |                      | LCd-NMeFOSA-M_00002 | 200 uL       | d-N-MeFOSA-M                                             | 1 ug/mL       |
|                       |          |           |                                |                      | LCd3-NMeFOSAA_00002 | 200 uL       | d3-NMeFOSAA                                              | 1 ug/mL       |
|                       |          |           |                                |                      | LCd5-NETFOSAA_00002 | 200 uL       | d5-NETFOSAA                                              | 1 ug/mL       |
|                       |          |           |                                |                      | LCM2-6:FTS_00002    | 200 uL       | M2-6:2FTS                                                | 0.95 ug/mL    |
|                       |          |           |                                |                      | LCM2-8:2FTS_00002   | 200 uL       | M2-8:2FTS                                                | 0.958 ug/mL   |
| ..LCd-NETFOSA-M_00002 | 03/10/19 |           | WELLINGTON, Lot dNETFOSA0314M  |                      | (Purchased Reagent) |              | d-N-EtFOSA-M                                             | 50 ug/mL      |
| ..LCd-NMeFOSA-M_00002 | 06/10/21 |           | WELLINGTON, Lot dNMeFOSA0616M  |                      | (Purchased Reagent) |              | d-N-MeFOSA-M                                             | 50 ug/mL      |
| ..LCd3-NMeFOSAA_00002 | 01/20/21 |           | WELLINGTON, Lot d3NMeFOSAA0116 |                      | (Purchased Reagent) |              | d3-NMeFOSAA                                              | 50 ug/mL      |
| ..LCd5-NETFOSAA_00002 | 12/07/20 |           | WELLINGTON, Lot d5NETFOSAA1115 |                      | (Purchased Reagent) |              | d5-NETFOSAA                                              | 50 ug/mL      |
| ..LCM2-6:FTS_00002    | 01/08/21 |           | WELLINGTON, Lot M262FTS0116    |                      | (Purchased Reagent) |              | M2-6:2FTS                                                | 47.5 ug/mL    |
| ..LCM2-8:2FTS_00002   | 01/08/21 |           | WELLINGTON, Lot M282FTS0116    |                      | (Purchased Reagent) |              | M2-8:2FTS                                                | 47.9 ug/mL    |
| .LCPFC2SP_00017       | 03/02/17 | 09/02/16  | Methanol, Lot 104453           | 10000 uL             | LC6:2FTS_00002      | 100 uL       | Sodium<br>1H,1H,2H,2H-perfluorooctane<br>sulfonate (6:2) | 0.474 ug/mL   |
|                       |          |           |                                |                      | LC8:2FTS_00002      | 100 uL       | Sodium<br>1H,1H,2H,2H-perfluorooctane<br>sulfonate (8:2) | 0.479 ug/mL   |
|                       |          |           |                                |                      | LCN-EtFOSA-M_00003  | 100 uL       | N-ethylperfluoro-1-octanesulfo<br>namide                 | 0.5 ug/mL     |
|                       |          |           |                                |                      | LCN-EtFOSAA_00002   | 100 uL       | N-ethyl perfluorooctane<br>sulfonamidoacetic acid        | 0.5 ug/mL     |
|                       |          |           |                                |                      | LCN-MeFOSA-M_00002  | 100 uL       | MeFOSA                                                   | 0.5 ug/mL     |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                  | Reagent Final Volume | Parent Reagent      |              | Analyte                                            | Concentration |
|-----------------------|----------|-----------|--------------------------------|----------------------|---------------------|--------------|----------------------------------------------------|---------------|
|                       |          |           |                                |                      | Reagent ID          | Volume Added |                                                    |               |
|                       |          |           |                                |                      | LCN-MeFOSAA_00003   | 100 uL       | N-methyl perfluorooctane sulfonamidoacetic acid    | 0.5 ug/mL     |
| ..LC6:2FTS_00002      | 06/25/21 |           | WELLINGTON, Lot 62FTS0616      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL    |
| ..LC8:2FTS_00002      | 10/23/20 |           | WELLINGTON, Lot 82FTS1015      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 47.9 ug/mL    |
| ..LCN-EtFOSA-M_00003  | 05/24/21 |           | WELLINGTON, Lot NtFOSA0516M    |                      | (Purchased Reagent) |              | N-ethylperfluoro-1-octanesulfo namide              | 50 ug/mL      |
| ..LCN-EtFOSAA_00002   | 01/20/21 |           | WELLINGTON, Lot NtFOSAA0116    |                      | (Purchased Reagent) |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 50 ug/mL      |
| ..LCN-MeFOSA-M_00002  | 05/24/21 |           | WELLINGTON, Lot NMeFOSA0714M   |                      | (Purchased Reagent) |              | MeFOSA                                             | 50 ug/mL      |
| ..LCN-MeFOSAA_00003   | 01/20/21 |           | WELLINGTON, Lot NMeFOSAA0116   |                      | (Purchased Reagent) |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 50 ug/mL      |
| LCPFC2-L5_00002       | 01/08/17 | 07/20/16  | MeOH/H2O, Lot 104453           | 5 mL                 | LCMPFC2SU_00005     | 250 uL       | d-N-EtFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d-N-MeFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d3-NMeFOSAA                                        | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d5-NtFOSAA                                         | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | M2-6:2FTS                                          | 47.5 ng/mL    |
|                       |          |           |                                |                      |                     |              | M2-8:2FTS                                          | 47.9 ng/mL    |
|                       |          |           |                                |                      | LCPFC2SP_00013      | 250 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ng/mL    |
|                       |          |           |                                |                      |                     |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 47.9 ng/mL    |
|                       |          |           |                                |                      |                     |              | N-ethylperfluoro-1-octanesulfo namide              | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | MeFOSA                                             | 50 ng/mL      |
| .LCMPFC2SU_00005      | 01/08/17 | 07/08/16  | Methanol, Lot 104453           | 10000 uL             | LCd-NtFOSA-M_00001  | 200 uL       | d-N-EtFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      | LCd-NMeFOSA-M_00001 | 200 uL       | d-N-MeFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      | LCd3-NMeFOSAA_00001 | 200 uL       | d3-NMeFOSAA                                        | 1 ug/mL       |
|                       |          |           |                                |                      | LCd5-NtFOSAA_00001  | 200 uL       | d5-NtFOSAA                                         | 1 ug/mL       |
|                       |          |           |                                |                      | LCM2-6:FTS_00001    | 200 uL       | M2-6:2FTS                                          | 0.95 ug/mL    |
|                       |          |           |                                |                      | LCM2-8:2FTS_00001   | 200 uL       | M2-8:2FTS                                          | 0.958 ug/mL   |
|                       |          |           |                                |                      |                     |              |                                                    |               |
| ..LCd-NtFOSA-M_00001  | 03/10/19 |           | WELLINGTON, Lot dNtFOSA0314M   |                      | (Purchased Reagent) |              | d-N-EtFOSA-M                                       | 50 ug/mL      |
| ..LCd-NMeFOSA-M_00001 | 01/28/19 |           | WELLINGTON, Lot dNMeFOSA0114M  |                      | (Purchased Reagent) |              | d-N-MeFOSA-M                                       | 50 ug/mL      |
| ..LCd3-NMeFOSAA_00001 | 01/31/18 |           | WELLINGTON, Lot d3NMeFOSAA0113 |                      | (Purchased Reagent) |              | d3-NMeFOSAA                                        | 50 ug/mL      |
| ..LCd5-NtFOSAA_00001  | 05/08/20 |           | WELLINGTON, Lot d5NtFOSAA0515  |                      | (Purchased Reagent) |              | d5-NtFOSAA                                         | 50 ug/mL      |
| ..LCM2-6:FTS_00001    | 07/15/17 |           | WELLINGTON, Lot M262FTS0714    |                      | (Purchased Reagent) |              | M2-6:2FTS                                          | 47.5 ug/mL    |
| ..LCM2-8:2FTS_00001   | 04/13/17 |           | WELLINGTON, Lot M282FTS0414    |                      | (Purchased Reagent) |              | M2-8:2FTS                                          | 47.9 ug/mL    |
| .LCPFC2SP_00013       | 01/20/17 | 07/20/16  | Methanol, Lot 104453           | 10000 uL             | LC6:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL   |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                 | Reagent Final Volume | Parent Reagent      |              | Analyte                                            | Concentration |
|-----------------------|----------|-----------|-------------------------------|----------------------|---------------------|--------------|----------------------------------------------------|---------------|
|                       |          |           |                               |                      | Reagent ID          | Volume Added |                                                    |               |
|                       |          |           |                               |                      | LC8:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.958 ug/mL   |
|                       |          |           |                               |                      | LCN-EtFOSA-M_00002  | 200 uL       | N-ethylperfluoro-1-octanesulfo namide              | 1 ug/mL       |
|                       |          |           |                               |                      | LCN-EtFOSAA_00001   | 200 uL       | N-ethyl perfluorooctane sulfonamidoacetic acid     | 1 ug/mL       |
|                       |          |           |                               |                      | LCN-MeFOSA-M_00001  | 200 uL       | MeFOSA                                             | 1 ug/mL       |
|                       |          |           |                               |                      | LCN-MeFOSAA_00001   | 200 uL       | N-methyl perfluorooctane sulfonamidoacetic acid    | 1 ug/mL       |
| ..LC6:2FTS_00001      | 10/03/17 |           | WELLINGTON, Lot 62FTS1014     |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL    |
| ..LC8:2FTS_00001      | 10/03/17 |           | WELLINGTON, Lot 82FTS1014     |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 47.9 ug/mL    |
| ..LCN-EtFOSA-M_00002  | 07/14/19 |           | WELLINGTON, Lot NetFOSA0714M  |                      | (Purchased Reagent) |              | N-ethylperfluoro-1-octanesulfo namide              | 50 ug/mL      |
| ..LCN-EtFOSAA_00001   | 01/29/18 |           | WELLINGTON, Lot NetFOSAA0113  |                      | (Purchased Reagent) |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 50 ug/mL      |
| ..LCN-MeFOSA-M_00001  | 07/15/19 |           | WELLINGTON, Lot NMeFOSA0714M  |                      | (Purchased Reagent) |              | MeFOSA                                             | 50 ug/mL      |
| ..LCN-MeFOSAA_00001   | 12/09/19 |           | WELLINGTON, Lot NMeFOSAA1214  |                      | (Purchased Reagent) |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 50 ug/mL      |
| LCPFC2-L6_00002       | 01/08/17 | 07/20/16  | MeOH/H2O, Lot 104453          | 5 mL                 | LCMPFC2SU_00005     | 250 uL       | d-N-EtFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                               |                      |                     |              | d-N-MeFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                               |                      |                     |              | d3-NMeFOSAA                                        | 50 ng/mL      |
|                       |          |           |                               |                      |                     |              | d5-NEtFOSAA                                        | 50 ng/mL      |
|                       |          |           |                               |                      |                     |              | M2-6:2FTS                                          | 47.5 ng/mL    |
|                       |          |           |                               |                      |                     |              | M2-8:2FTS                                          | 47.9 ng/mL    |
|                       |          |           |                               |                      | LCPFC2SP_00013      | 1000 uL      | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 189.6 ng/mL   |
|                       |          |           |                               |                      |                     |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 191.6 ng/mL   |
|                       |          |           |                               |                      |                     |              | N-ethylperfluoro-1-octanesulfo namide              | 200 ng/mL     |
|                       |          |           |                               |                      |                     |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 200 ng/mL     |
|                       |          |           |                               |                      |                     |              | MeFOSA                                             | 200 ng/mL     |
|                       |          |           |                               |                      |                     |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 200 ng/mL     |
| .LCMPFC2SU_00005      | 01/08/17 | 07/08/16  | Methanol, Lot 104453          | 10000 uL             | LCd-NEtFOSA-M_00001 | 200 uL       | d-N-EtFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                               |                      | LCd-NMeFOSA-M_00001 | 200 uL       | d-N-MeFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                               |                      | LCd3-NMeFOSAA_00001 | 200 uL       | d3-NMeFOSAA                                        | 1 ug/mL       |
|                       |          |           |                               |                      | LCd5-NEtFOSAA_00001 | 200 uL       | d5-NEtFOSAA                                        | 1 ug/mL       |
|                       |          |           |                               |                      | LCM2-6:FTS_00001    | 200 uL       | M2-6:2FTS                                          | 0.95 ug/mL    |
|                       |          |           |                               |                      | LCM2-8:2FTS_00001   | 200 uL       | M2-8:2FTS                                          | 0.958 ug/mL   |
| ..LCd-NEtFOSA-M_00001 | 03/10/19 |           | WELLINGTON, Lot dNetFOSA0314M |                      | (Purchased Reagent) |              | d-N-EtFOSA-M                                       | 50 ug/mL      |



## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

SDG No.:

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                  | Reagent Final Volume | Parent Reagent      |              | Analyte                                            | Concentration |
|-----------------------|----------|-----------|--------------------------------|----------------------|---------------------|--------------|----------------------------------------------------|---------------|
|                       |          |           |                                |                      | Reagent ID          | Volume Added |                                                    |               |
| ..LCd-NMeFOSA-M_00001 | 01/28/19 |           | WELLINGTON, Lot dNMeFOSA0114M  |                      | (Purchased Reagent) |              | d-N-MeFOSA-M                                       | 50 ug/mL      |
| ..LCd3-NMeFOSAA_00001 | 01/31/18 |           | WELLINGTON, Lot d3NMeFOSAA0113 |                      | (Purchased Reagent) |              | d3-NMeFOSAA                                        | 50 ug/mL      |
| ..LCd5-NEtFOSAA_00001 | 05/08/20 |           | WELLINGTON, Lot d5NEtFOSAA0515 |                      | (Purchased Reagent) |              | d5-NEtFOSAA                                        | 50 ug/mL      |
| ..LCM2-6:FTS_00001    | 07/15/17 |           | WELLINGTON, Lot M262FTS0714    |                      | (Purchased Reagent) |              | M2-6:2FTS                                          | 47.5 ug/mL    |
| ..LCM2-8:2FTS_00001   | 04/13/17 |           | WELLINGTON, Lot M282FTS0414    |                      | (Purchased Reagent) |              | M2-8:2FTS                                          | 47.9 ug/mL    |
| .LCPFC2SP_00013       | 01/20/17 | 07/20/16  | Methanol, Lot 104453           | 10000 uL             | LC6:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL   |
|                       |          |           |                                |                      | LC8:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.958 ug/mL   |
|                       |          |           |                                |                      | LCN-EtFOSA-M_00002  | 200 uL       | N-ethylperfluoro-1-octanesulfo namide              | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-EtFOSAA_00001   | 200 uL       | N-ethyl perfluorooctane sulfonamidoacetic acid     | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-MeFOSA-M_00001  | 200 uL       | MeFOSA                                             | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-MeFOSAA_00001   | 200 uL       | N-methyl perfluorooctane sulfonamidoacetic acid    | 1 ug/mL       |
| ..LC6:2FTS_00001      | 10/03/17 |           | WELLINGTON, Lot 62FTS1014      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL    |
| ..LC8:2FTS_00001      | 10/03/17 |           | WELLINGTON, Lot 82FTS1014      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 47.9 ug/mL    |
| ..LCN-EtFOSA-M_00002  | 07/14/19 |           | WELLINGTON, Lot NEtFOSA0714M   |                      | (Purchased Reagent) |              | N-ethylperfluoro-1-octanesulfo namide              | 50 ug/mL      |
| ..LCN-EtFOSAA_00001   | 01/29/18 |           | WELLINGTON, Lot NEtFOSAA0113   |                      | (Purchased Reagent) |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 50 ug/mL      |
| ..LCN-MeFOSA-M_00001  | 07/15/19 |           | WELLINGTON, Lot NMeFOSA0714M   |                      | (Purchased Reagent) |              | MeFOSA                                             | 50 ug/mL      |
| ..LCN-MeFOSAA_00001   | 12/09/19 |           | WELLINGTON, Lot NMeFOSAA1214   |                      | (Purchased Reagent) |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 50 ug/mL      |
| LCPFC2-L7_00002       | 01/08/17 | 07/20/16  | MeOH/H2O, Lot 104453           | 5 mL                 | LCMPFC2SU_00005     | 250 uL       | d-N-EtFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d-N-MeFOSA-M                                       | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d3-NMeFOSAA                                        | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | d5-NEtFOSAA                                        | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | M2-6:2FTS                                          | 47.5 ng/mL    |
|                       |          |           |                                |                      |                     |              | M2-8:2FTS                                          | 47.9 ng/mL    |
|                       |          |           |                                |                      | LCPFC2SP_00013      | 2000 uL      | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 379.2 ng/mL   |
|                       |          |           |                                |                      |                     |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 383.2 ng/mL   |
|                       |          |           |                                |                      |                     |              | N-ethylperfluoro-1-octanesulfo namide              | 400 ng/mL     |
|                       |          |           |                                |                      |                     |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 400 ng/mL     |
|                       |          |           |                                |                      |                     |              | MeFOSA                                             | 400 ng/mL     |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                  | Reagent Final Volume | Parent Reagent      |              | Analyte                                            | Concentration |
|-----------------------|----------|-----------|--------------------------------|----------------------|---------------------|--------------|----------------------------------------------------|---------------|
|                       |          |           |                                |                      | Reagent ID          | Volume Added |                                                    |               |
|                       |          |           |                                |                      |                     |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 400 ng/mL     |
| .LCMPFC2SU_00005      | 01/08/17 | 07/08/16  | Methanol, Lot 104453           | 10000 uL             | LCd-NEtFOSA-M_00001 | 200 uL       | d-N-EtFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      | LCd-NMeFOSA-M_00001 | 200 uL       | d-N-MeFOSA-M                                       | 1 ug/mL       |
|                       |          |           |                                |                      | LCd3-NMeFOSAA_00001 | 200 uL       | d3-NMeFOSAA                                        | 1 ug/mL       |
|                       |          |           |                                |                      | LCd5-NEtFOSAA_00001 | 200 uL       | d5-NEtFOSAA                                        | 1 ug/mL       |
|                       |          |           |                                |                      | LCM2-6:FTS_00001    | 200 uL       | M2-6:2FTS                                          | 0.95 ug/mL    |
|                       |          |           |                                |                      | LCM2-8:2FTS_00001   | 200 uL       | M2-8:2FTS                                          | 0.958 ug/mL   |
| ..LCd-NEtFOSA-M_00001 | 03/10/19 |           | WELLINGTON, Lot dNetFOSA0314M  |                      | (Purchased Reagent) |              | d-N-EtFOSA-M                                       | 50 ug/mL      |
| ..LCd-NMeFOSA-M_00001 | 01/28/19 |           | WELLINGTON, Lot dNMeFOSA0114M  |                      | (Purchased Reagent) |              | d-N-MeFOSA-M                                       | 50 ug/mL      |
| ..LCd3-NMeFOSAA_00001 | 01/31/18 |           | WELLINGTON, Lot d3NMeFOSAA0113 |                      | (Purchased Reagent) |              | d3-NMeFOSAA                                        | 50 ug/mL      |
| ..LCd5-NEtFOSAA_00001 | 05/08/20 |           | WELLINGTON, Lot d5NetFOSAA0515 |                      | (Purchased Reagent) |              | d5-NEtFOSAA                                        | 50 ug/mL      |
| ..LCM2-6:FTS_00001    | 07/15/17 |           | WELLINGTON, Lot M262FTS0714    |                      | (Purchased Reagent) |              | M2-6:2FTS                                          | 47.5 ug/mL    |
| ..LCM2-8:2FTS_00001   | 04/13/17 |           | WELLINGTON, Lot M282FTS0414    |                      | (Purchased Reagent) |              | M2-8:2FTS                                          | 47.9 ug/mL    |
| .LCPFC2SP_00013       | 01/20/17 | 07/20/16  | Methanol, Lot 104453           | 10000 uL             | LC6:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL   |
|                       |          |           |                                |                      | LC8:2FTS_00001      | 200 uL       | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 0.958 ug/mL   |
|                       |          |           |                                |                      | LCN-EtFOSA-M_00002  | 200 uL       | N-ethylperfluoro-1-octanesulfo namide              | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-EtFOSAA_00001   | 200 uL       | N-ethyl perfluorooctane sulfonamidoacetic acid     | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-MeFOSA-M_00001  | 200 uL       | MeFOSA                                             | 1 ug/mL       |
|                       |          |           |                                |                      | LCN-MeFOSAA_00001   | 200 uL       | N-methyl perfluorooctane sulfonamidoacetic acid    | 1 ug/mL       |
| ..LC6:2FTS_00001      | 10/03/17 |           | WELLINGTON, Lot 62FTS1014      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL    |
| ..LC8:2FTS_00001      | 10/03/17 |           | WELLINGTON, Lot 82FTS1014      |                      | (Purchased Reagent) |              | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2) | 47.9 ug/mL    |
| ..LCN-EtFOSA-M_00002  | 07/14/19 |           | WELLINGTON, Lot NEtFOSA0714M   |                      | (Purchased Reagent) |              | N-ethylperfluoro-1-octanesulfo namide              | 50 ug/mL      |
| ..LCN-EtFOSAA_00001   | 01/29/18 |           | WELLINGTON, Lot NEtFOSAA0113   |                      | (Purchased Reagent) |              | N-ethyl perfluorooctane sulfonamidoacetic acid     | 50 ug/mL      |
| ..LCN-MeFOSA-M_00001  | 07/15/19 |           | WELLINGTON, Lot NMeFOSA0714M   |                      | (Purchased Reagent) |              | MeFOSA                                             | 50 ug/mL      |
| ..LCN-MeFOSAA_00001   | 12/09/19 |           | WELLINGTON, Lot NMeFOSAA1214   |                      | (Purchased Reagent) |              | N-methyl perfluorooctane sulfonamidoacetic acid    | 50 ug/mL      |
| <b>LCPFCIC_00020</b>  | 03/01/17 | 12/01/16  | MeOH/H2O, Lot 09285            | 5 mL                 | LCMPFCSU_00046      | 250 uL       | 13C2-PFHxDA                                        | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | 13C2-PFTeDA                                        | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | 13C4-PFHpA                                         | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | 13C5-PFPeA                                         | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | 13C8 FOSA                                          | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | 13C4 PFBA                                          | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | 13C2 PFDA                                          | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | 13C2 PFDoA                                         | 50 ng/mL      |
|                       |          |           |                                |                      |                     |              | 13C2 PFHxA                                         | 50 ng/mL      |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID         | Exp Date | Prep Date                                 | Dilutant Used              | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|--------------------|----------|-------------------------------------------|----------------------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                    |          |                                           |                            |                      | Reagent ID          | Volume Added |                                     |               |
|                    |          |                                           |                            |                      |                     |              | 1802 PFHxS                          | 47.3 ng/mL    |
|                    |          |                                           |                            |                      |                     |              | 13C5 PFNA                           | 50 ng/mL      |
|                    |          |                                           |                            |                      |                     |              | 13C4 PFOA                           | 50 ng/mL      |
|                    |          |                                           |                            |                      |                     |              | 13C4 PFOS                           | 47.8 ng/mL    |
|                    |          |                                           |                            |                      |                     |              | 13C2 PFUnA                          | 50 ng/mL      |
|                    |          |                                           |                            |                      | LCPFACMXB_00007     | 125 uL       | Perfluorobutanesulfonic acid (PFBS) | 44.25 ng/mL   |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctane Sulfonate (PFOS)    | 47.75 ng/mL   |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 50 ng/mL      |
| ..LCMPFCSU_00046   | 03/01/17 | 11/03/16                                  | Methanol, Lot Baker 144541 | 50000 uL             | LCM2PFHxDA_00008    | 1000 uL      | 13C2-PFHxDA                         | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM2PFTeDA_00007    | 1000 uL      | 13C2-PFTeDA                         | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM4PFHFA_00007     | 1000 uL      | 13C4-PFHFA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM5PFPEA_00008     | 1000 uL      | 13C5-PFPeA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCM8FOSA_00011      | 1000 uL      | 13C8 FOSA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFBA_00008       | 1000 uL      | 13C4 PFBA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFDA_00011       | 1000 uL      | 13C2 PFDA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFDoA_00008      | 1000 uL      | 13C2 PFDoA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFHxA_00012      | 1000 uL      | 13C2 PFHxA                          | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFHxS_00008      | 1000 uL      | 1802 PFHxS                          | 0.946 ug/mL   |
|                    |          |                                           |                            |                      | LCMPFNA_00008       | 1000 uL      | 13C5 PFNA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFOA_00012       | 1000 uL      | 13C4 PFOA                           | 1 ug/mL       |
|                    |          |                                           |                            |                      | LCMPFOS_00017       | 1000 uL      | 13C4 PFOS                           | 0.956 ug/mL   |
|                    |          |                                           |                            |                      | LCMPFUDa_00009      | 1000 uL      | 13C2 PFUnA                          | 1 ug/mL       |
| ..LCM2PFHxDA_00008 | 01/07/21 | Wellington Laboratories, Lot M2PFHxDA1112 |                            |                      | (Purchased Reagent) |              | 13C2-PFHxDA                         | 50 ug/mL      |
| ..LCM2PFTeDA_00007 | 12/07/20 | Wellington Laboratories, Lot M2PFTeDA1115 |                            |                      | (Purchased Reagent) |              | 13C2-PFTeDA                         | 50 ug/mL      |
| ..LCM4PFHFA_00007  | 05/27/21 | Wellington Laboratories, Lot M4PFHFA0516  |                            |                      | (Purchased Reagent) |              | 13C4-PFHFA                          | 50 ug/mL      |
| ..LCM5PFPEA_00008  | 05/22/20 | Wellington Laboratories, Lot M5PFPeA0515  |                            |                      | (Purchased Reagent) |              | 13C5-PFPeA                          | 50 ug/mL      |
| ..LCM8FOSA_00011   | 12/22/17 | Wellington Laboratories, Lot M8FOSA1215I  |                            |                      | (Purchased Reagent) |              | 13C8 FOSA                           | 50 ug/mL      |
| ..LCMPFBA_00008    | 05/24/21 | Wellington Laboratories, Lot MPFBA0516    |                            |                      | (Purchased Reagent) |              | 13C4 PFBA                           | 50 ug/mL      |
| ..LCMPFDA_00011    | 08/19/20 | Wellington Laboratories, Lot MPFDA0815    |                            |                      | (Purchased Reagent) |              | 13C2 PFDA                           | 50 ug/mL      |
| ..LCMPFDoA_00008   | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416   |                            |                      | (Purchased Reagent) |              | 13C2 PFDoA                          | 50 ug/mL      |
| ..LCMPFHxA_00012   | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416   |                            |                      | (Purchased Reagent) |              | 13C2 PFHxA                          | 50 ug/mL      |
| ..LCMPFHxS_00008   | 10/23/20 | Wellington Laboratories, Lot MPFHxS1015   |                            |                      | (Purchased Reagent) |              | 1802 PFHxS                          | 47.3 ug/mL    |
| ..LCMPFNA_00008    | 04/13/19 | Wellington Laboratories, Lot MPFNA0414    |                            |                      | (Purchased Reagent) |              | 13C5 PFNA                           | 50 ug/mL      |
| ..LCMPFOA_00012    | 01/22/21 | Wellington Laboratories, Lot MPFOA0116    |                            |                      | (Purchased Reagent) |              | 13C4 PFOA                           | 50 ug/mL      |
| ..LCMPFOS_00017    | 08/03/21 | Wellington Laboratories, Lot MPFOS0816    |                            |                      | (Purchased Reagent) |              | 13C4 PFOS                           | 47.8 ug/mL    |
| ..LCMPFUDa_00009   | 02/12/21 | Wellington Laboratories, Lot MPFUDa0216   |                            |                      | (Purchased Reagent) |              | 13C2 PFUnA                          | 50 ug/mL      |
| ..LCPFACMXB_00007  | 11/06/20 | Wellington Laboratories, Lot PFACMXB1115  |                            |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS) | 1.77 ug/mL    |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctane Sulfonate (PFOS)    | 1.91 ug/mL    |
|                    |          |                                           |                            |                      |                     |              | Perfluorooctanoic acid (PFOA)       | 2 ug/mL       |
| LCPFCSP_00070      | 05/15/17 | 11/15/16                                  | Methanol, Lot 090285       | 10000 uL             | LCPFBA_00005        | 100 uL       | Perfluorobutyric acid               | 0.5 ug/mL     |
|                    |          |                                           |                            |                      | LCPFBS_00005        | 100 uL       | Perfluorobutane Sulfonate           | 0.442 ug/mL   |
|                    |          |                                           |                            |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 0.442 ug/mL   |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-23783-1

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

| Reagent ID        | Exp Date | Prep Date                                 | Dilutant Used | Reagent Final Volume | Parent Reagent      |              | Analyte                             | Concentration |
|-------------------|----------|-------------------------------------------|---------------|----------------------|---------------------|--------------|-------------------------------------|---------------|
|                   |          |                                           |               |                      | Reagent ID          | Volume Added |                                     |               |
|                   |          |                                           |               |                      | LCPFDA_00005        | 100 uL       | Perfluorodecanoic acid              | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFDoA_00005       | 100 uL       | Perfluorododecanoic acid            | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFDS_00006        | 100 uL       | Perfluorodecane Sulfonate           | 0.482 ug/mL   |
|                   |          |                                           |               |                      |                     |              | Perfluorodecane Sulfonic acid       | 0.482 ug/mL   |
|                   |          |                                           |               |                      | LCPFHpA_00005       | 100 uL       | Perfluoroheptanoic acid             | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFHpS_00009       | 100 uL       | Perfluoroheptane Sulfonate          | 0.476 ug/mL   |
|                   |          |                                           |               |                      |                     |              | Perfluoroheptanesulfonic Acid       | 0.476 ug/mL   |
|                   |          |                                           |               |                      | LCPFHxA_00004       | 100 uL       | Perfluorohexanoic acid              | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFHxDA_00006      | 100 uL       | Perfluorohexadecanoic acid          | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFHxS-br_00002    | 100 uL       | Perfluorohexane Sulfonate           | 0.455 ug/mL   |
|                   |          |                                           |               |                      |                     |              | Perfluorohexanesulfonic acid        | 0.455 ug/mL   |
|                   |          |                                           |               |                      | LCPFNA_00005        | 100 uL       | Perfluorononanoic acid              | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFOA_00006        | 100 uL       | Perfluorooctanoic acid (PFOA)       | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFODA_00005       | 100 uL       | Perfluorooctadecanoic acid          | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFOS-br_00002     | 100 uL       | Perfluorooctane Sulfonate (PFOS)    | 0.464 ug/mL   |
|                   |          |                                           |               |                      | LCPFOSA_00006       | 100 uL       | Perfluorooctane Sulfonamide         | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFPeA_00005       | 100 uL       | Perfluoropentanoic acid             | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFTeDA_00004      | 100 uL       | Perfluorotetradecanoic acid         | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFTrDA_00004      | 100 uL       | Perfluorotridecanoic acid           | 0.5 ug/mL     |
|                   |          |                                           |               |                      | LCPFUdA_00005       | 100 uL       | Perfluoroundecanoic acid            | 0.5 ug/mL     |
| .LCPFBA_00005     | 05/27/21 | Wellington Laboratories, Lot PFBA0516     |               |                      | (Purchased Reagent) |              | Perfluorobutyric acid               | 50 ug/mL      |
| .LCPFBS_00005     | 03/15/21 | Wellington Laboratories, Lot LPFBS0316    |               |                      | (Purchased Reagent) |              | Perfluorobutane Sulfonate           | 44.2 ug/mL    |
|                   |          |                                           |               |                      |                     |              | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL    |
| .LCPFDA_00005     | 07/02/20 | Wellington Laboratories, Lot PFDA0615     |               |                      | (Purchased Reagent) |              | Perfluorodecanoic acid              | 50 ug/mL      |
| .LCPFDoA_00005    | 01/30/20 | Wellington Laboratories, Lot PFDoA0115    |               |                      | (Purchased Reagent) |              | Perfluorododecanoic acid            | 50 ug/mL      |
| .LCPFDS_00006     | 05/24/21 | Wellington Laboratories, Lot LPFDS0516    |               |                      | (Purchased Reagent) |              | Perfluorodecane Sulfonate           | 48.2 ug/mL    |
|                   |          |                                           |               |                      |                     |              | Perfluorodecane Sulfonic acid       | 48.2 ug/mL    |
| .LCPFHpA_00005    | 01/22/21 | Wellington Laboratories, Lot PFHpA0116    |               |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid             | 50 ug/mL      |
| .LCPFHpS_00009    | 11/06/20 | Wellington Laboratories, Lot LPFHpS1115   |               |                      | (Purchased Reagent) |              | Perfluoroheptane Sulfonate          | 47.6 ug/mL    |
|                   |          |                                           |               |                      |                     |              | Perfluoroheptanesulfonic Acid       | 47.6 ug/mL    |
| .LCPFHxA_00004    | 12/22/20 | Wellington Laboratories, Lot PFHxA1215    |               |                      | (Purchased Reagent) |              | Perfluorohexanoic acid              | 50 ug/mL      |
| .LCPFHxDA_00006   | 05/25/21 | Wellington Laboratories, Lot PFHxDA0516   |               |                      | (Purchased Reagent) |              | Perfluorohexadecanoic acid          | 50 ug/mL      |
| .LCPFHxS-br_00002 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 |               |                      | (Purchased Reagent) |              | Perfluorohexane Sulfonate           | 45.5 ug/mL    |
|                   |          |                                           |               |                      |                     |              | Perfluorohexanesulfonic acid        | 45.5 ug/mL    |
| .LCPFNA_00005     | 10/23/20 | Wellington Laboratories, Lot PFNA1015     |               |                      | (Purchased Reagent) |              | Perfluorononanoic acid              | 50 ug/mL      |
| .LCPFOA_00006     | 11/06/20 | Wellington Laboratories, Lot PFOA1115     |               |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)       | 50 ug/mL      |
| .LCPFODA_00005    | 01/30/20 | Wellington Laboratories, Lot PFODA0115    |               |                      | (Purchased Reagent) |              | Perfluorooctadecanoic acid          | 50 ug/mL      |
| .LCPFOS-br_00002  | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015  |               |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonate (PFOS)    | 46.4 ug/mL    |
| .LCPFOSA_00006    | 09/02/17 | Wellington Laboratories, Lot FOSA0815I    |               |                      | (Purchased Reagent) |              | Perfluorooctane Sulfonamide         | 50 ug/mL      |
| .LCPFPeA_00005    | 01/30/20 | Wellington Laboratories, Lot PFPeA0115    |               |                      | (Purchased Reagent) |              | Perfluoropentanoic acid             | 50 ug/mL      |
| .LCPFTeDA_00004   | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215   |               |                      | (Purchased Reagent) |              | Perfluorotetradecanoic acid         | 50 ug/mL      |
| .LCPFTrDA_00004   | 12/10/18 | Wellington Laboratories, Lot PFTTrDA1213  |               |                      | (Purchased Reagent) |              | Perfluorotridecanoic acid           | 50 ug/mL      |
| .LCPFUdA_00005    | 08/19/20 | Wellington Laboratories, Lot PFUdA0815    |               |                      | (Purchased Reagent) |              | Perfluoroundecanoic acid            | 50 ug/mL      |

Reagent

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**LC6:2FTS\_00001**

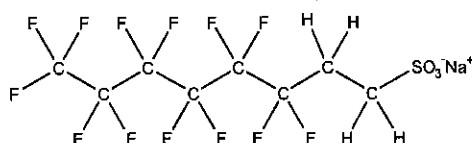
r: 7h115 &v  
S: 7h20/15 &v



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** 6:2FTS **LOT NUMBER:** 62FTS1014  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluorooctane sulfonate  
**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:**  $C_8H_4F_{13}SO_3Na$  **MOLECULAR WEIGHT:** 450.15  
**CONCENTRATION:**  $50.0 \pm 2.5 \mu\text{g/ml}$  (Na salt) **SOLVENT(S):** Methanol  
 $47.4 \pm 2.4 \mu\text{g/ml}$  (6:2FTS anion)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 10/03/2014  
**EXPIRY DATE:** (mm/dd/yyyy) 10/03/2017  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

- See page 2 for further details.

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

Certified By:

B.G. Chittim

Date: 03/27/2015  
(mm/dd/yyyy)

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

**INTENDED USE:**

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**HAZARDS:**

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

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

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

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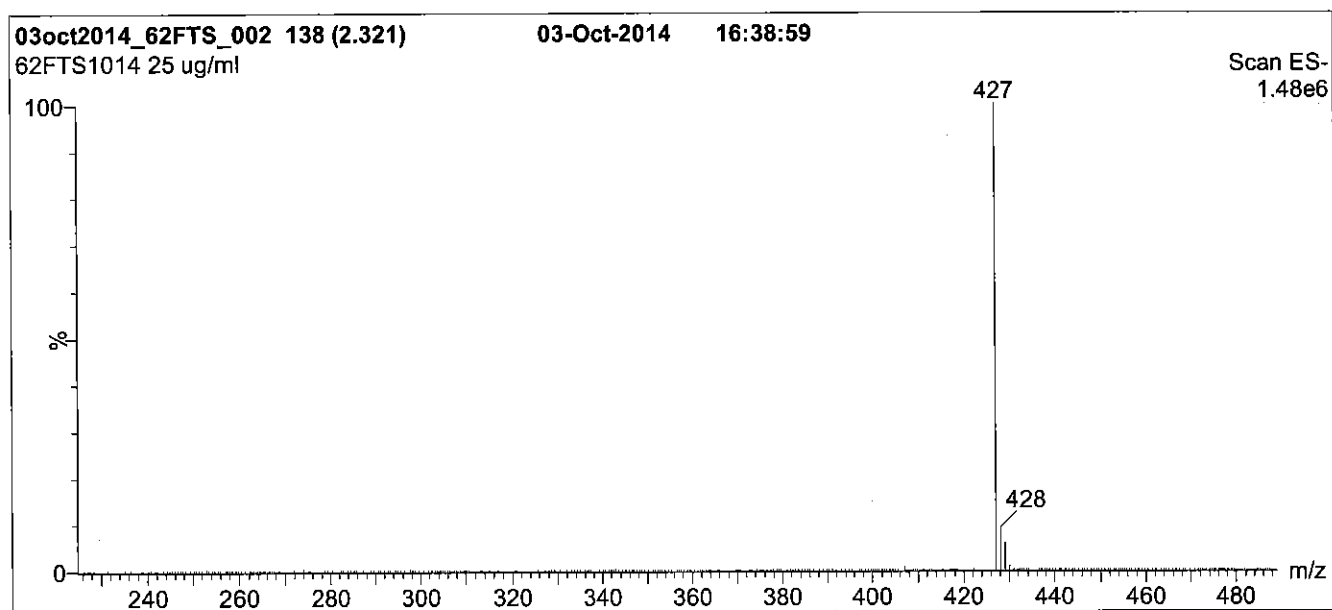
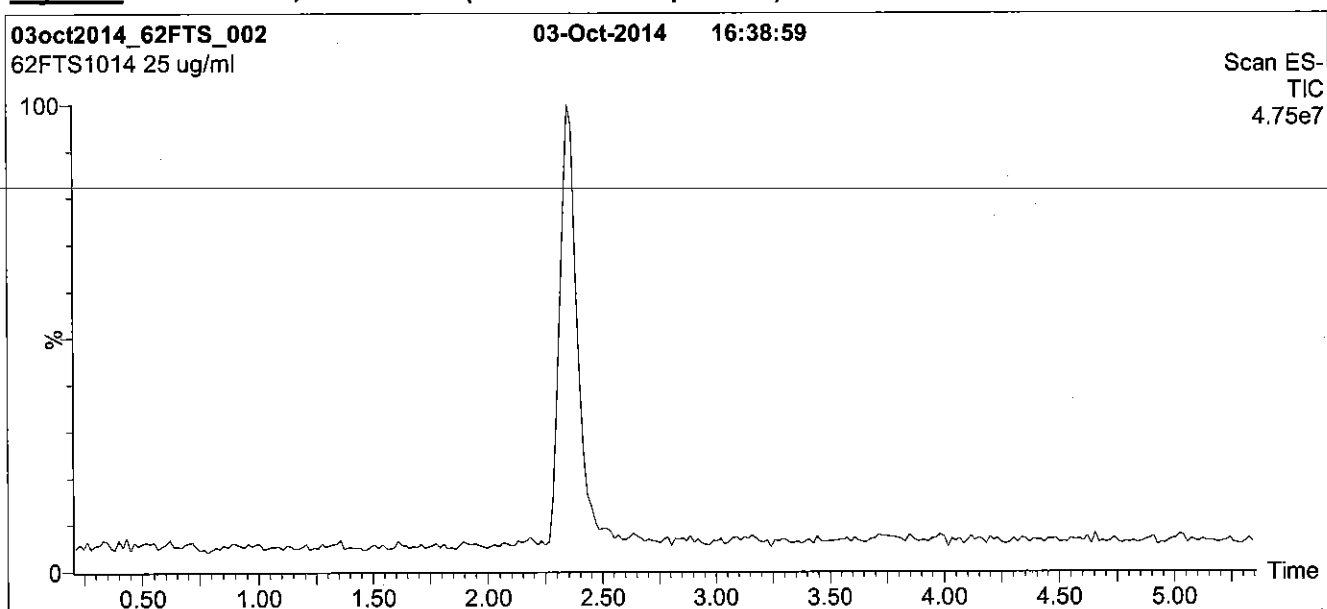
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**Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

Flow: 300  $\mu$ l/min

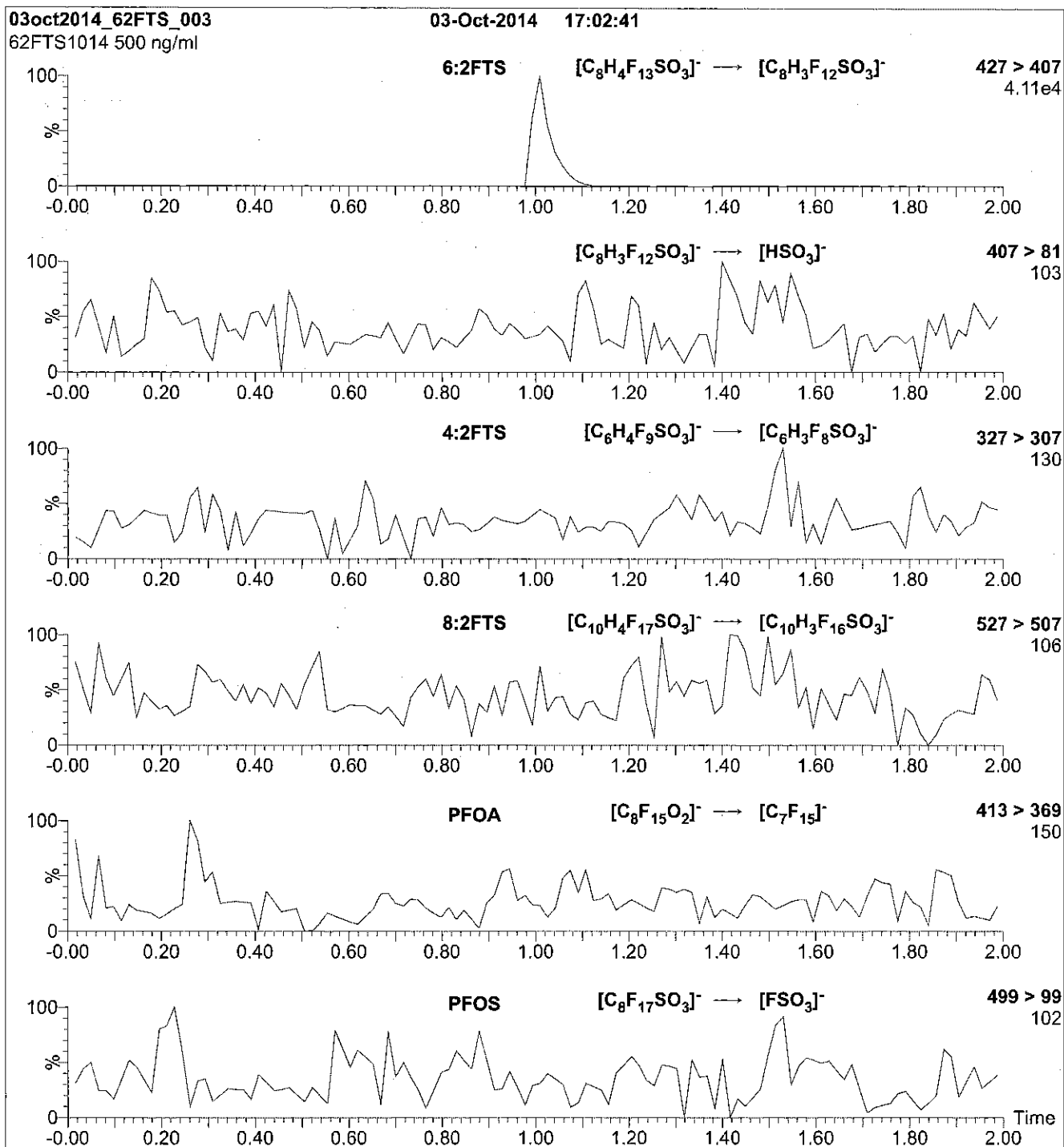
**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 30.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750



**Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml 6:2FTS)

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.50e-3  
Collision Energy (eV) = 25

Reagent

---

**LC6:2FTS\_00002**

R: 8/23/16 SBC



715544

ID: LC6:2FTS\_00002

Exp: 06/25/21 Prod: SBC

6:2FTS



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

6:2FTS

**LOT NUMBER:**

62FTS0616

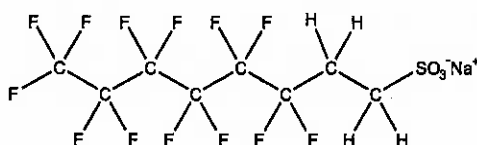
**COMPOUND:**

Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

C<sub>8</sub>H<sub>4</sub>F<sub>13</sub>SO<sub>3</sub>Na

**MOLECULAR WEIGHT:**

450.15

**CONCENTRATION:**

50.0 ± 2.5 µg/ml (Na salt)  
47.4 ± 2.4 µg/ml (6:2FTS anion)

**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

>98%

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

06/25/2016

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

06/25/2021

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

See page 2 for further details.

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Certified By:

B.G. Chittim

Date: 06/29/2016

(mm/dd/yyyy)

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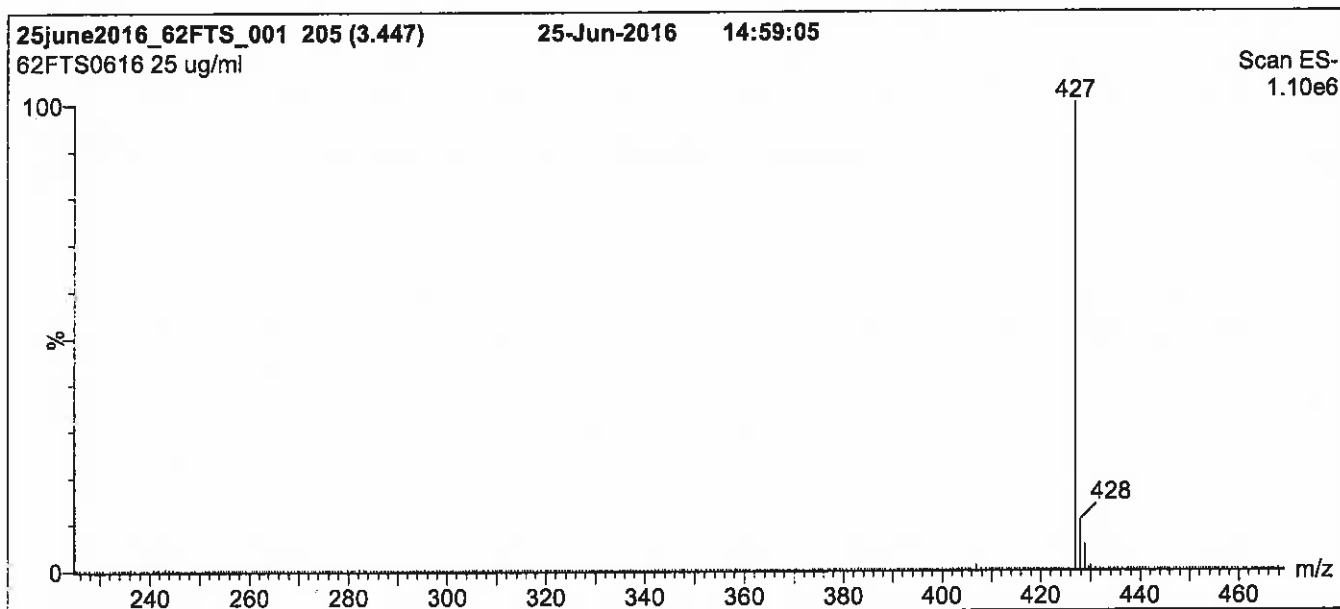
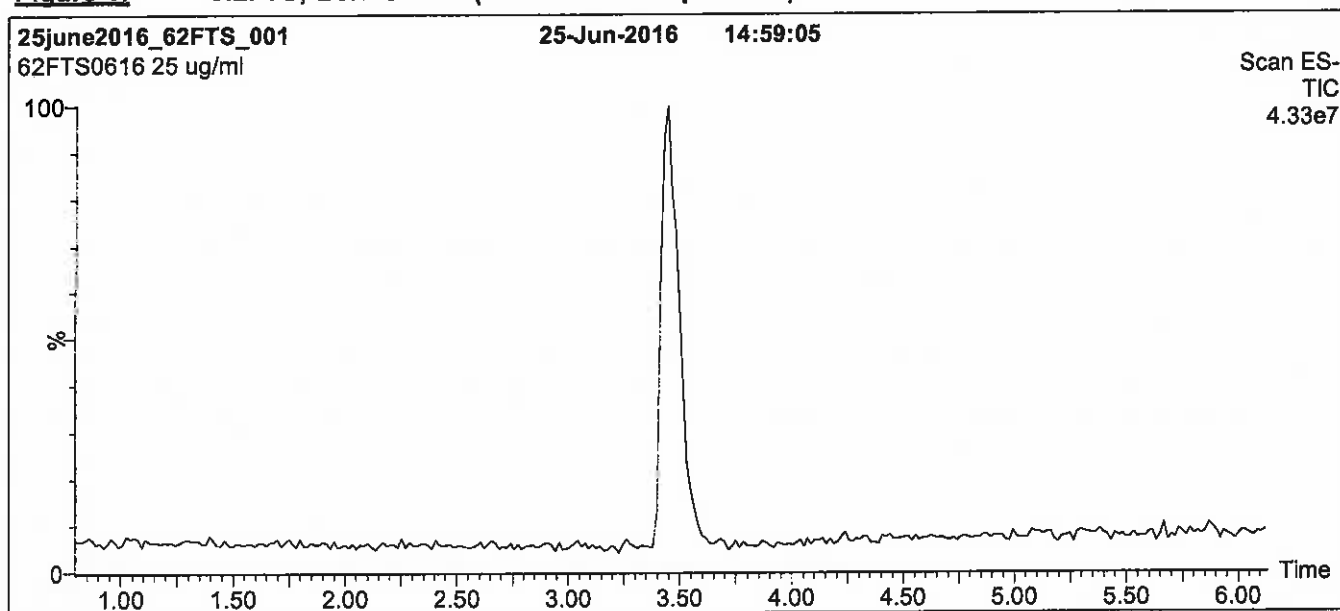
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**Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)**



**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

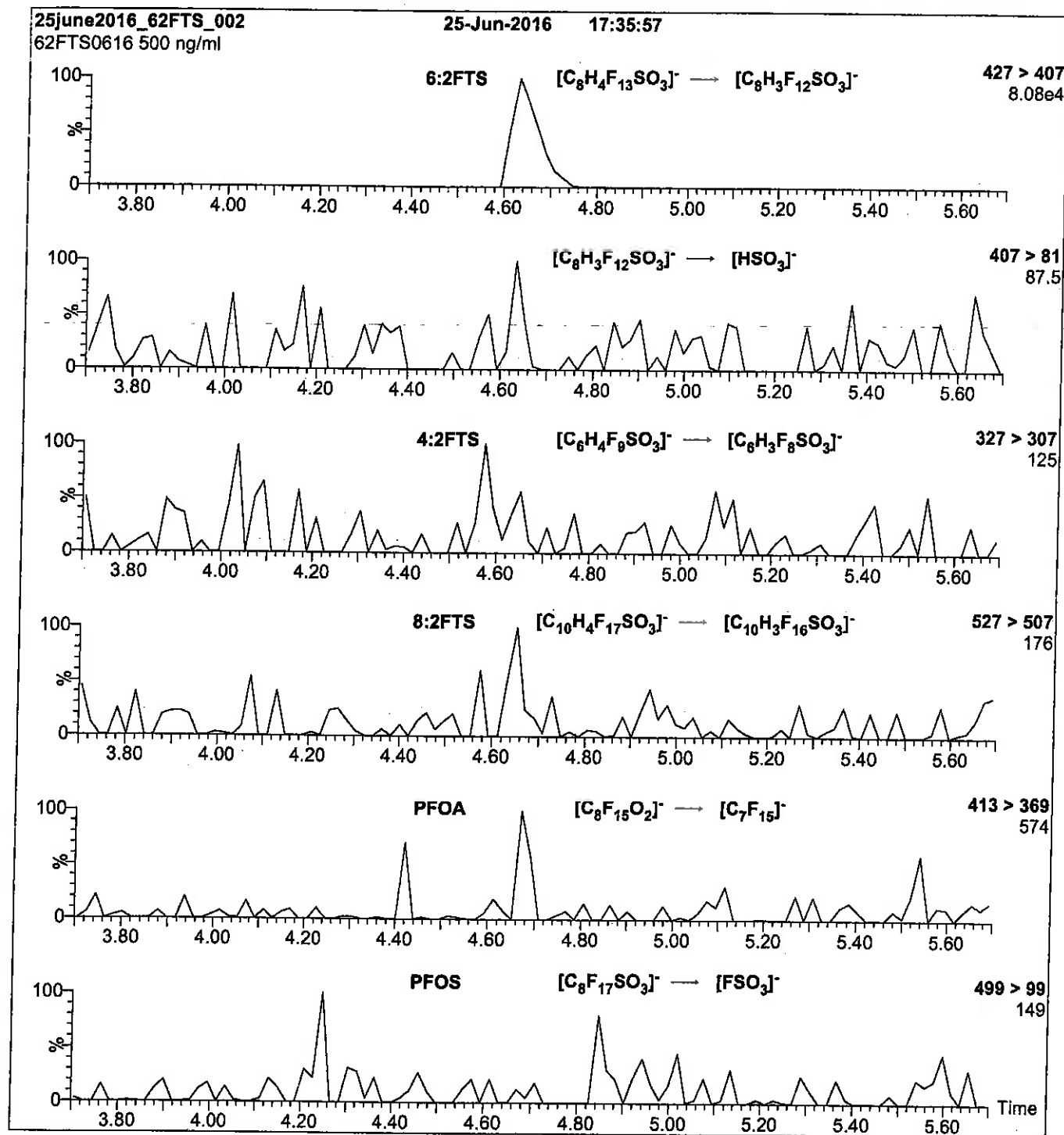
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 30.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop Injection  
10  $\mu$ l (500 ng/ml 6:2FTS)

Mobility 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) = 3.46e-3  
Collision Energy (eV) = 25

Reagent

---

**LC8 : 2FTS\_00001**

r: 7/16/15 8V  
S: 7/22/15 8V



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

8:2FTS

**LOT NUMBER:**

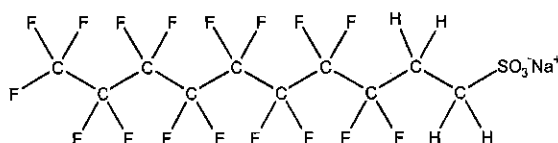
82FTS1014

**COMPOUND:**

Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $C_{10}H_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:**

550.16

**CONCENTRATION:** $50.0 \pm 2.5 \mu\text{g/ml}$  (Na salt)  
 $47.9 \pm 2.4 \mu\text{g/ml}$  (8:2FTS anion)**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

&gt;98%

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

10/03/2014

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

10/03/2017

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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Certified By:

  
B.G. Chittim

Date: 03/27/2015

(mm/dd/yyyy)

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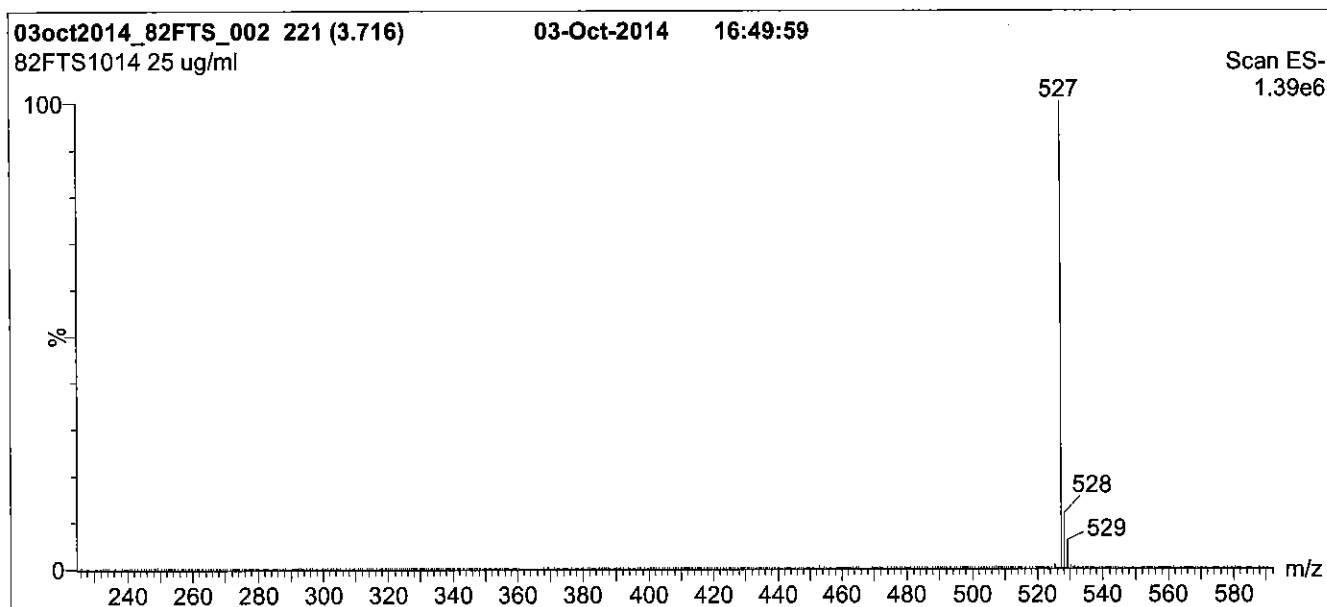
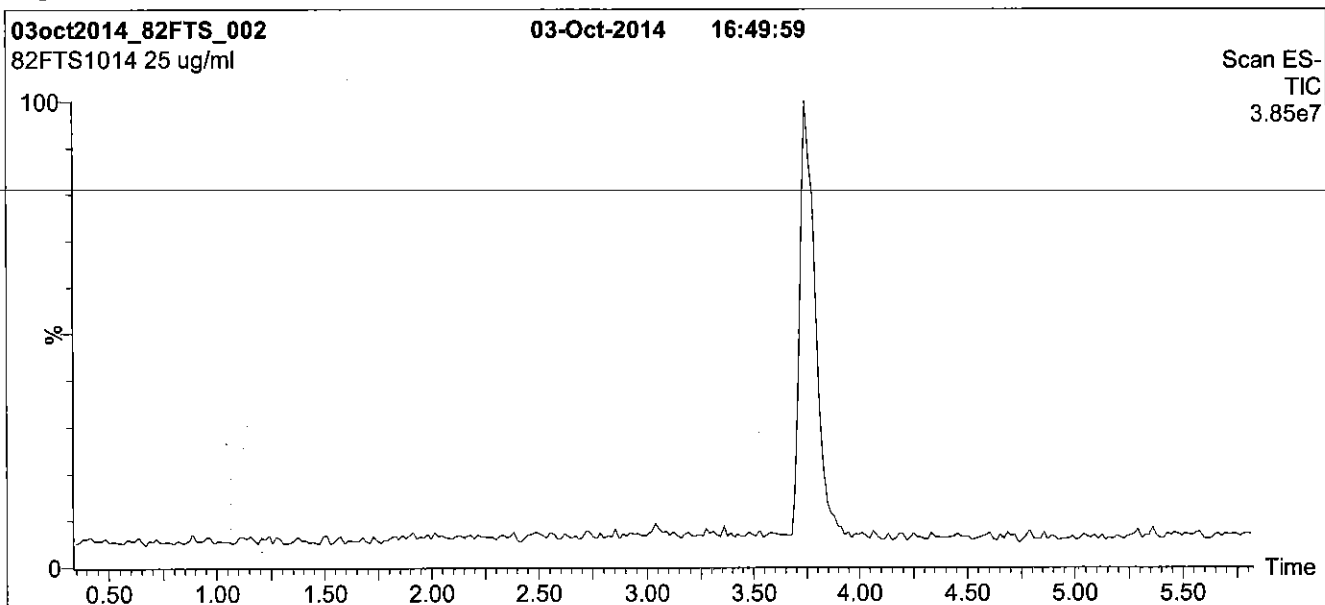
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**Figure 1:** 8:2FTS; LC/MS Data (TIC and Mass Spectrum)



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

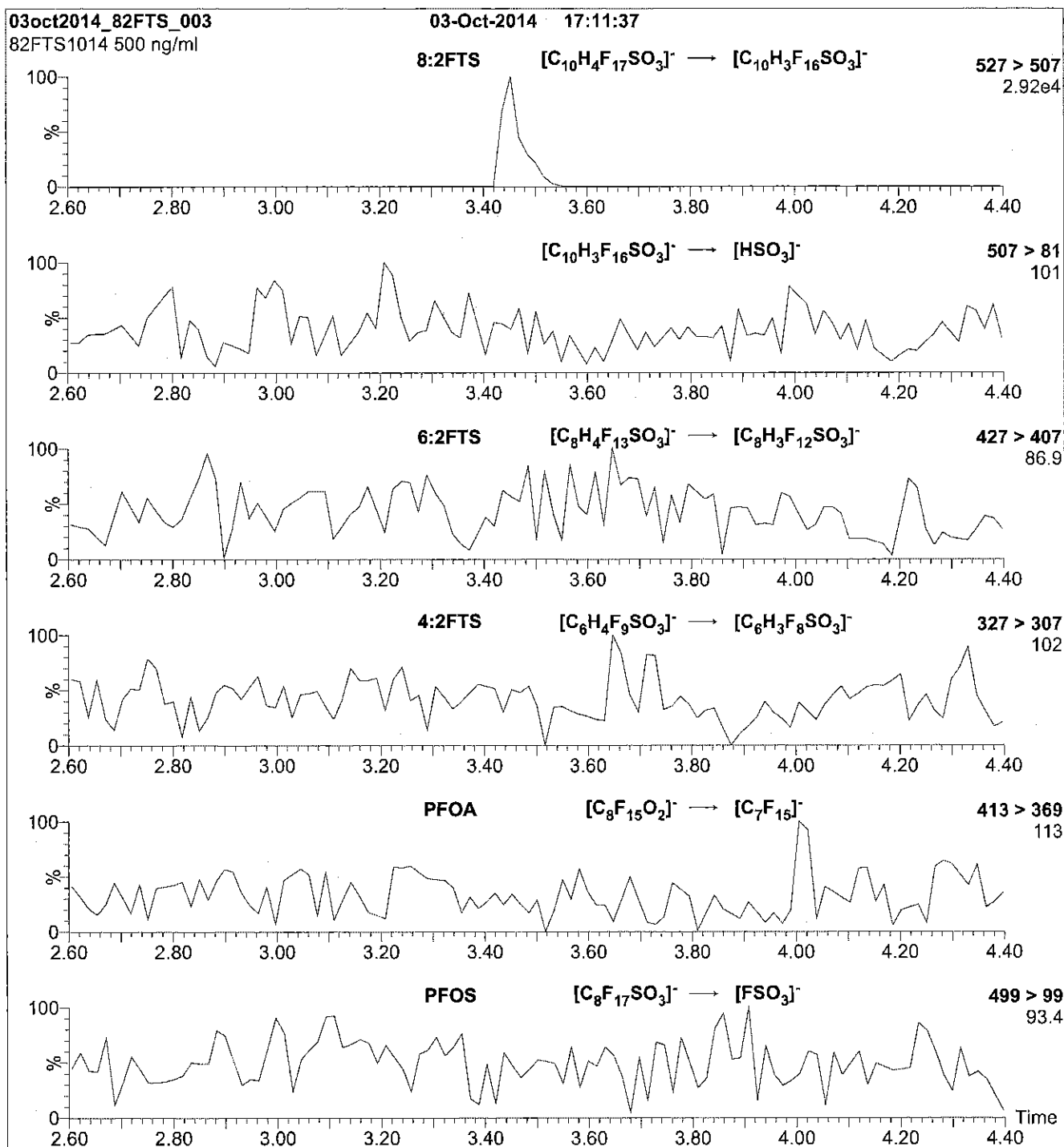
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 850 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 30.00  
**Cone Gas Flow (l/hr)** = 100  
**Desolvation Gas Flow (l/hr)** = 750

**Figure 2: 8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml 8:2FTS)

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.50e-3  
Collision Energy (eV) = 30

Reagent

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**LC8 : 2FTS\_00002**

R: 8/23/16 SBC



715545  
ID: LC8:2FTS\_00002  
Exp: 10/23/20 Prod: SBC  
8:2FTS

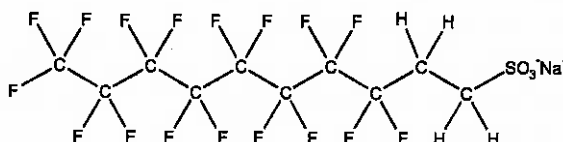


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** 8:2FTS **LOT NUMBER:** 82FTS1015  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

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



**MOLECULAR FORMULA:**  $C_{10}H_4F_{17}SO_3Na$  **MOLECULAR WEIGHT:** 550.16  
**CONCENTRATION:**  $50.0 \pm 2.5 \mu\text{g/ml}$  (Na salt) **SOLVENT(S):** Methanol  
 $47.9 \pm 2.4 \mu\text{g/ml}$  (8:2FTS anion)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 10/23/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 10/23/2020  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

See page 2 for further details.

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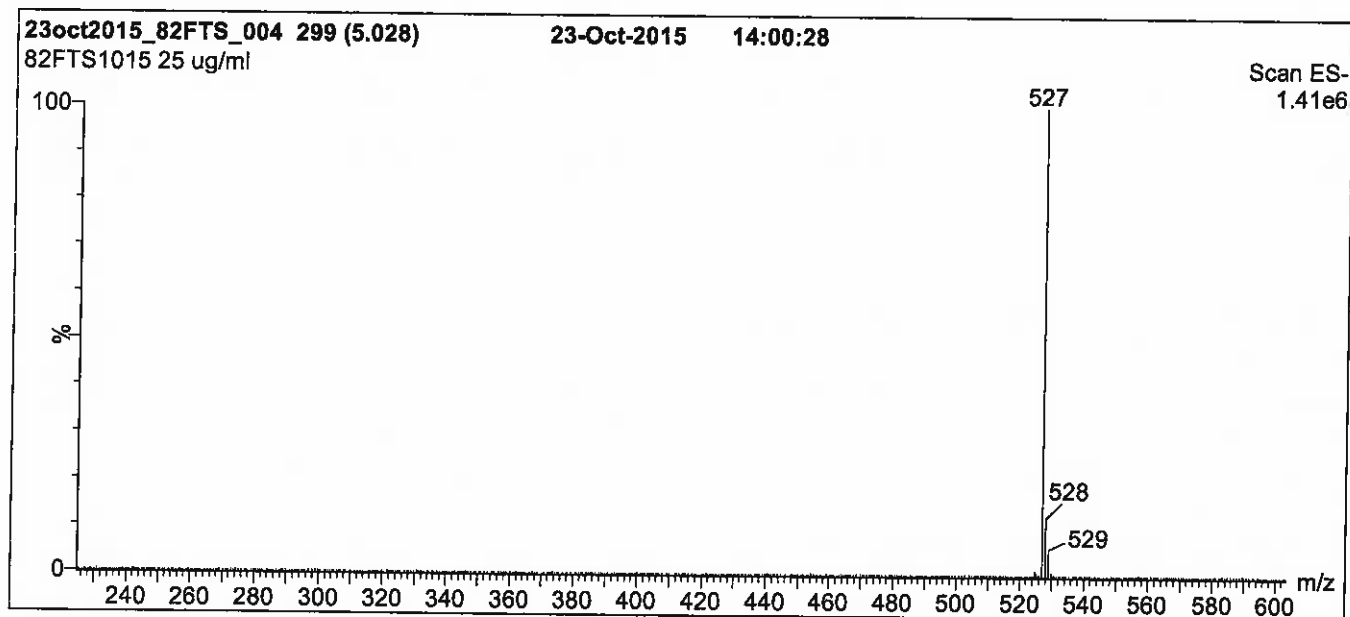
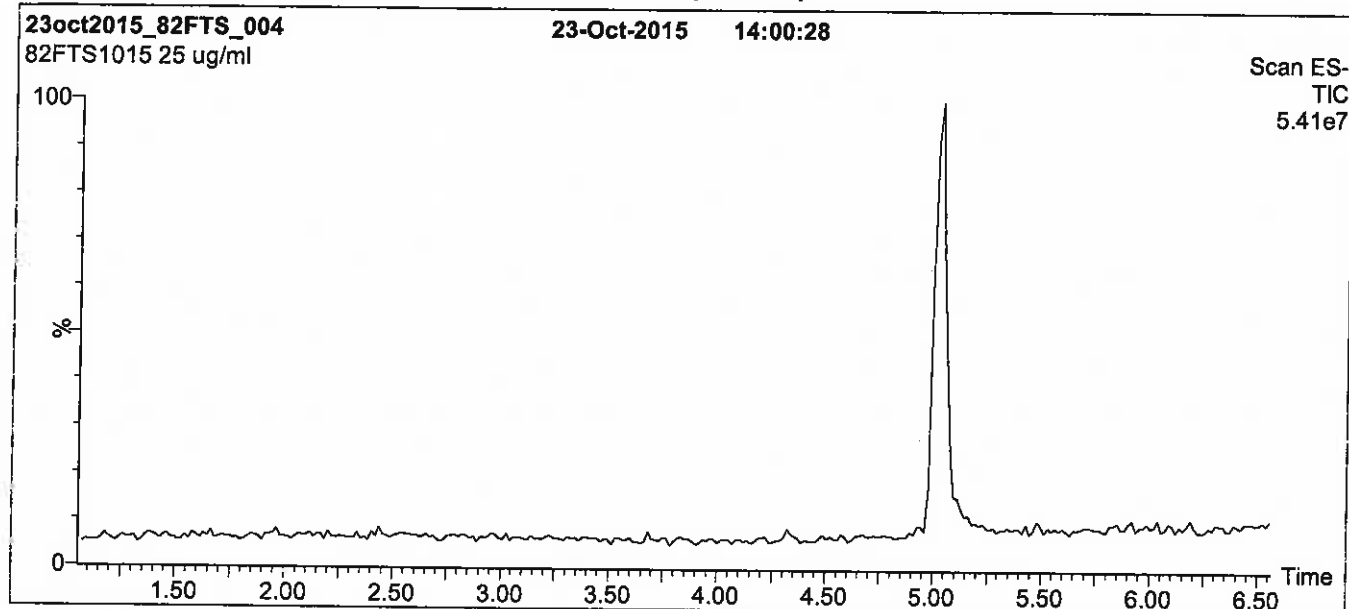
**QUALITY MANAGEMENT:**

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



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**Figure 1:** 8:2FTS; LC/MS Data (TIC and Mass Spectrum)



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

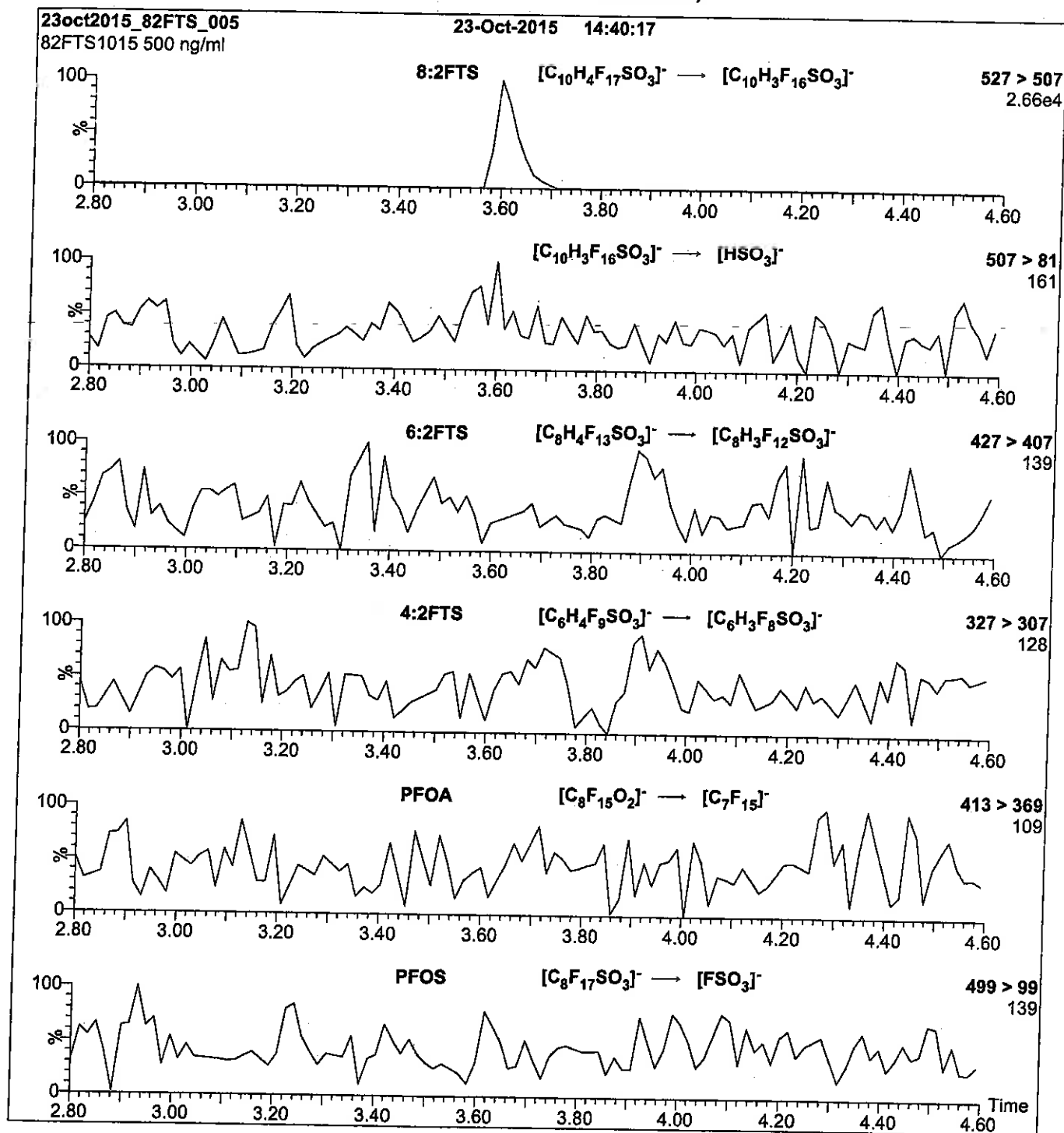
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 850 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 30.00  
**Cone Gas Flow (l/hr)** = 100  
**Desolvation Gas Flow (l/hr)** = 750

**Figure 2: 8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml 8:2FTS)

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) = 3.28e-3  
Collision Energy (eV) = 30



Reagent

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**LCd-NEtFOSA-M\_00001**

C: 7/16/15 8/



# WELLINGTON LABORATORIES

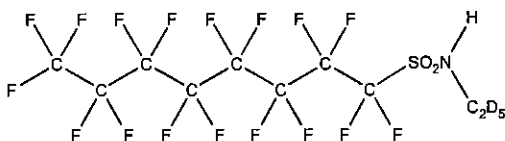
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** d-N-EtFOSA-M  
**COMPOUND:** N-ethyl-d<sub>5</sub>-perfluoro-1-octanesulfonamide

**LOT NUMBER:** dNEtFOSA0314M

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** C<sub>10</sub>D<sub>6</sub>HF<sub>17</sub>NO<sub>2</sub>S  
**CONCENTRATION:** 50 ± 2.5 µg/ml  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 03/10/2014  
**EXPIRY DATE:** (mm/dd/yyyy) 03/10/2019  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 532.23  
**SOLVENT(S):** Methanol  
**ISOTOPIC PURITY:** ≥98% <sup>2</sup>H<sub>5</sub>

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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

**Certified By:**

B.G. Chittim

**Date:** 04/01/2015

(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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

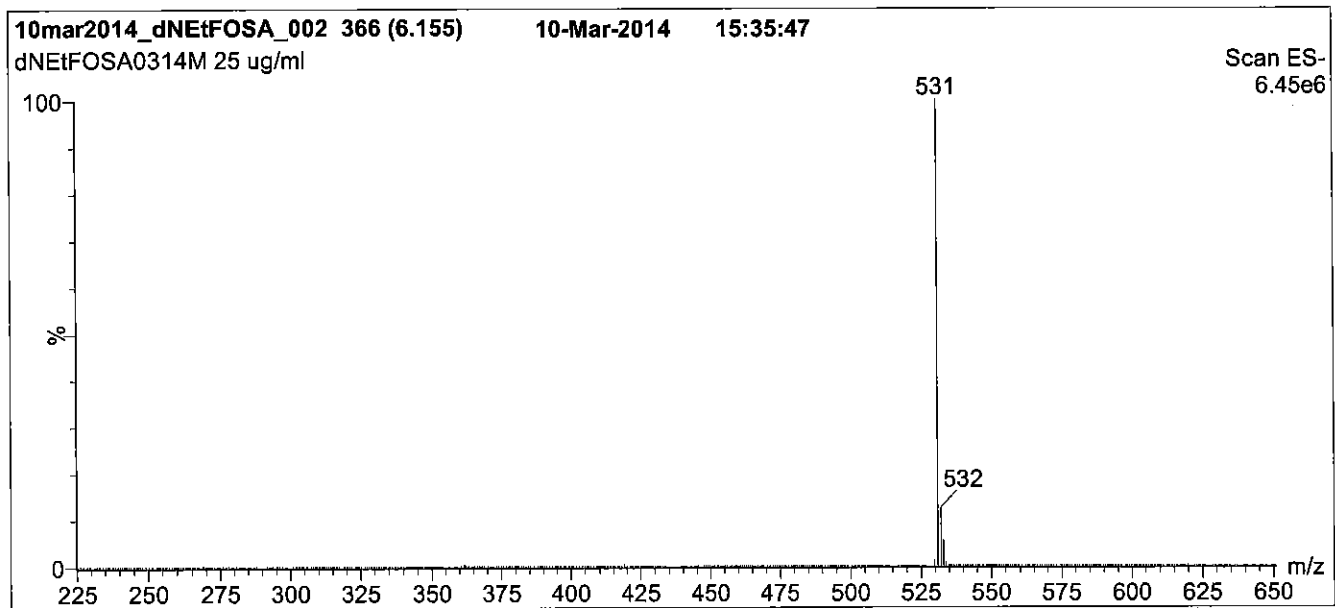
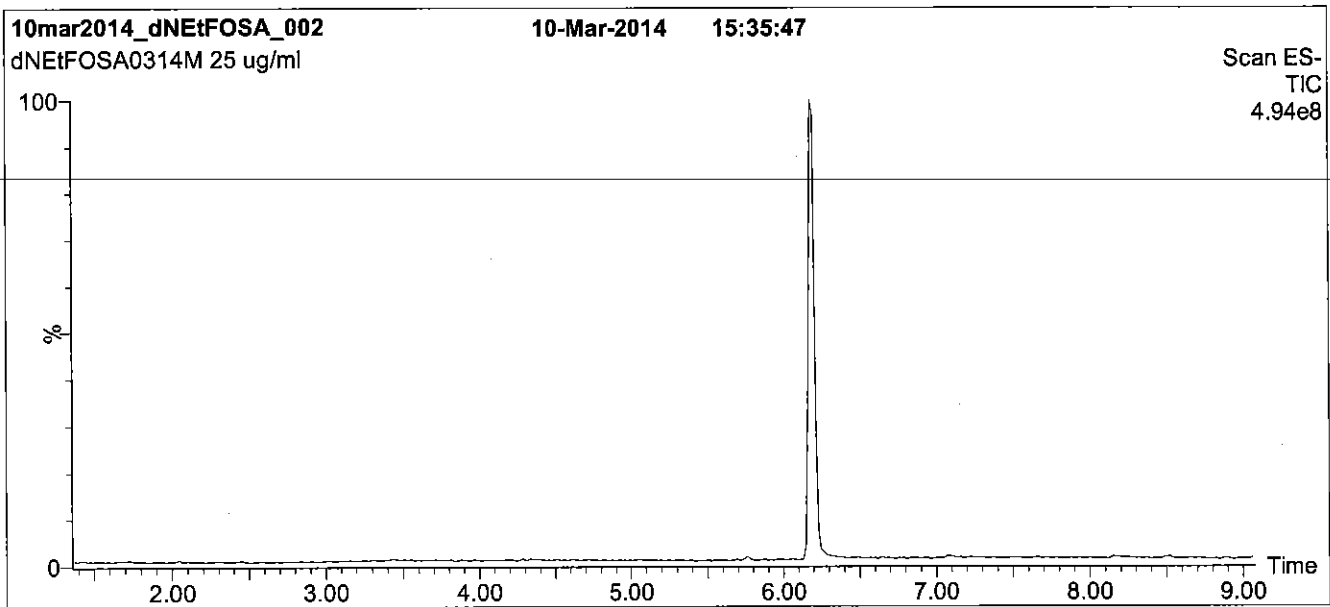
**QUALITY MANAGEMENT:**

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**Figure 1:** d-N-EtFOSA-M; 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: 40% H<sub>2</sub>O / 60% (80:20 MeOH:ACN)  
(both with 10mM 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

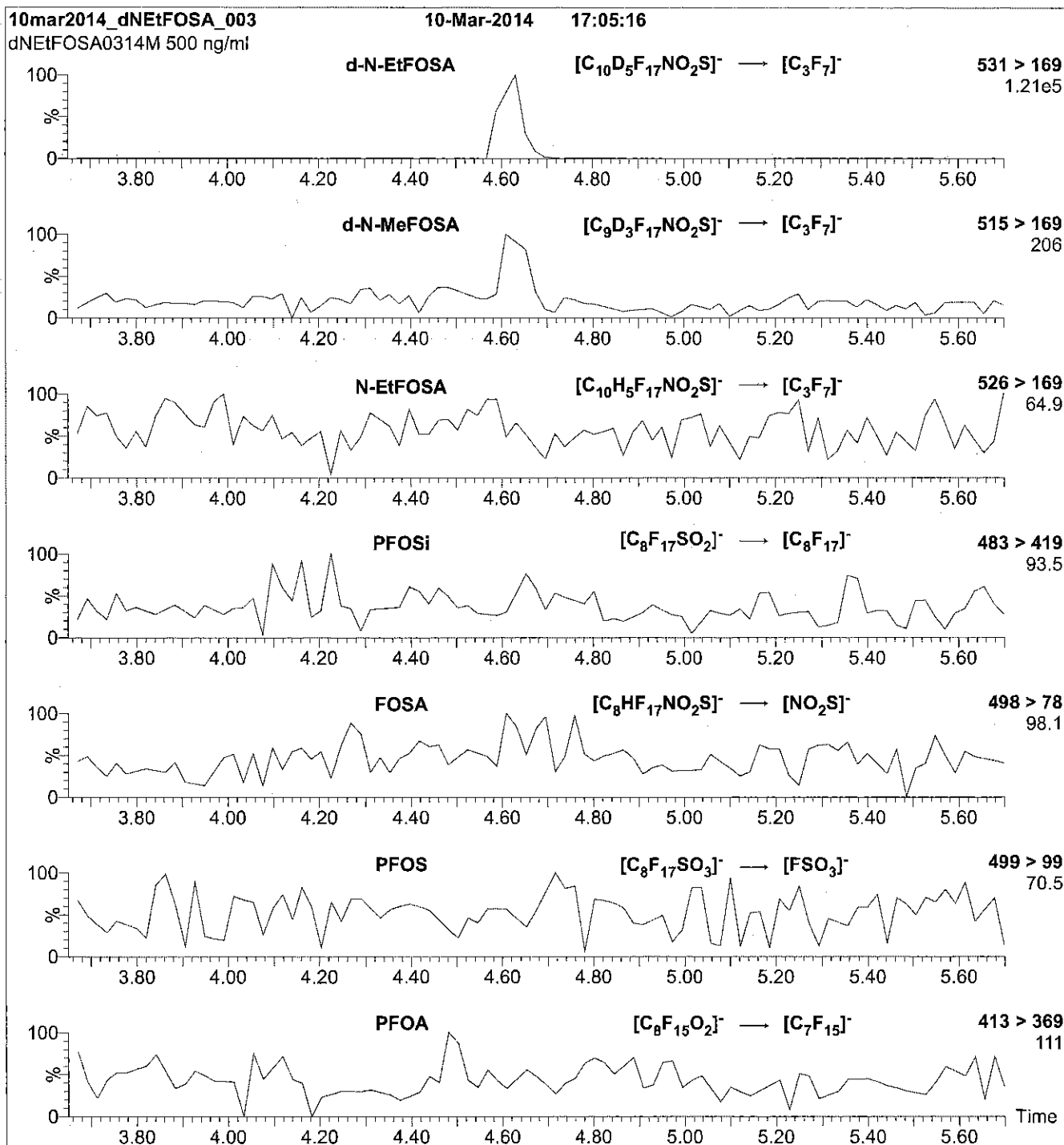
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 950 amu)

**Source:** Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 40.00  
Cone Gas Flow (l/hr) = 100  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: d-N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml d-N-EtFOSA-M)

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

Reagent

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**LCd-NEtFOSA-M\_00002**

R-7/6/16 CAN



671571  
 ID: LCd-NEtFOSA-M\_00002  
 Exp: 03/10/19 Pripd: CBW  
 d-N-EtFOSA-M



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

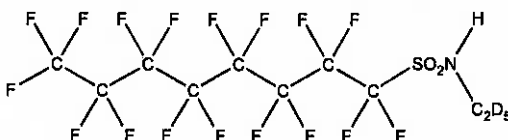
d-N-EtFOSA-M

**LOT NUMBER:**

dNEtFOSA0314M

**COMPOUND:**N-ethyl-d<sub>5</sub>-perfluoro-1-octanesulfonamide**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**C<sub>10</sub>D<sub>5</sub>HF<sub>17</sub>NO<sub>2</sub>S**CONCENTRATION:**

50 ± 2.5 µg/ml

**CHEMICAL PURITY:**

&gt;98%

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

03/10/2014

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

03/10/2019

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:**

532.23

**SOLVENT(S):**

Methanol

**ISOTOPIC PURITY:**≥98% <sup>2</sup>H<sub>5</sub>**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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

Certified By:

  
 B.G. Chittim

Date: 04/01/2015

(mm/dd/yyyy)

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

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

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**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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**QUALITY MANAGEMENT:**

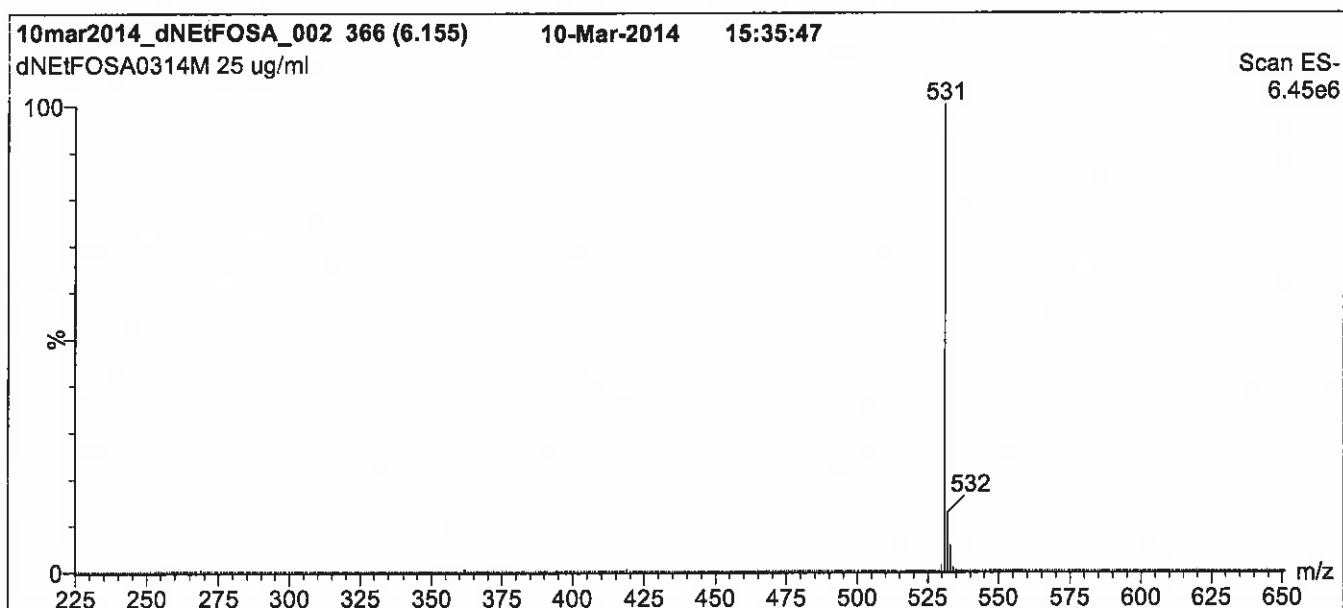
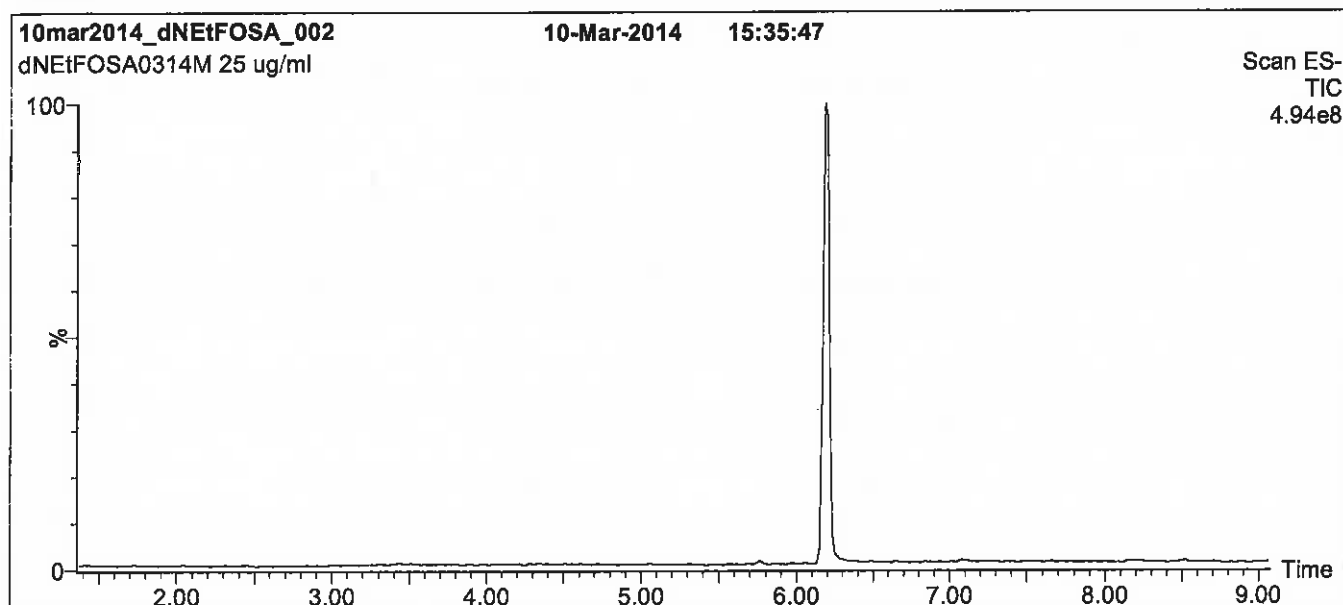
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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**Figure 1: d-N-EtFOSA-M; 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:** Gracient  
Start: 40% H<sub>2</sub>O / 60% (80:20 MeOH:ACN)  
(both with 10mM 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

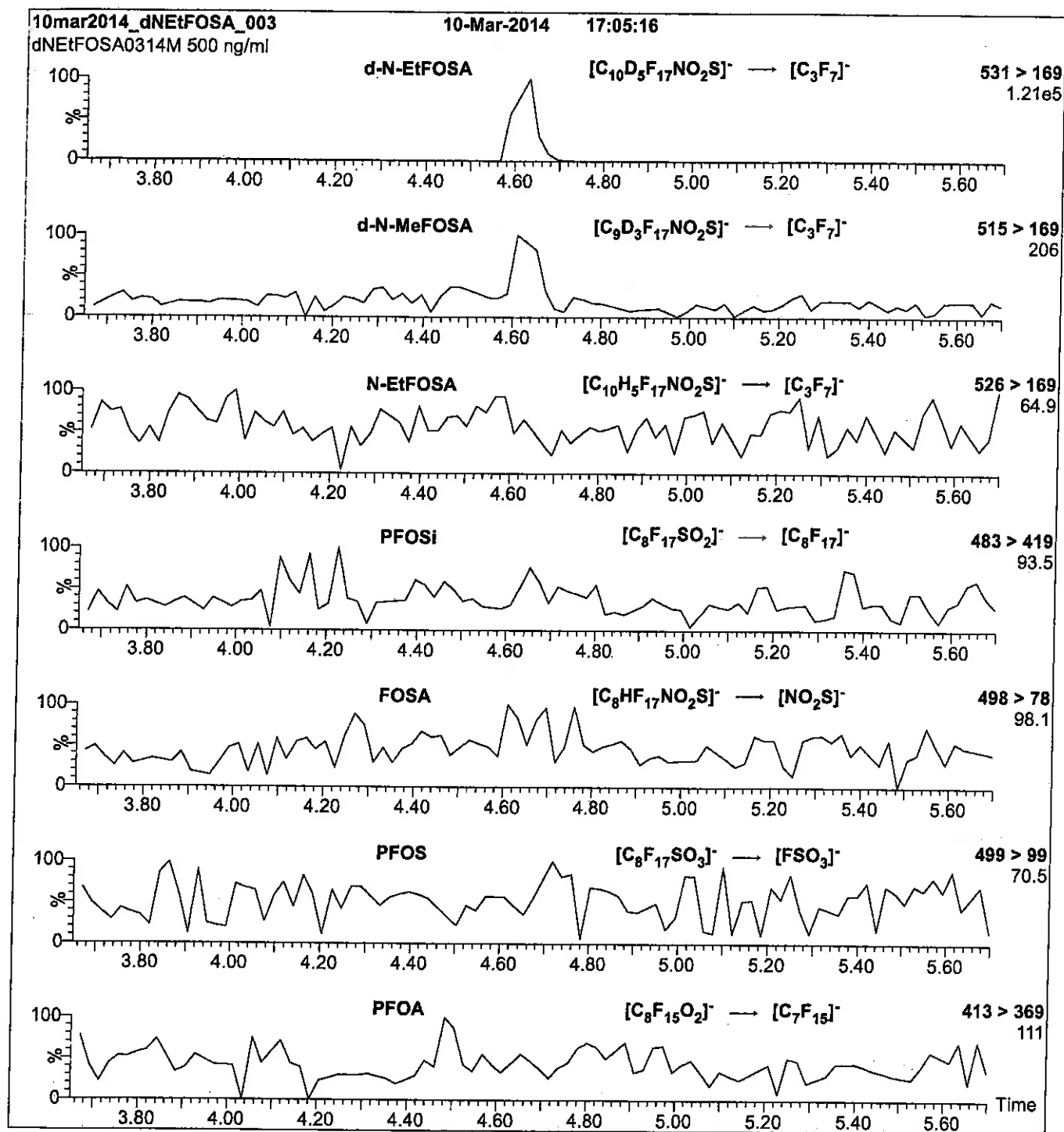
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 950 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 40.00  
**Cone Gas Flow (l/hr)** = 100  
**Desolvation Gas Flow (l/hr)** = 750

**Figure 2:** d-N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml d-N-EtFOSA-M)

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

Reagent

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**LCd-NMeFOSA-M\_00001**

r: 7/16/15 SKW



# WELLINGTON LABORATORIES

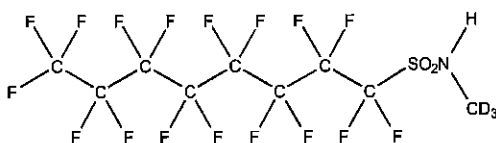
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** d-N-MeFOSA-M  
**COMPOUND:** N-methyl-d<sub>3</sub>-perfluoro-1-octanesulfonamide

**LOT NUMBER:** dNMeFOSA0114M

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** C<sub>9</sub>D<sub>3</sub>HF<sub>17</sub>NO<sub>2</sub>S  
**CONCENTRATION:** 50 ± 2.5 µg/ml  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 01/28/2014  
**EXPIRY DATE:** (mm/dd/yyyy) 01/28/2019  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 516.19  
**SOLVENT(S):** Methanol  
**ISOTOPIC PURITY:** ≥98% <sup>2</sup>H<sub>3</sub>

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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**Certified By:**

B.G. Chittim

**Date:** 04/01/2015  
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
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where  $x$  is expressed as a relative standard uncertainty of the individual parameter.

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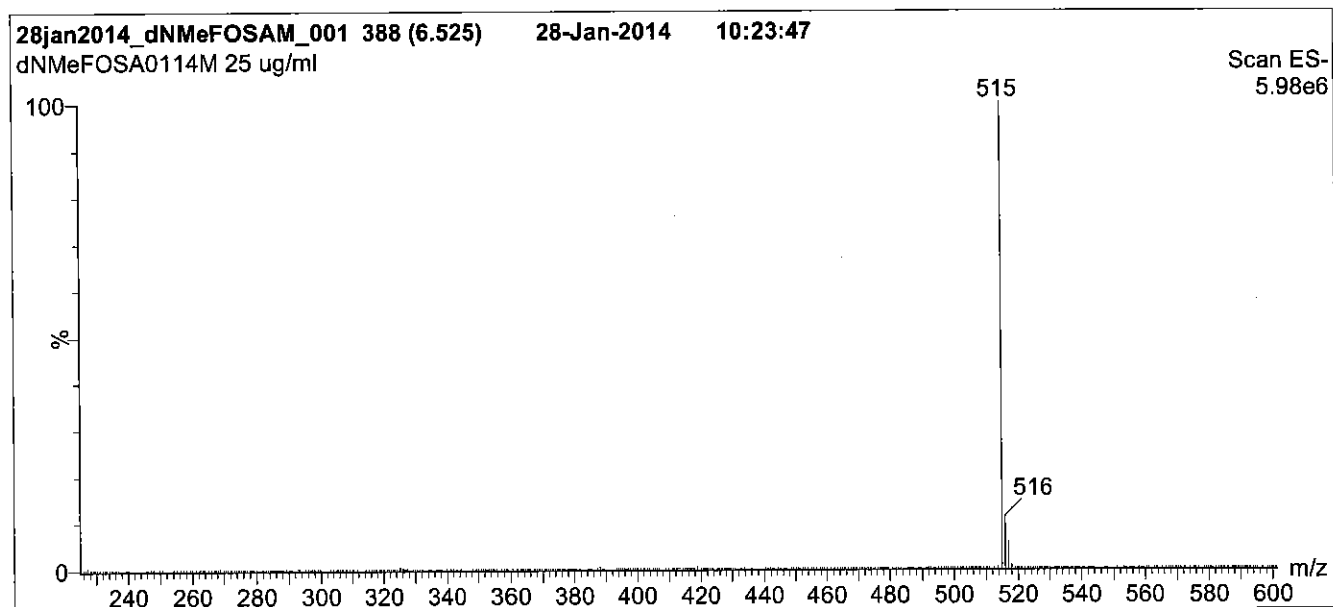
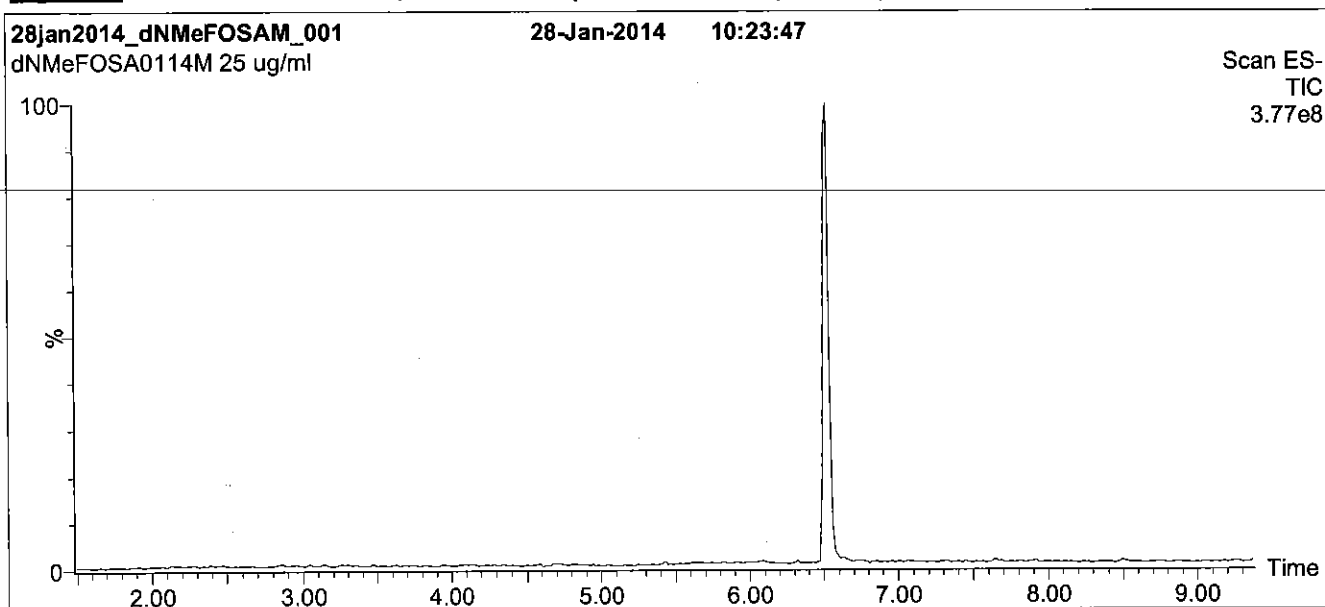
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**Figure 1: d-N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)**



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

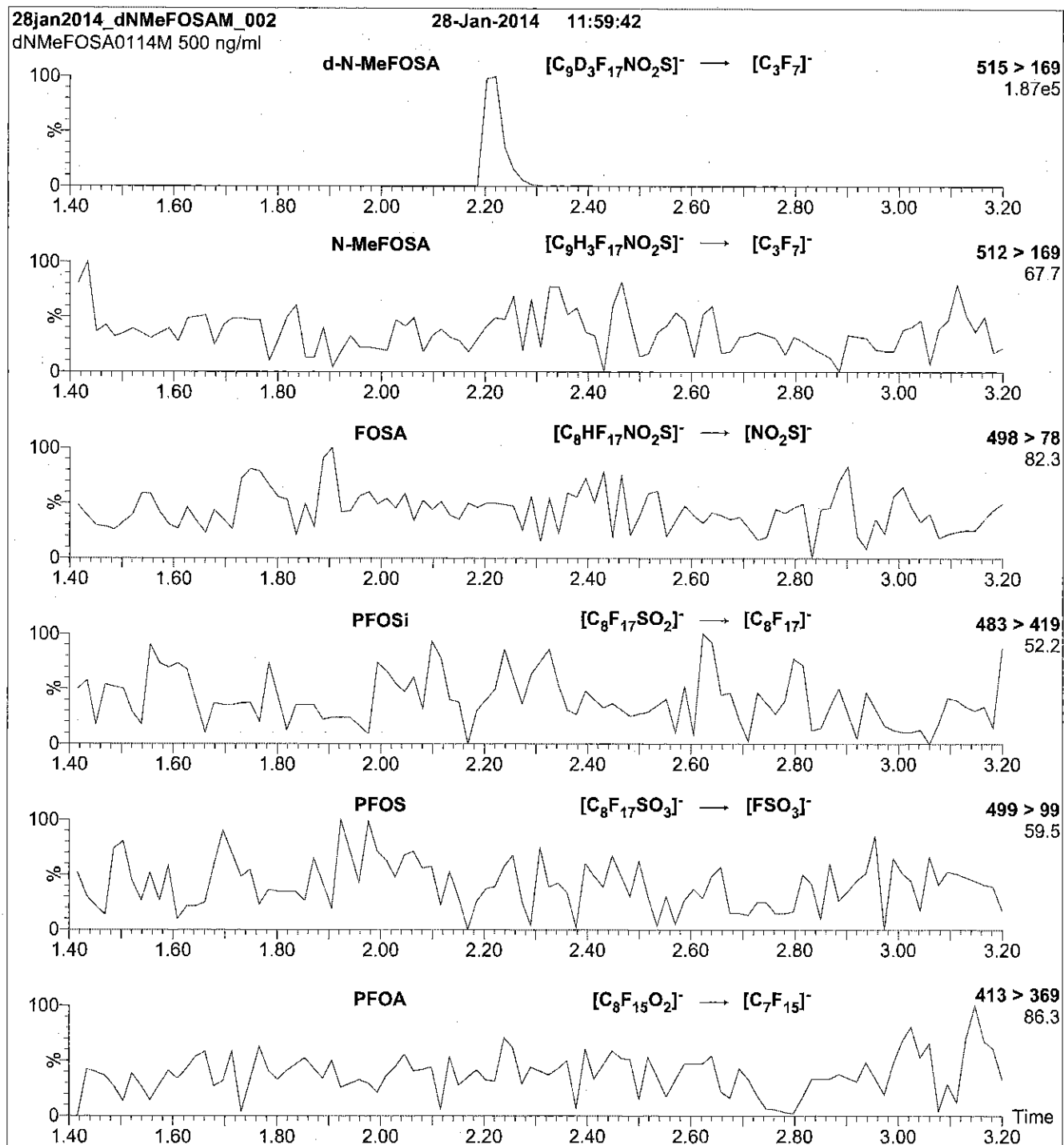
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

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

**Figure 2: d-N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml d-N-MeFOSA-M)

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) = 3.50e-3  
Collision Energy (eV) = 30

Reagent

---

**LCd-NMeFOSA-M\_00002**





671625

ID: LCd-NMeFOSA-M\_00002

Exp: 06/13/21 Prep: CBW

d-N-MeFOSA-M



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

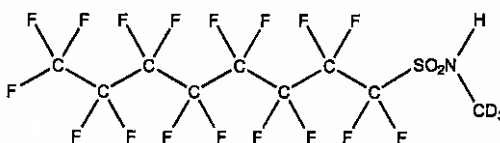
d-N-MeFOSA-M

**LOT NUMBER:**

dNMeFOSA0616M

**COMPOUND:**N-methyl-d<sub>3</sub>-perfluoro-1-octanesulfonamide**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**C<sub>8</sub>D<sub>3</sub>HF<sub>17</sub>NO<sub>2</sub>S**CONCENTRATION:**

50 ± 2.5 µg/ml

**CHEMICAL PURITY:**

&gt;98%

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

06/10/2016

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

06/10/2021

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:**

516.19

**SOLVENT(S):**

Methanol

**ISOTOPIC PURITY:**≥98% <sup>2</sup>H<sub>3</sub>**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

See page 2 for further details.

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

Certified By:

  
B.G. Chittim

Date: 06/16/2016

(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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**LIMITED WARRANTY:**

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

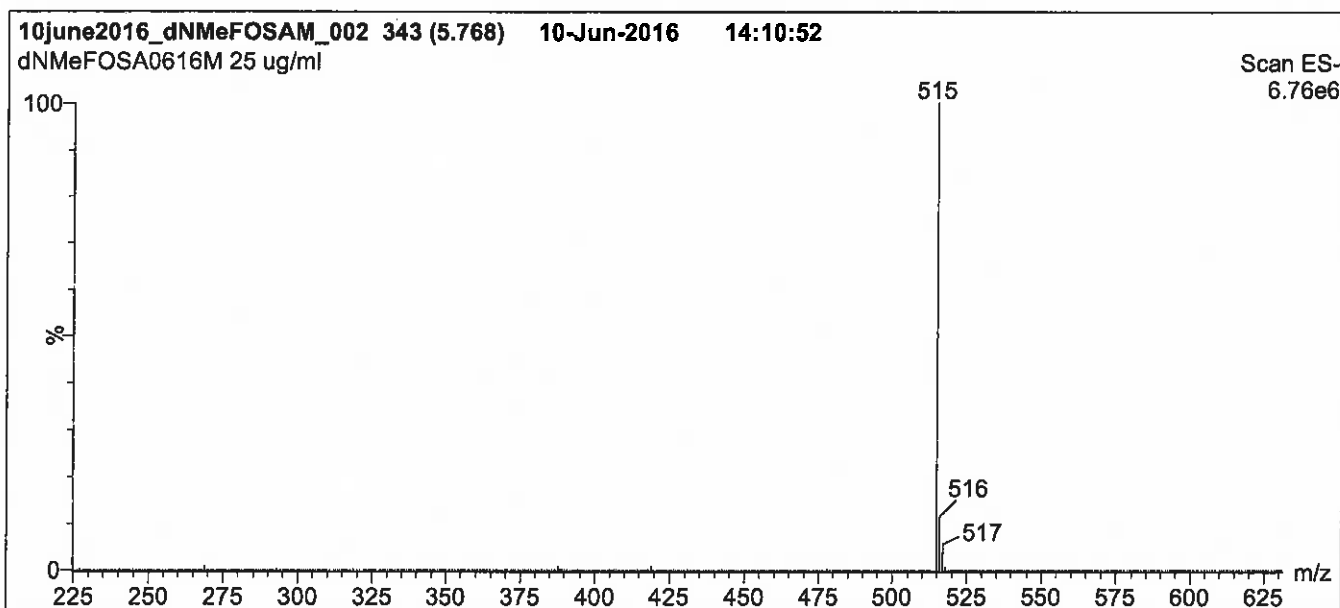
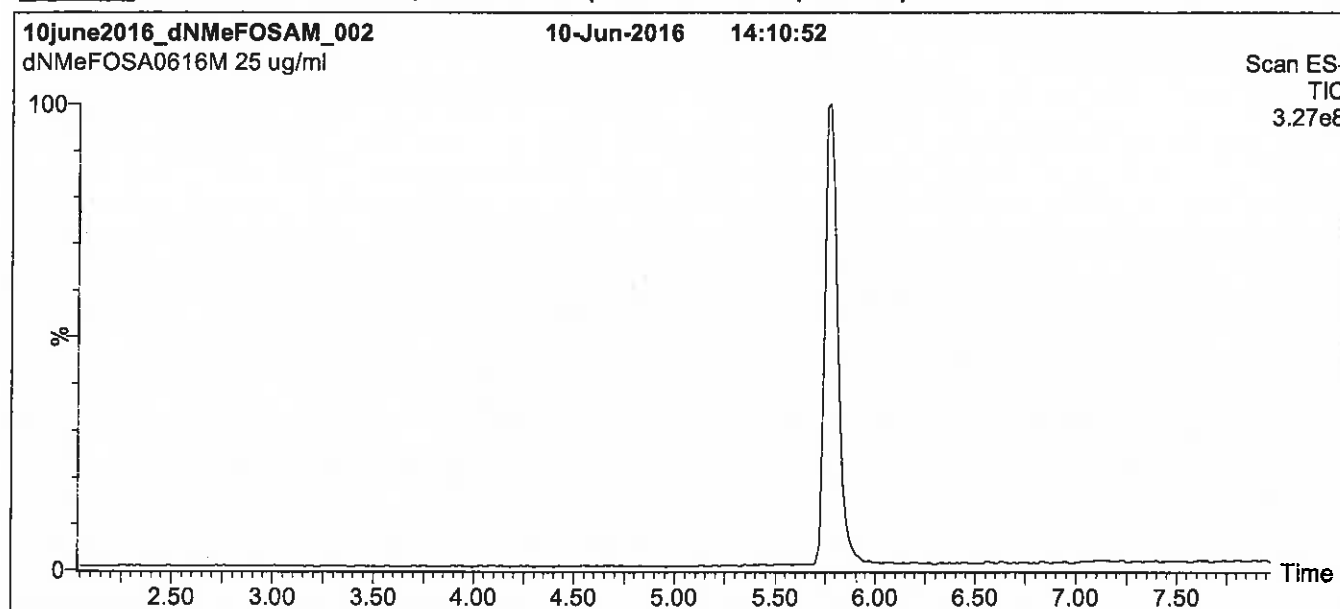
**QUALITY MANAGEMENT:**

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



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**Figure 1:** d-N-MeFOSA-M; 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: 40% H<sub>2</sub>O / 60% (80:20 MeOH:ACN)  
(both with 10mM 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)

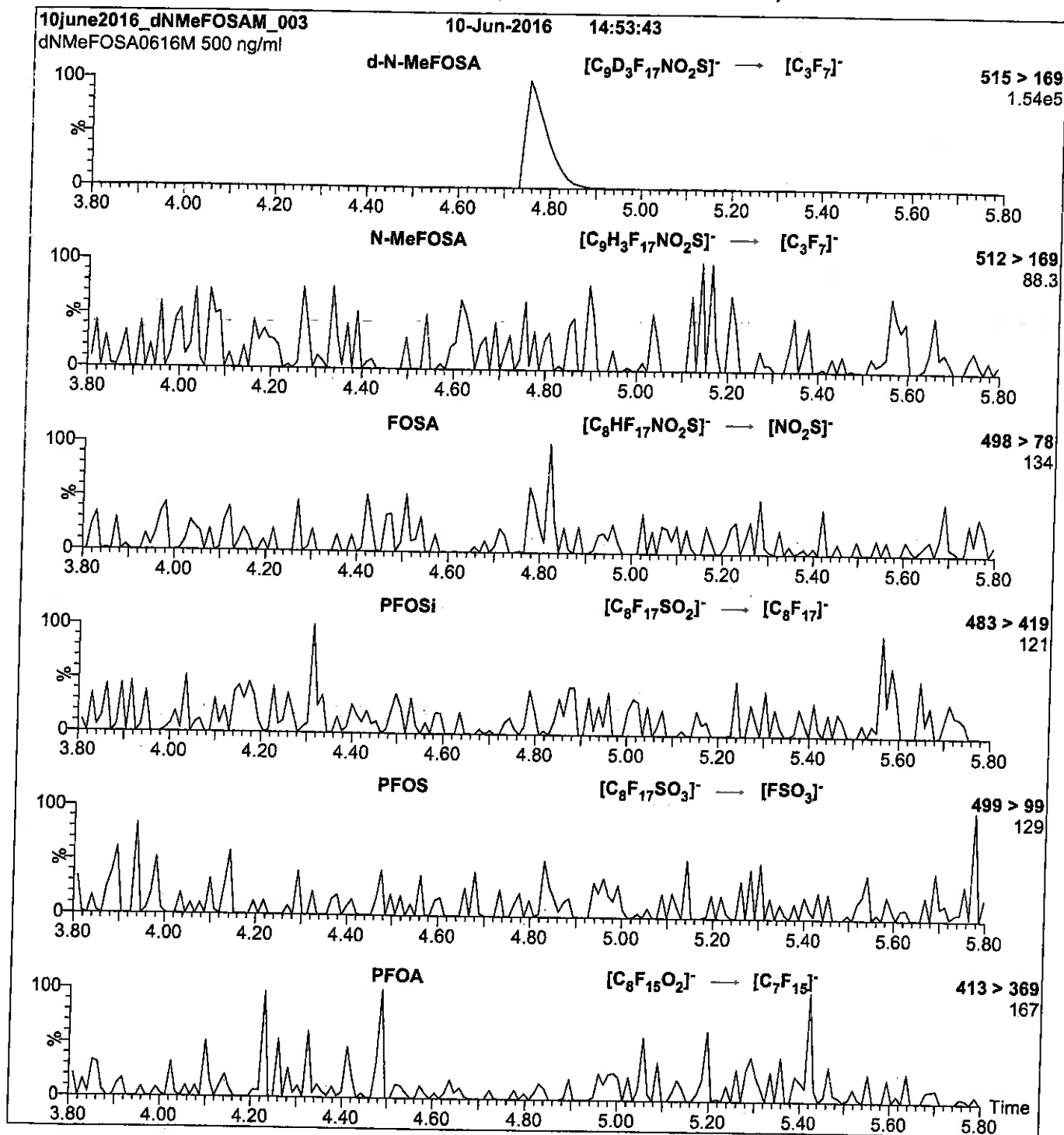
Capillary Voltage (kV) = 2.50

Cone Voltage (V) = 40.00

Cone Gas Flow (l/hr) = 50

Desolvation Gas Flow (l/hr) = 750

**Figure 2: d-N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml d-N-MeFOSA-M)

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.39e-3  
Collision Energy (eV) = 25

Reagent

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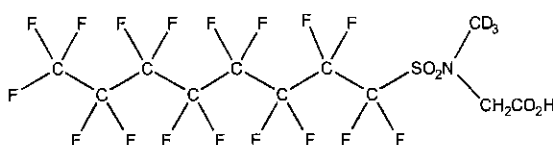
**LCd3-NMeFOSAA\_00001**



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0113  
**COMPOUND:** N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid  
**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:**  $C_{11}D_3H_3F_{17}NO_4S$  **MOLECULAR WEIGHT:** 574.23  
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$  **SOLVENT(S):** Methanol  
 Water (<1%)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:**  $\geq 98\% \text{ } ^2\text{H}_3$   
**LAST TESTED:** (mm/dd/yyyy) 01/31/2013  
**EXPIRY DATE:** (mm/dd/yyyy) 01/31/2018  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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

Certified By:

B.G. Chittim

Date: 04/06/2015

(mm/dd/yyyy)

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

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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.

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**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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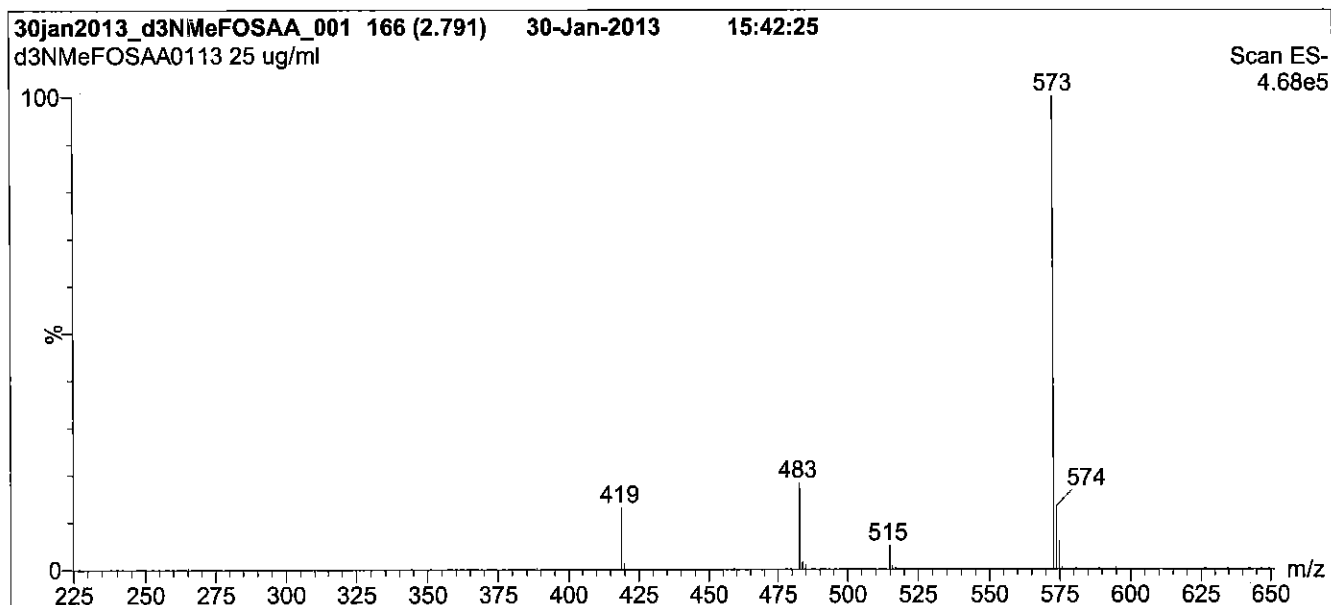
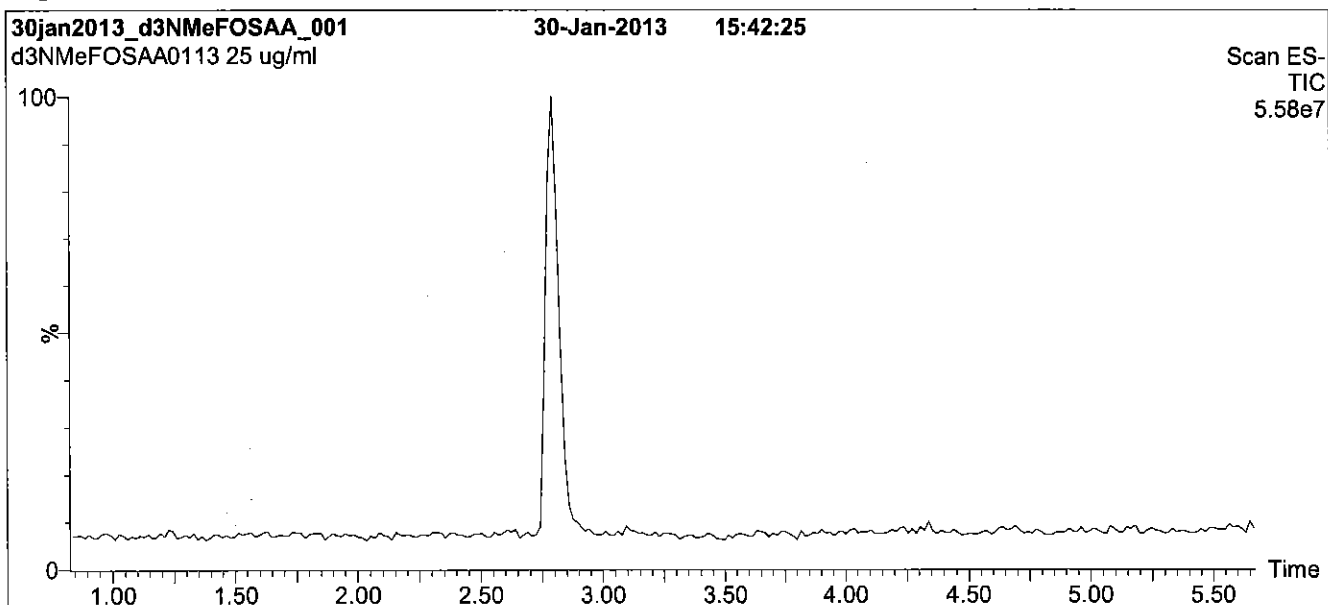
**QUALITY MANAGEMENT:**

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**Figure 1: d3-N-MeFOSAA; 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: 65% (80:20 MeOH:ACN) / 35% 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

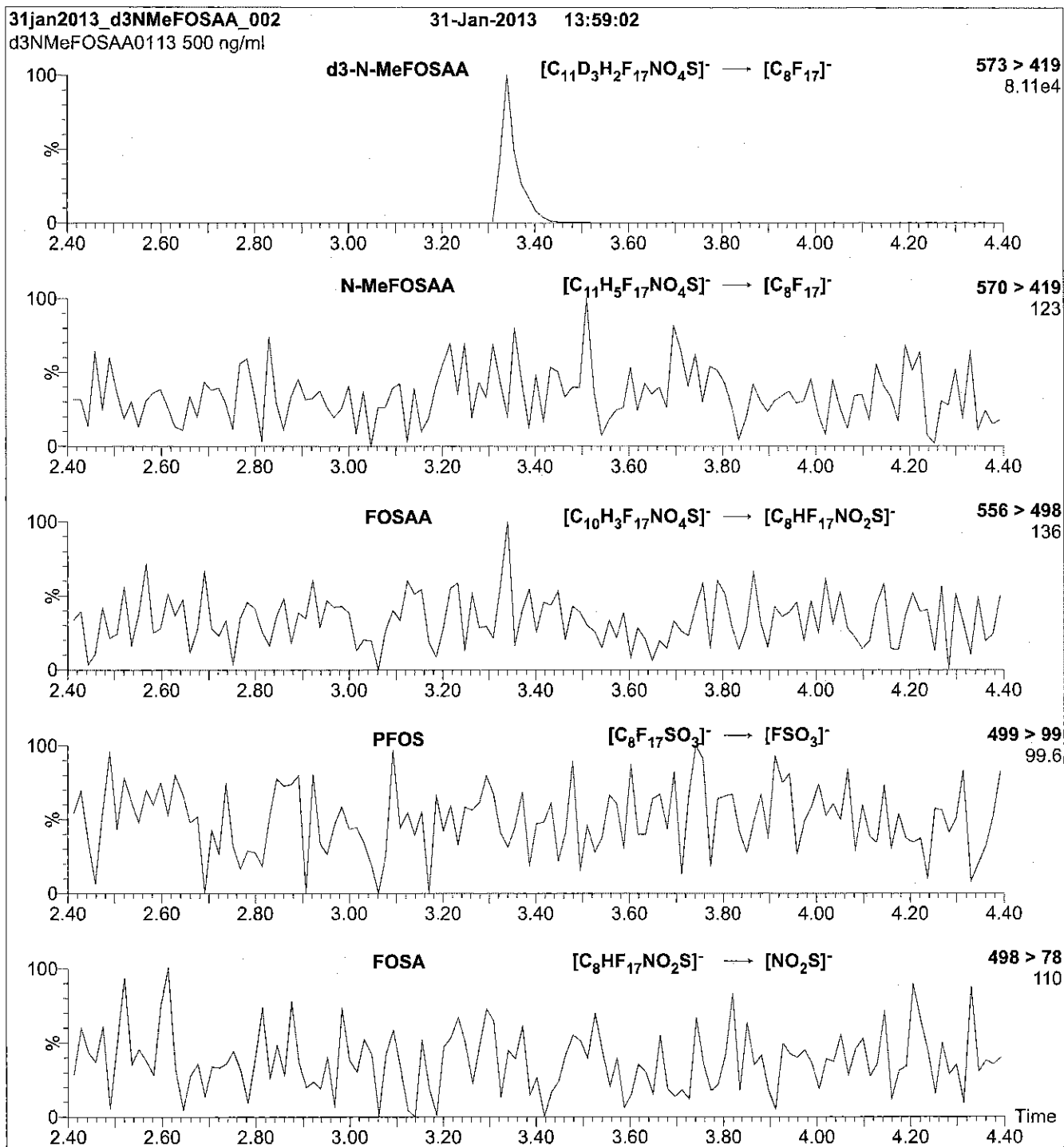
**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 35.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750



**Figure 2: d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

**Injection:** Direct loop injection  
10  $\mu$ l (500 ng/ml d3-N-MeFOSAA)

**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) = 25

Reagent

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**LCd3-NMeFOSAA\_00002**

R-7/6/16 CBW



671572

ID: LCd3-NMeFOSAA\_00002

Exp: 01/2021 Prpd: CBW

d3-N-MeFOSAA

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

d3-N-MeFOSAA

**LOT NUMBER:**

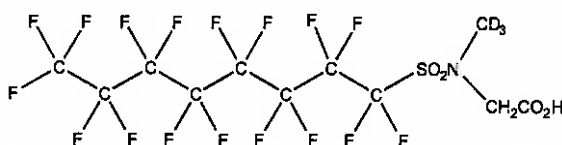
d3NMeFOSAA0116

**COMPOUND:**

N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $C_{11}D_3H_3F_{17}NO_4S$ **MOLECULAR WEIGHT:**

574.23

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

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

**ISOTOPIC PURITY:** $\geq 98\% \text{ } ^2\text{H}_3$ **LAST TESTED:** (mm/dd/yyyy)

01/20/2016

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

01/20/2021

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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Certified By:

  
B.G. Chittim

Date: 01/25/2016

(mm/dd/yyyy)

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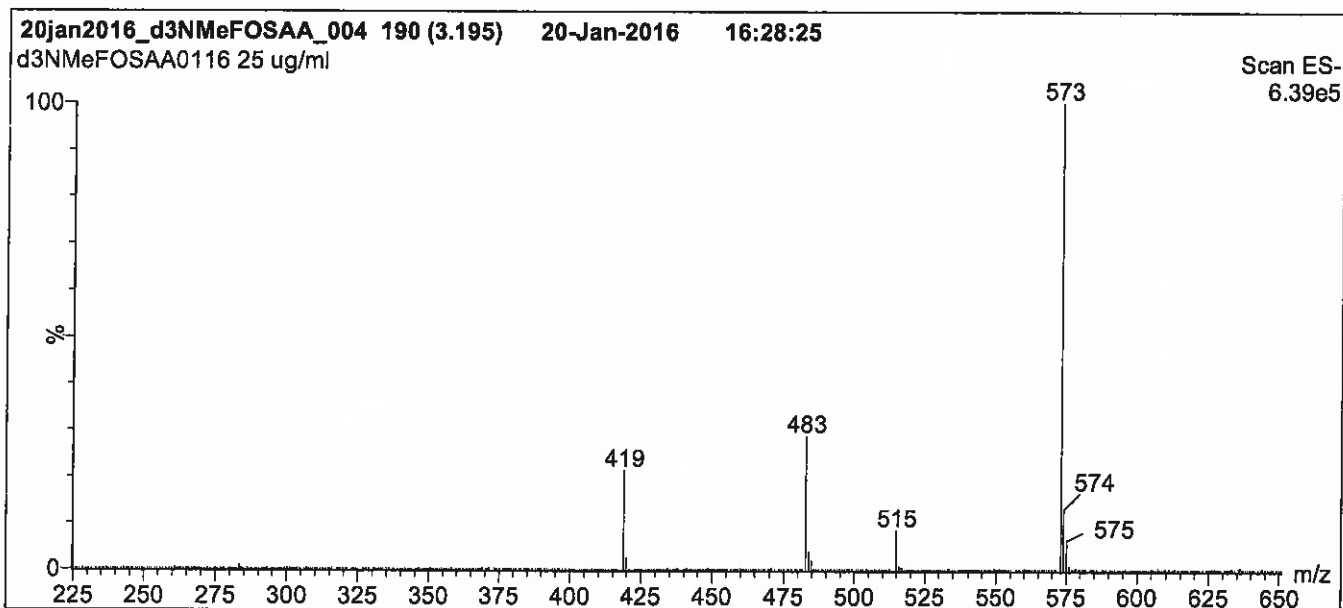
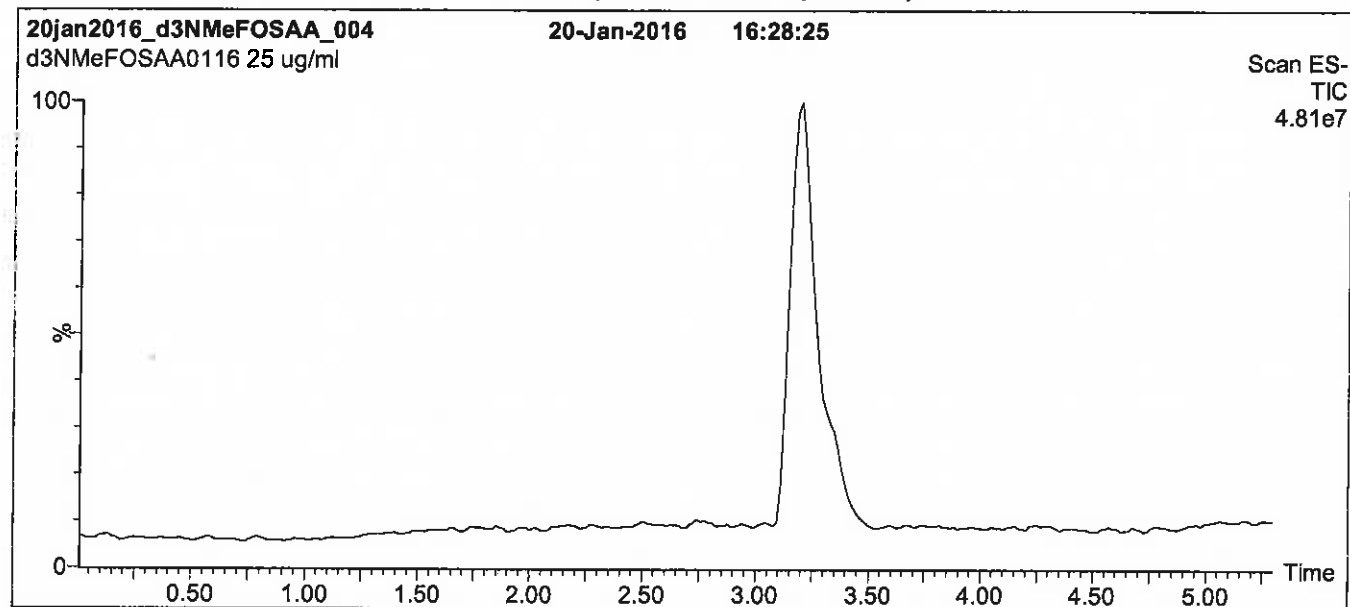
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**Figure 1:** d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

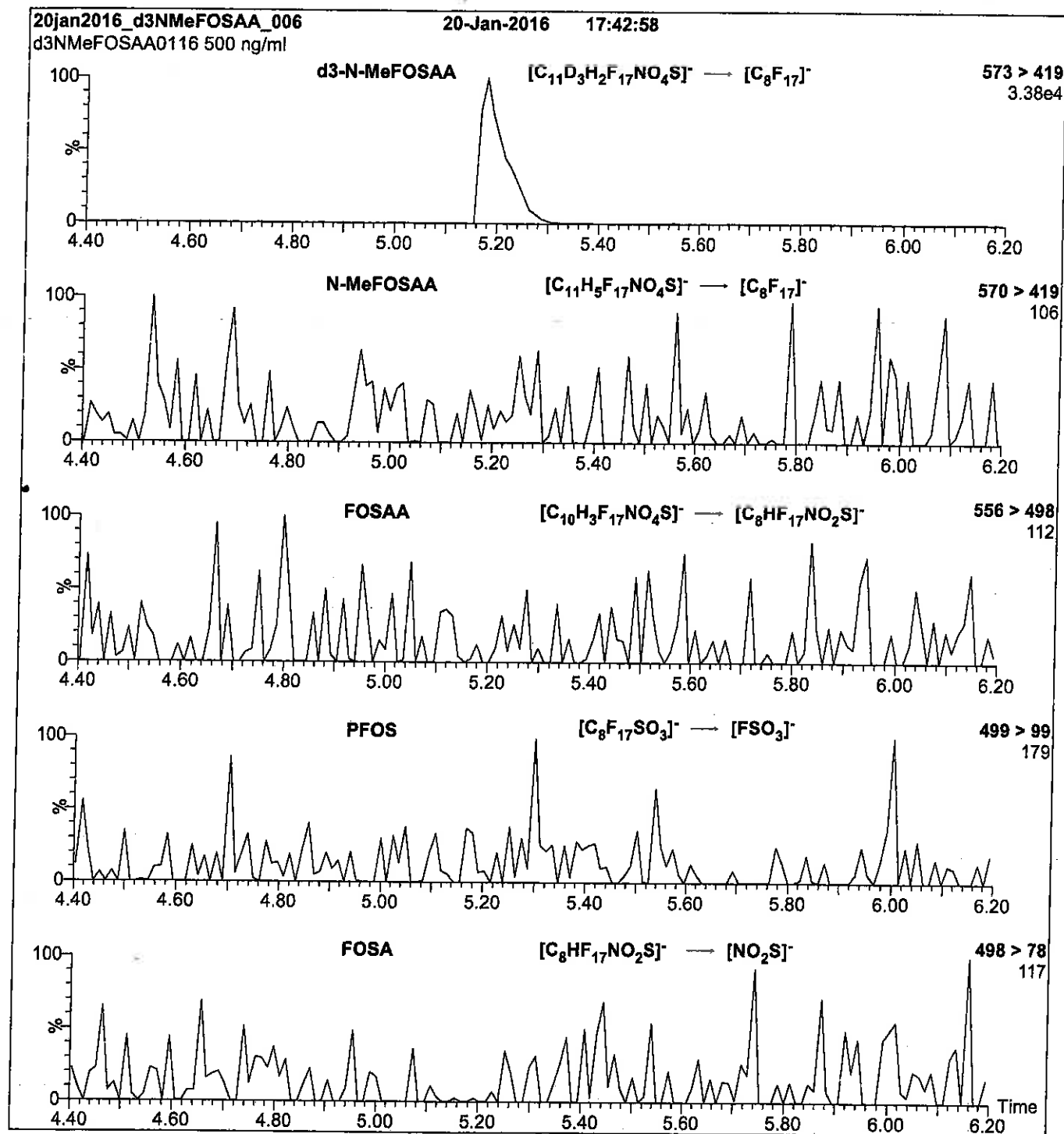
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 850 amu)

**Source:** Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 35.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml d3-N-MeFOSAA)

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

Flow: 300  $\mu$ l/min

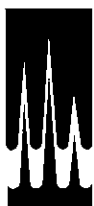
**MS Parameters**

Collision Gas (mbar) = 3.66e-3  
Collision Energy (eV) = 25

Reagent

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**LCd5-NEtFOSAA\_00001**

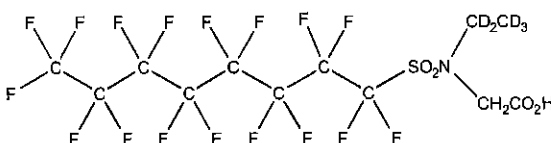


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA0515  
**COMPOUND:** N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

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



**MOLECULAR FORMULA:**  $C_{12}D_5H_3F_{17}NO_4S$   
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$

**MOLECULAR WEIGHT:** 590.27  
**SOLVENT(S):** Methanol  
 Water (<1%)

**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 05/08/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 05/08/2020  
**RECOMMENDED STORAGE:** Refrigerate ampoule

**ISOTOPIC PURITY:**  $\geq 98\% \text{ } ^2\text{H}_5$

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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Certified By:

B.G. Chittim

Date: 05/11/2015  
 (mm/dd/yyyy)

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**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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

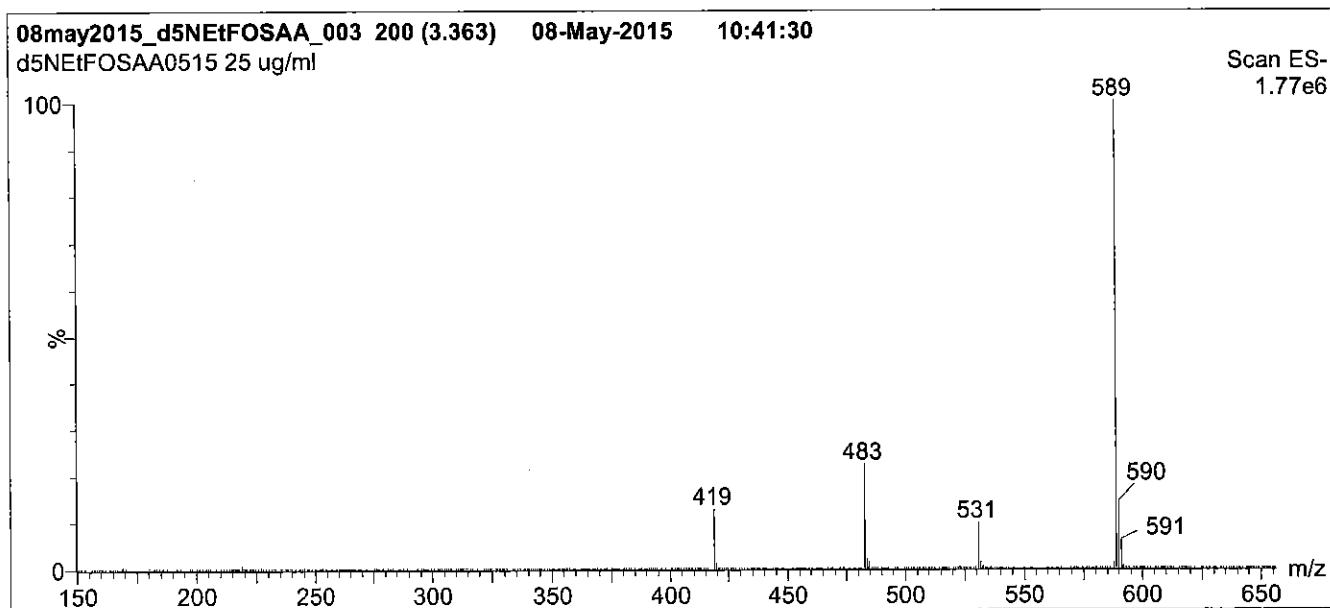
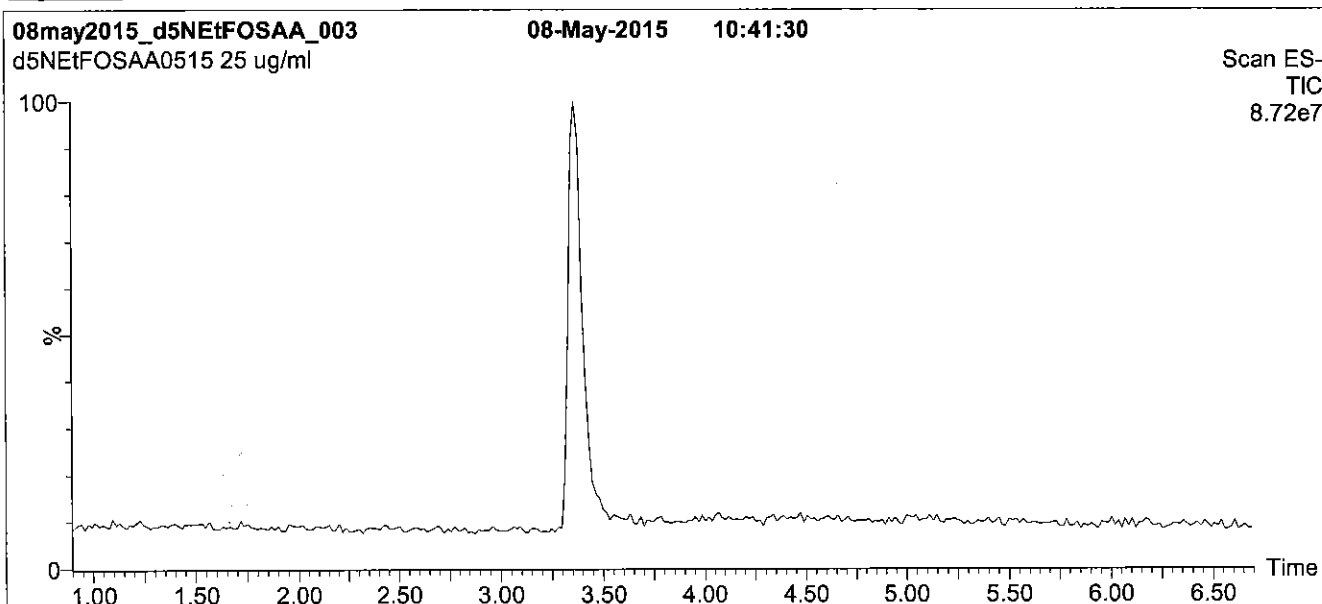
**QUALITY MANAGEMENT:**

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



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**Figure 1: d5-N-EtFOSAA; 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: 65% (80:20 MeOH:ACN) / 35% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

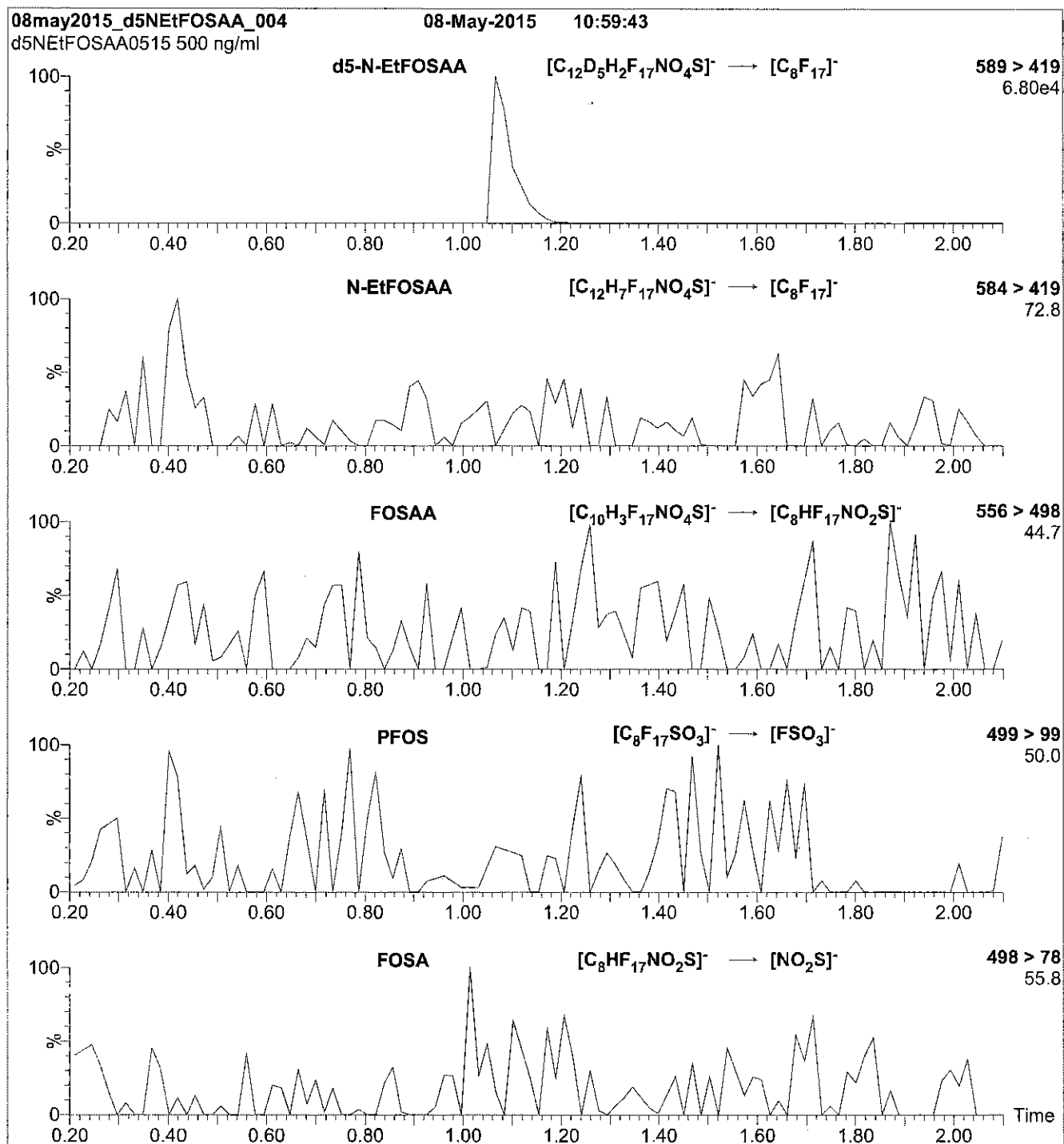
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 35.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml d5-N-EtFOSAA)

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) = 3.24e-3  
Collision Energy (eV) = 25

Reagent

---

**LCd5-NEtFOSAA\_00002**

R: 7/6/16 CBW



671603

ID: LCd5-NEtFOSAA\_00002

Exp: 12/07/20 Prep: CBW

d5-N-EtFOSAA

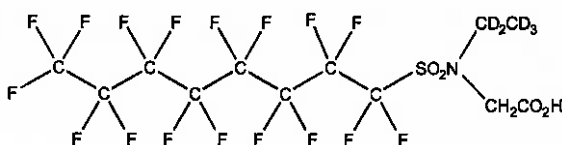


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1115  
**COMPOUND:** N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

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



**MOLECULAR FORMULA:** C<sub>12</sub>D<sub>5</sub>H<sub>3</sub>F<sub>17</sub>NO<sub>4</sub>S

**CONCENTRATION:** 50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:** 590.27

**SOLVENT(S):** Methanol

Water (<1%)

**CHEMICAL PURITY:** >98%

**ISOTOPIC PURITY:** ≥98% <sup>2</sup>H<sub>6</sub>

**LAST TESTED:** (mm/dd/yyyy) 12/07/2015

**EXPIRY DATE:** (mm/dd/yyyy) 12/07/2020

**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

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

### ADDITIONAL INFORMATION:

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

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

Certified By:

B.G. Chittim

Date: 12/07/2015

(mm/dd/yyyy)

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

**INTENDED USE:**

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**HAZARDS:**

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**EXPIRY DATE / PERIOD OF VALIDITY:**

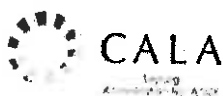
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**LIMITED WARRANTY:**

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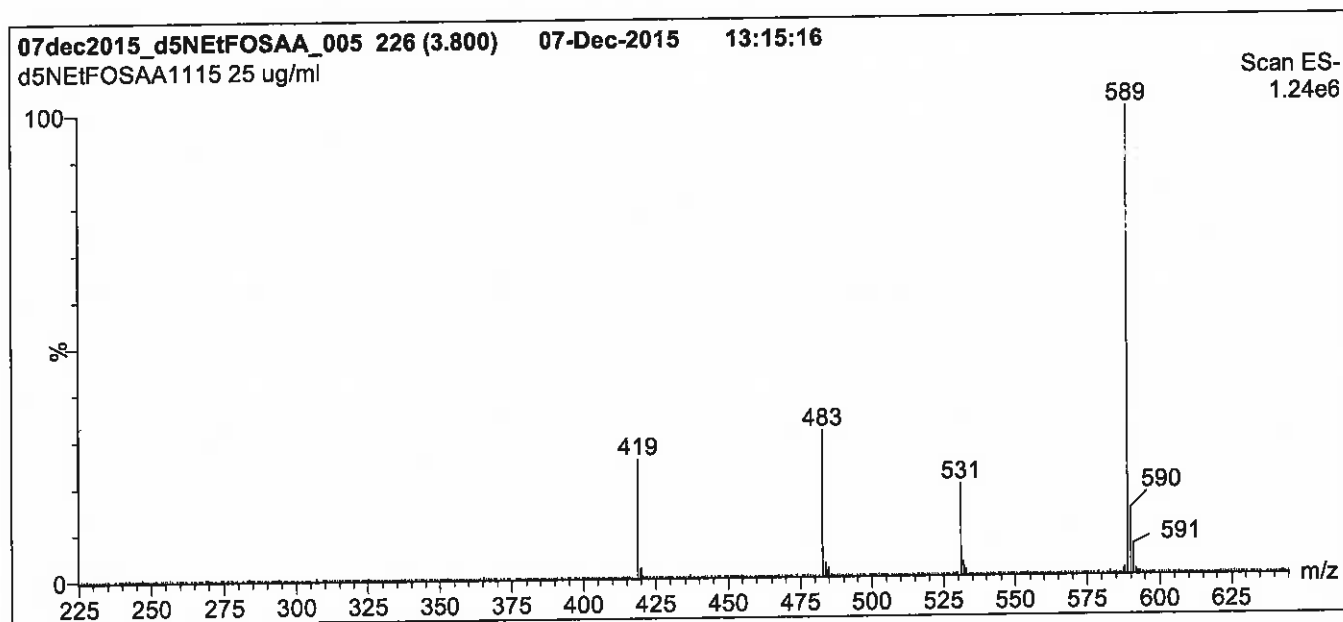
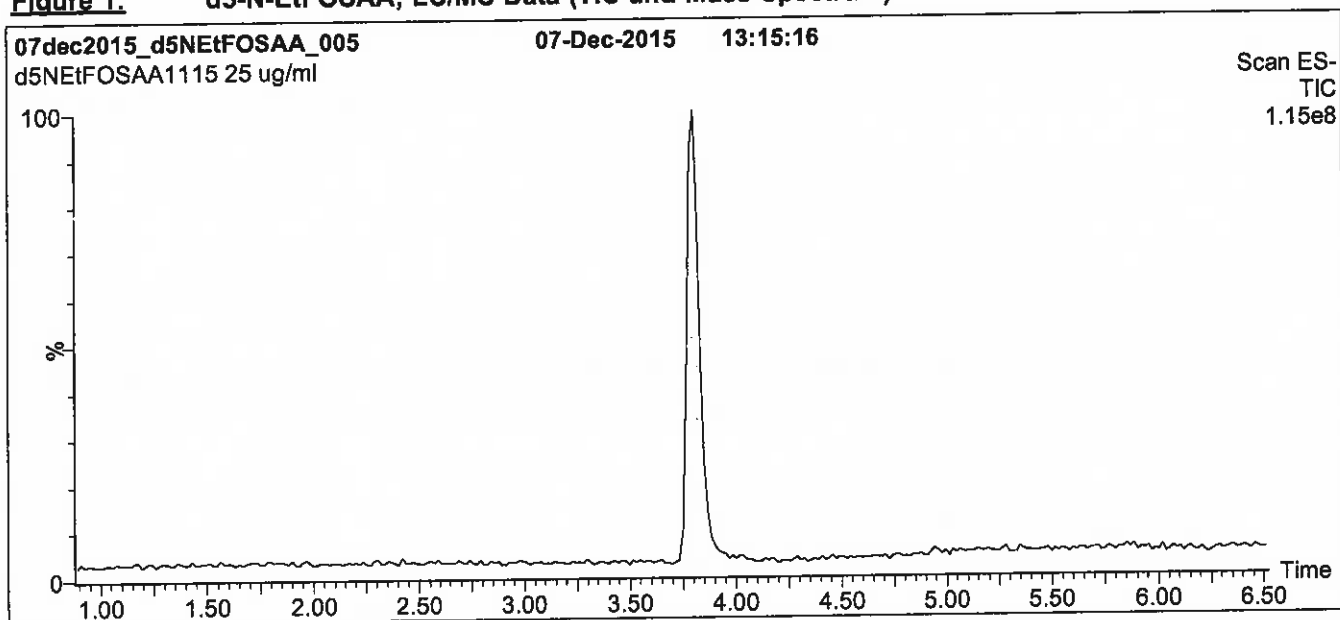
**QUALITY MANAGEMENT:**

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**Figure 1: d5-N-EtFOSAA; 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: 65% (80:20 MeOH:ACN) / 35% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min.  
before returning to initial conditions in 0.5 min.  
Time: 10 min

Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)

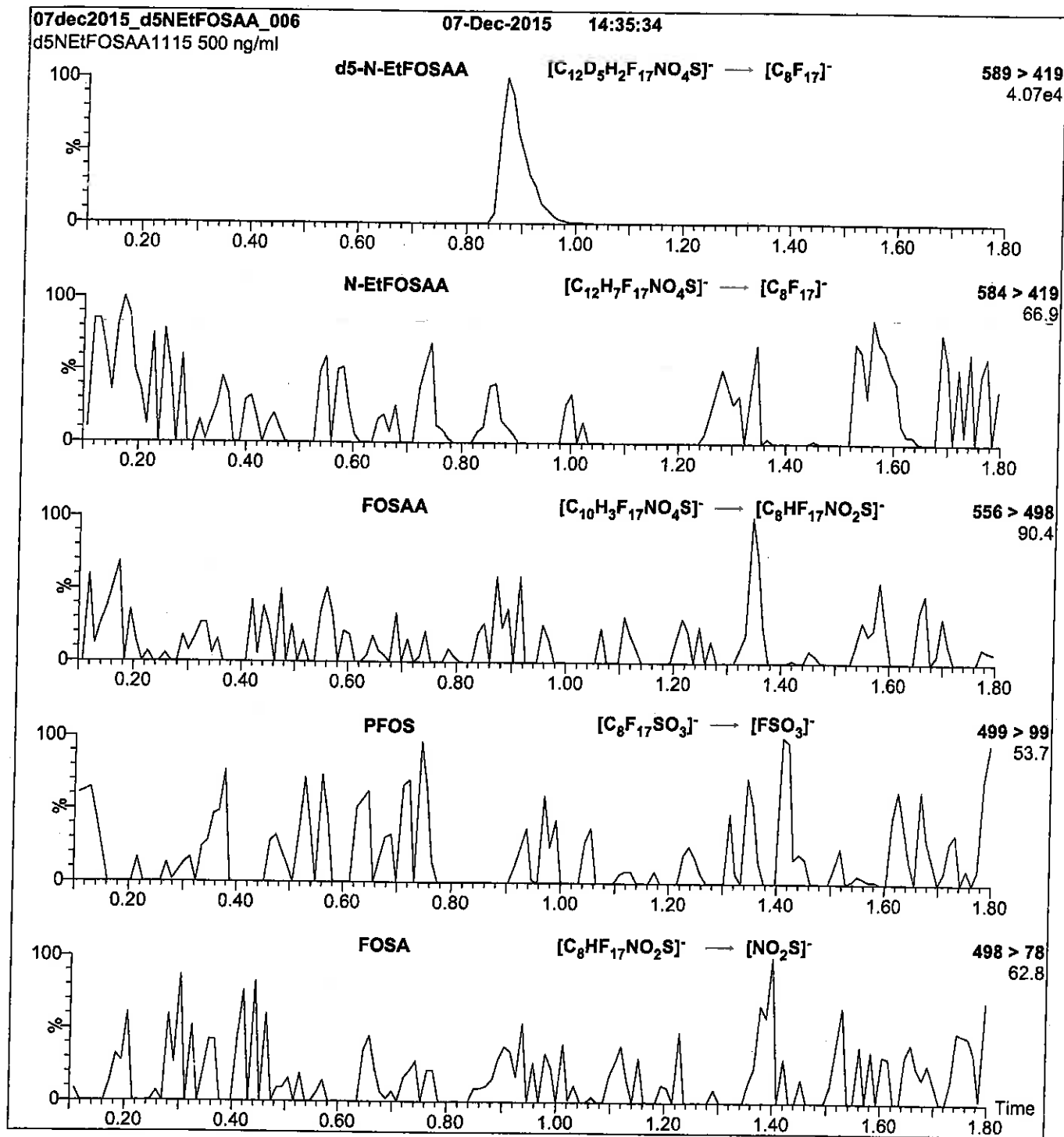
Capillary Voltage (kV) = 3.00

Cone Voltage (V) = 35.00

Cone Gas Flow (l/hr) = 50

Desolvation Gas Flow (l/hr) = 750

**Figure 2: d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml d5-N-EtFOSAA)

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

Flow: 300  $\mu$ l/min

**MS Parameters**

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

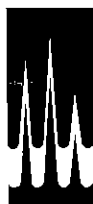


Reagent

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**LCM2-6:FTS\_00001**

R. 7/16/15 SW  
S. 7/20/15 SW

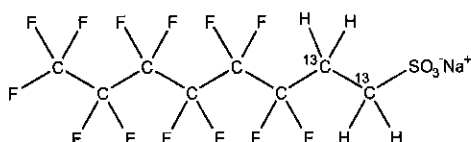


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2-6:2FTS **LOT NUMBER:** M262FTS0714  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluoro-[1,2-<sup>13</sup>C<sub>2</sub>]octane sulfonate

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



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>6</sub>H<sub>4</sub>F<sub>13</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 452.13  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol  
47.5 ± 2.4 µg/ml (M2-6:2FTS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 07/15/2014 (1,2-<sup>13</sup>C<sub>2</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 07/15/2017  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of <sup>34</sup>S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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

Certified By:

B.G. Chittim

Date: 03/27/2015  
(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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**SYNTHESIS / CHARACTERIZATION:**

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

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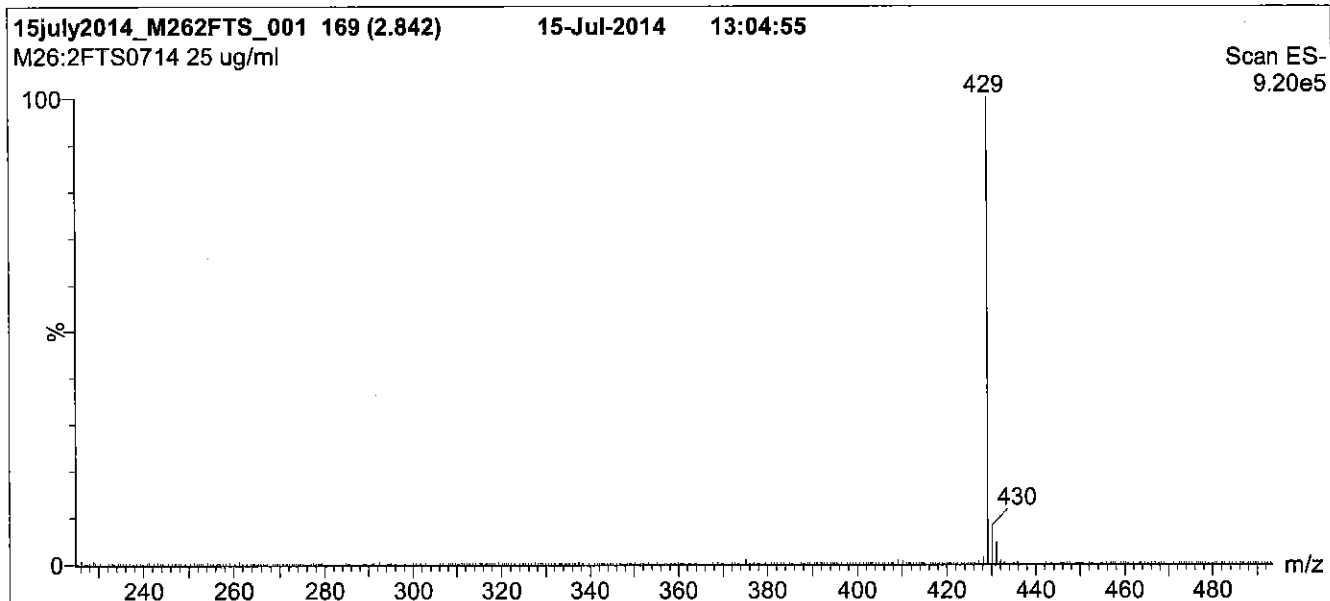
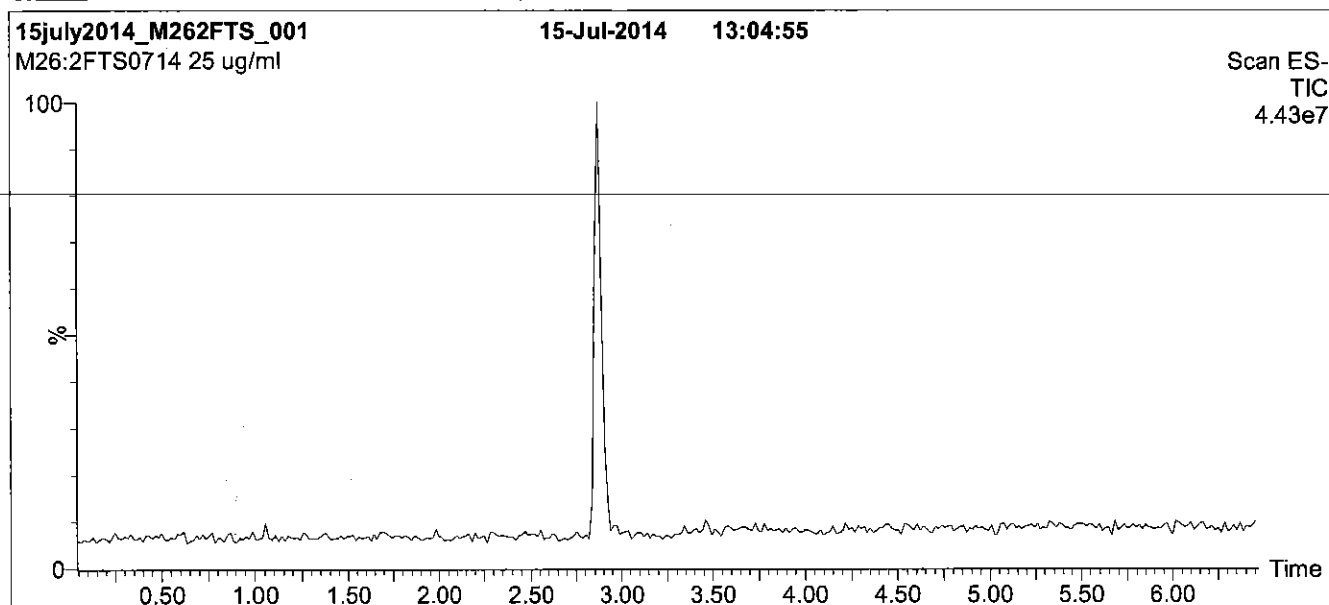
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**Figure 1: M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

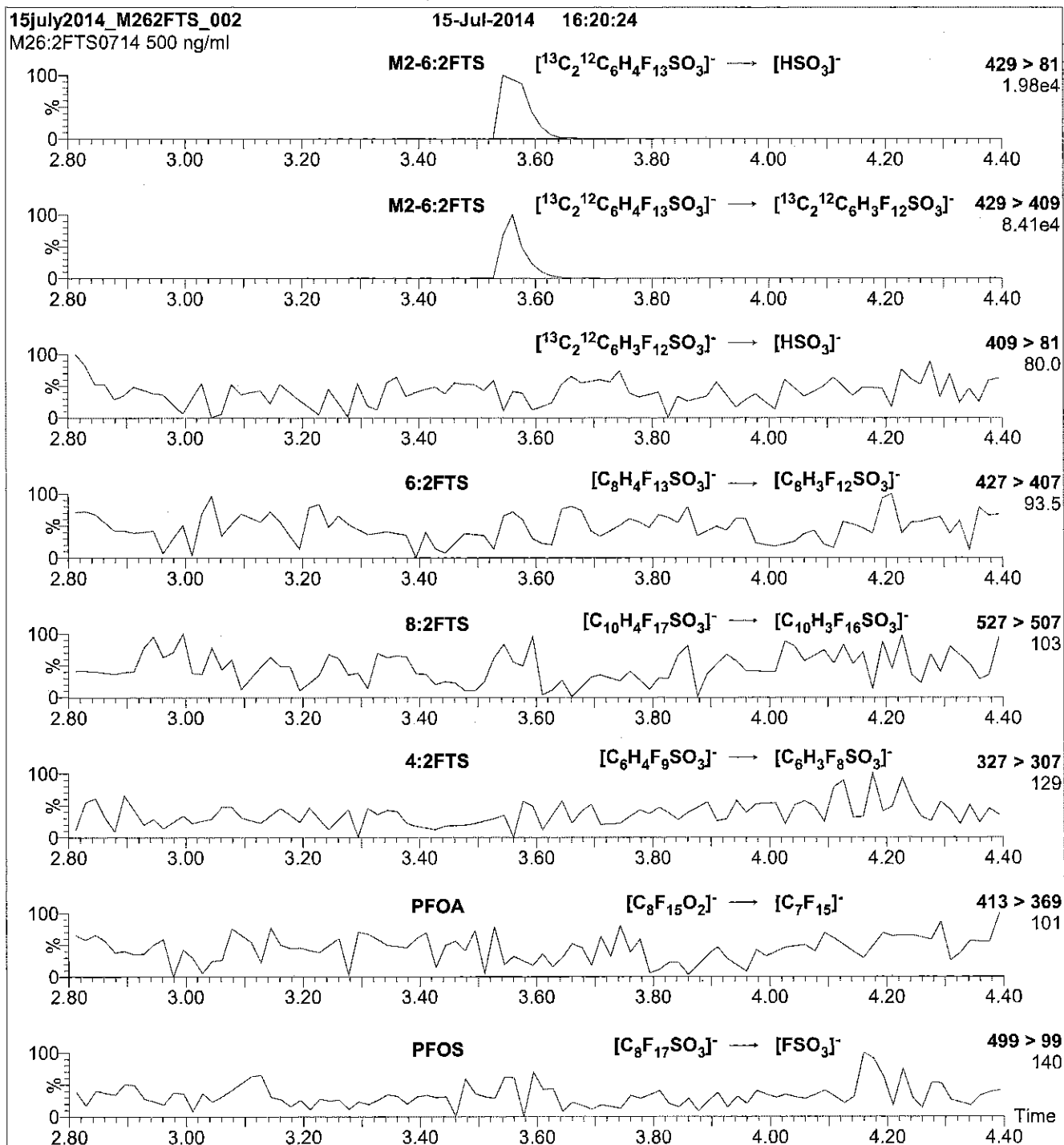
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 950 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 30.00  
**Cone Gas Flow (l/hr)** = 50  
**Desolvation Gas Flow (l/hr)** = 750

**Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M2-6:2FTS)

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

Reagent

---

**LCM2-6:FTS\_00002**

R: 7/6/16 CSW

671575  
ID: LCM2-6:FTS\_00002  
Exp: 01/08/21 Prod: CSW  
M2-6:2FTS

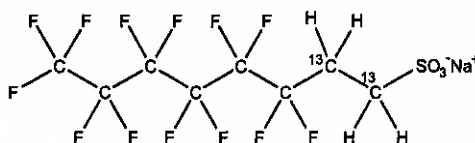


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2-6:2FTS **LOT NUMBER:** M262FTS0116  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluoro-[1,2-<sup>13</sup>C<sub>2</sub>]octane sulfonate

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



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>6</sub>H<sub>4</sub>F<sub>13</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 452.13  
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47.5 ± 2.4 µg/ml (M2-6:2FTS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 01/08/2016 (1,2-<sup>13</sup>C<sub>2</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 01/08/2021  
**RECOMMENDED STORAGE:** Refrigerate ampoule

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

B.G. Chittim

Date: 01/11/2016

(mm/dd/yyyy)

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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:**

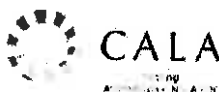
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**LIMITED WARRANTY:**

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

**QUALITY MANAGEMENT:**

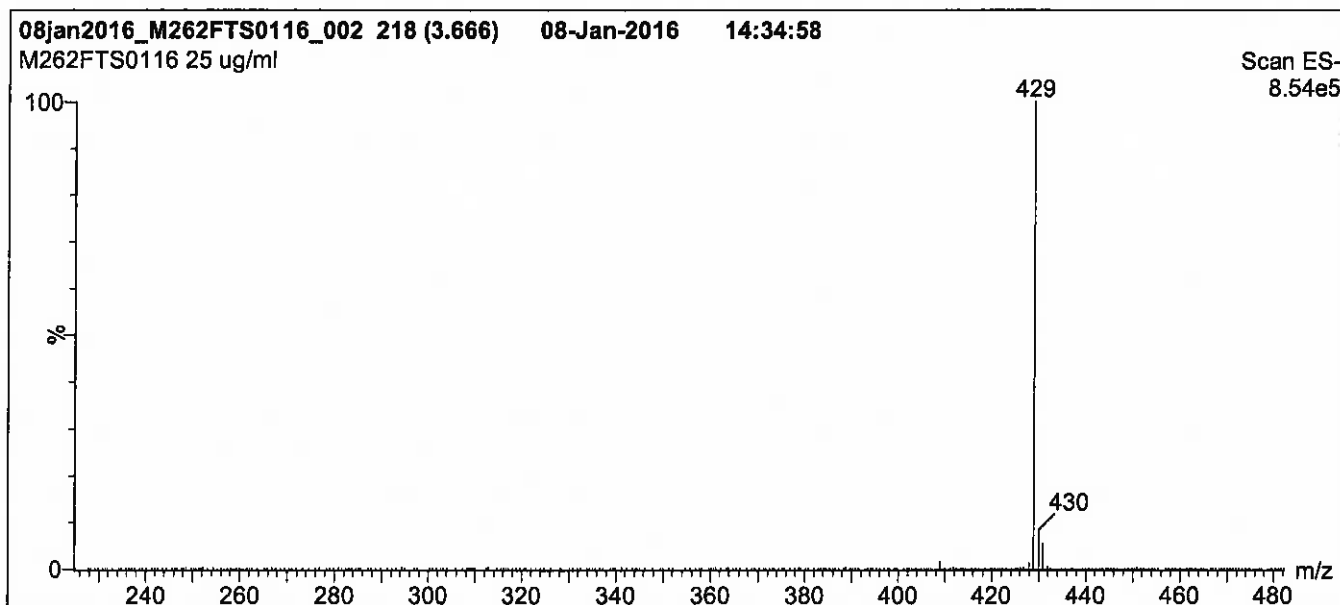
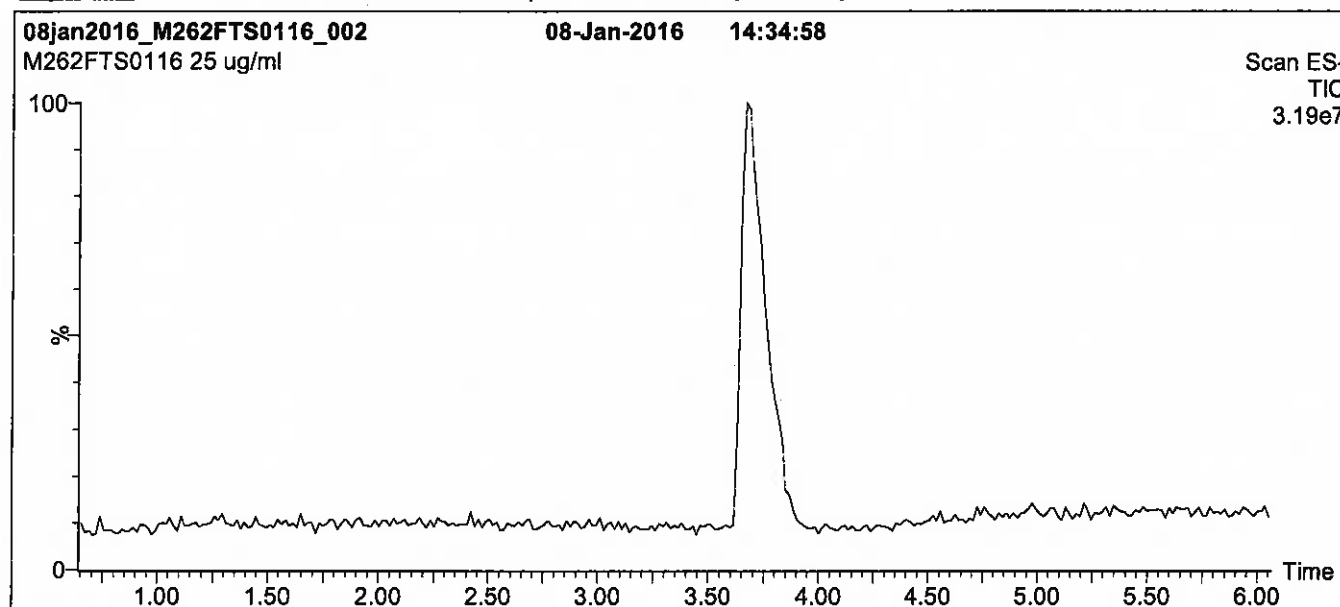
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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**Figure 1:** M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

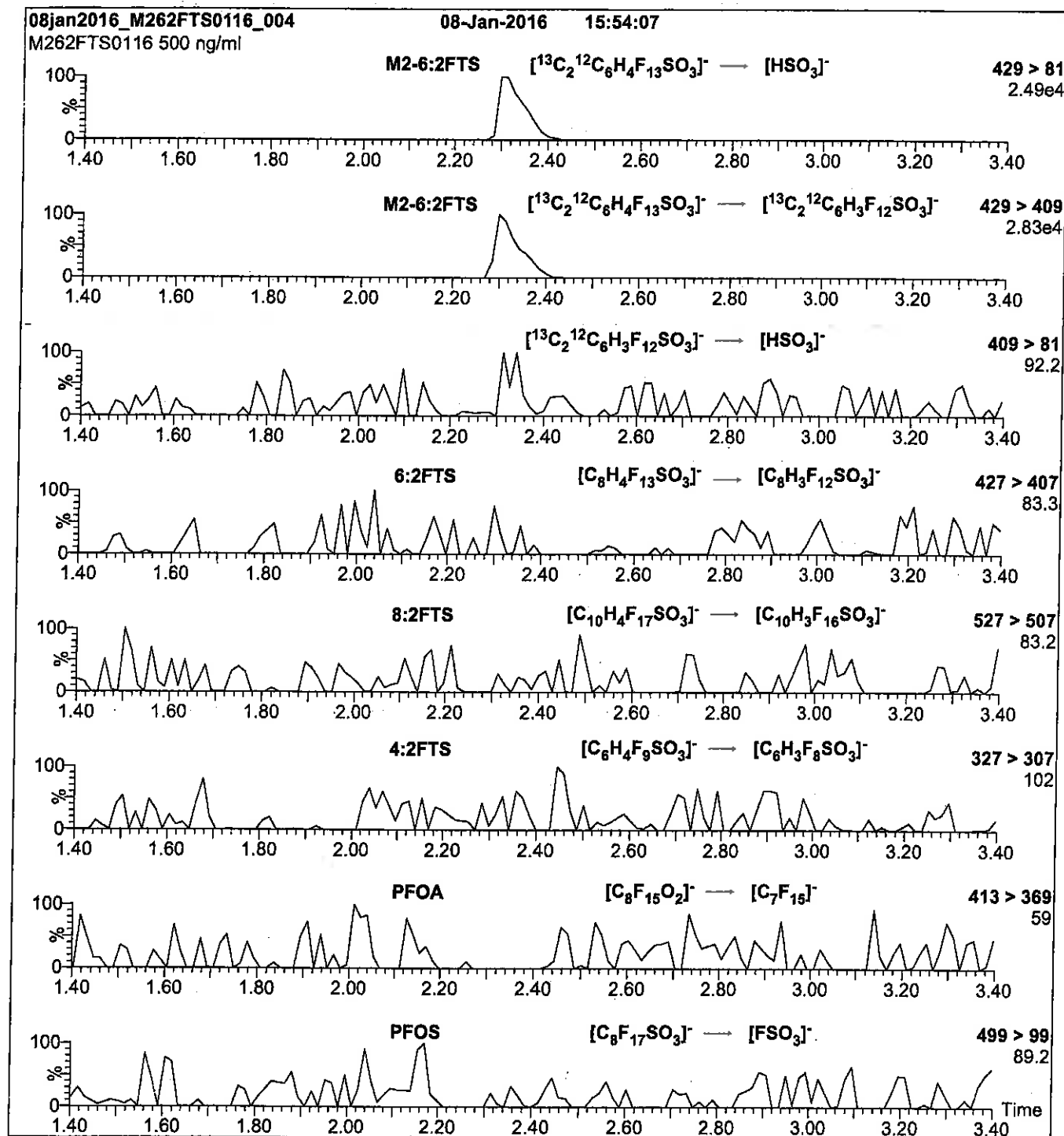
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 850 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 30.00  
**Cone Gas Flow (l/hr)** = 100  
**Desolvation Gas Flow (l/hr)** = 750

**Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

**Injection:** Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M2-6:2FTS)

**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) = 3.28e-3  
Collision Energy (eV) = 25

Reagent

---

**LCM2-8:2FTS\_00001**

r: 7/16/15 B/  
8: 7/22/15 STV

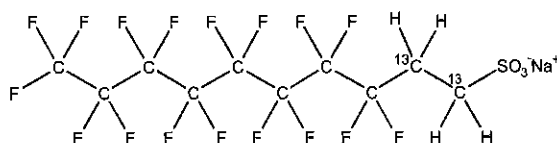


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2-8:2FTS **LOT NUMBER:** M282FTS0414  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluoro-[1,2-<sup>13</sup>C<sub>2</sub>]decane sulfonate

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



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>8</sub>H<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 552.15  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol  
47.9 ± 2.4 µg/ml (M2-8:2FTS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 04/13/2014 (1,2-<sup>13</sup>C<sub>2</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 04/13/2017  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of <sup>34</sup>S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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

Certified By:

B.G. Chittim

Date: 03/27/2015

(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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**UNCERTAINTY:**

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

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

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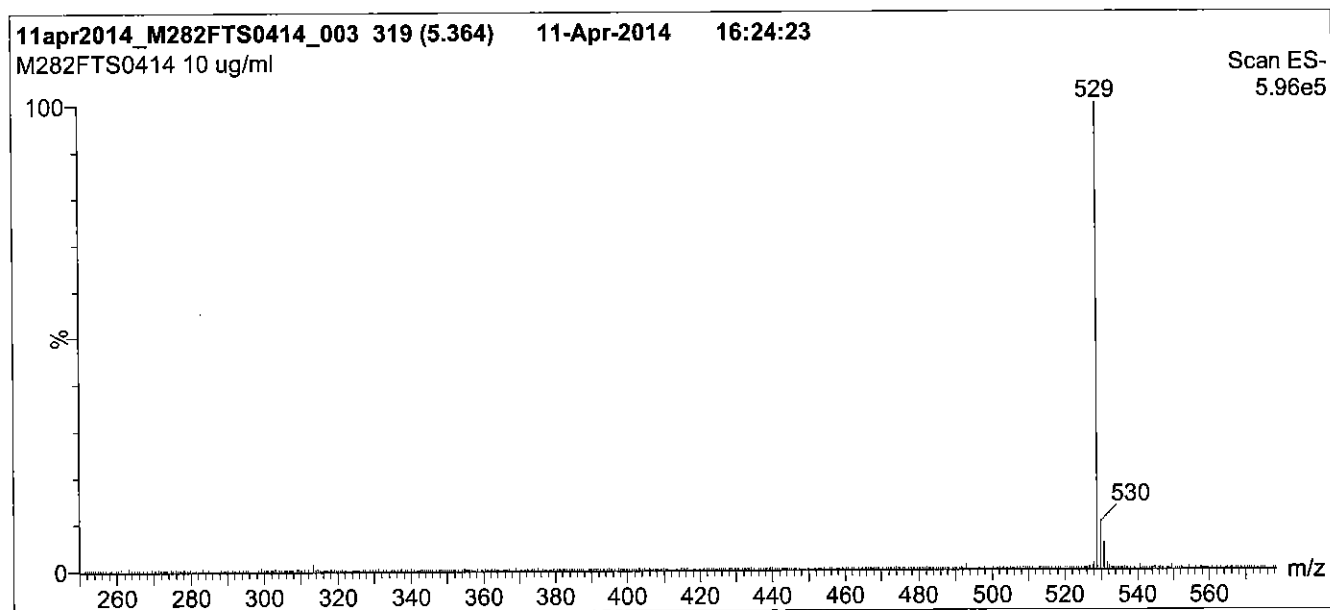
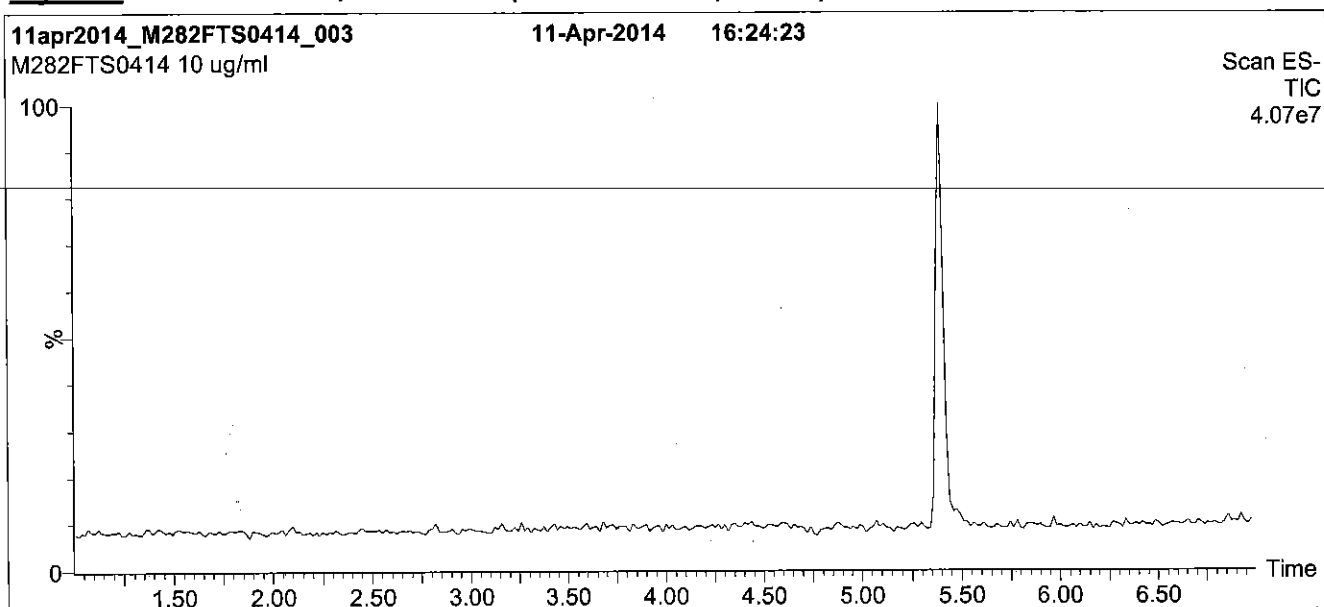
**QUALITY MANAGEMENT:**

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**Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

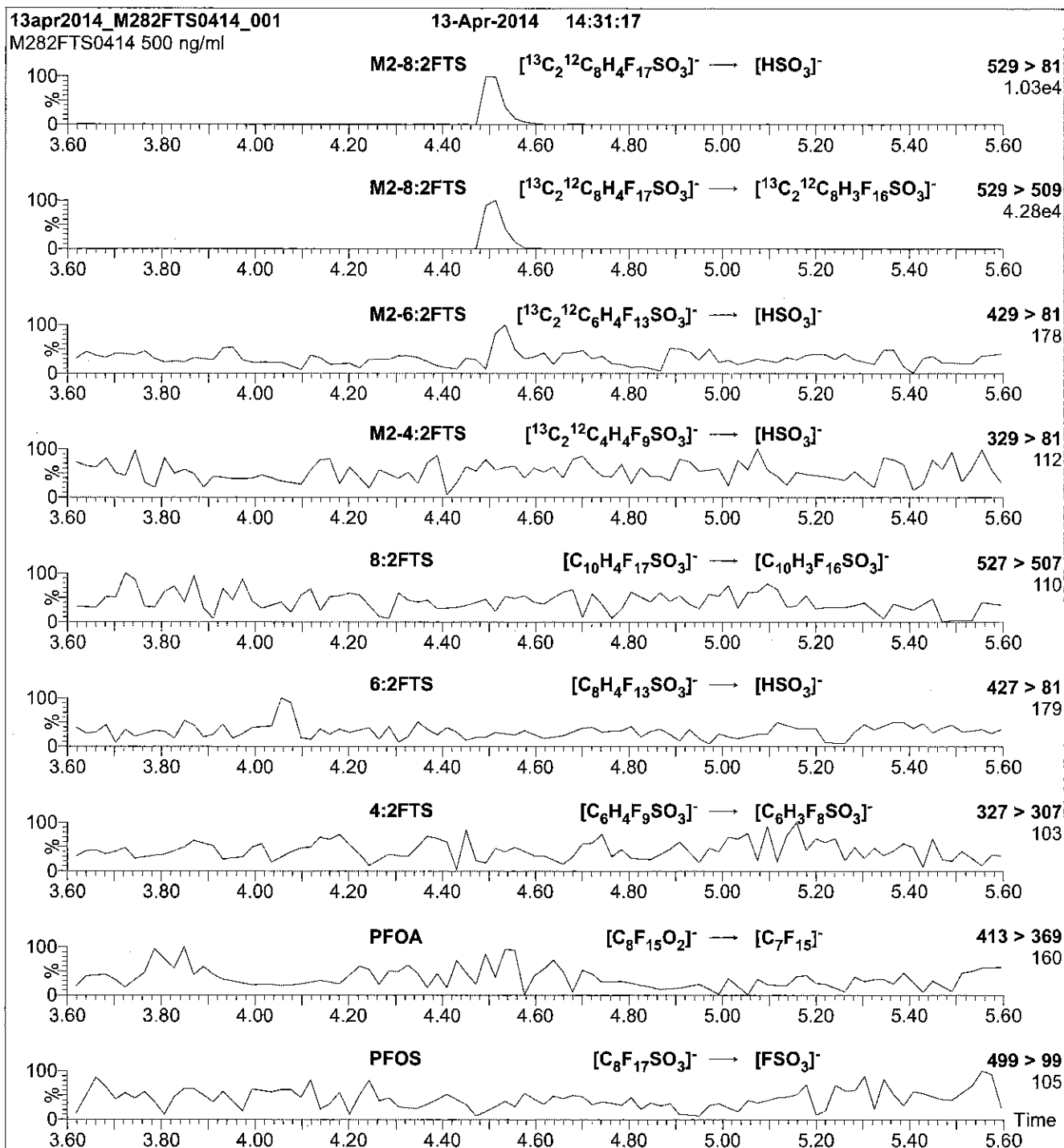
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 30.00  
Cone Gas Flow (l/hr) = 100  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M2-8:2FTS)

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) = 3.24e-3  
Collision Energy (eV) = 25

Reagent

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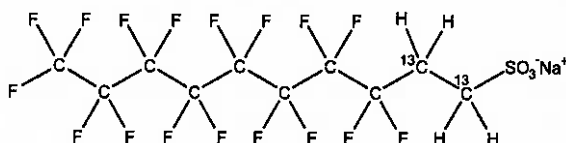
**LCM2-8:2FTS\_00002**



R<sub>s</sub> 7/6/16 *can*671602  
ID: LCM2-8:2FTS\_00002  
Exp: 01/08/21 Prod: CBW  
M2-8:2FTS**WELLINGTON**  
LABORATORIES**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION

**PRODUCT CODE:** M2-8:2FTS **LOT NUMBER:** M282FTS0116  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluoro-[1,2-<sup>13</sup>C<sub>2</sub>]decane sulfonate

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



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>8</sub>H<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 552.15  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol  
 47.9 ± 2.4 µg/ml (M2-8:2FTS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 01/08/2016 (1,2-<sup>13</sup>C<sub>2</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 01/08/2021  
**RECOMMENDED STORAGE:** Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of <sup>34</sup>S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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Certified By:

  
 B.G. Chittim
Date: 01/18/2016  
(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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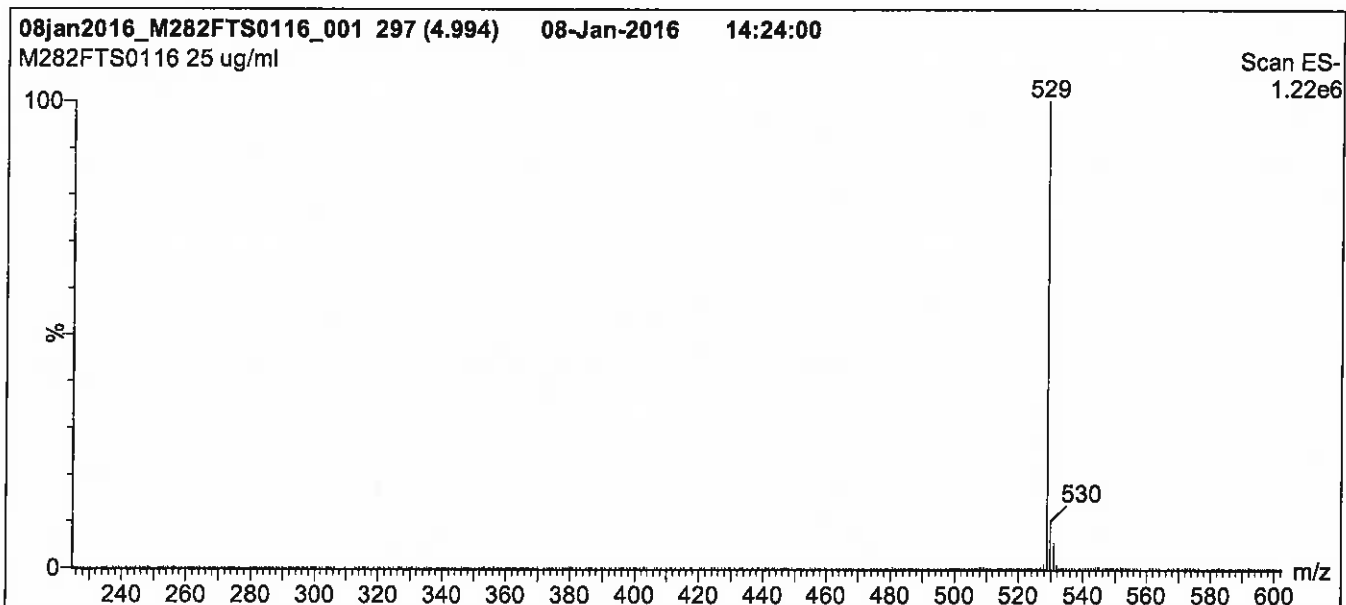
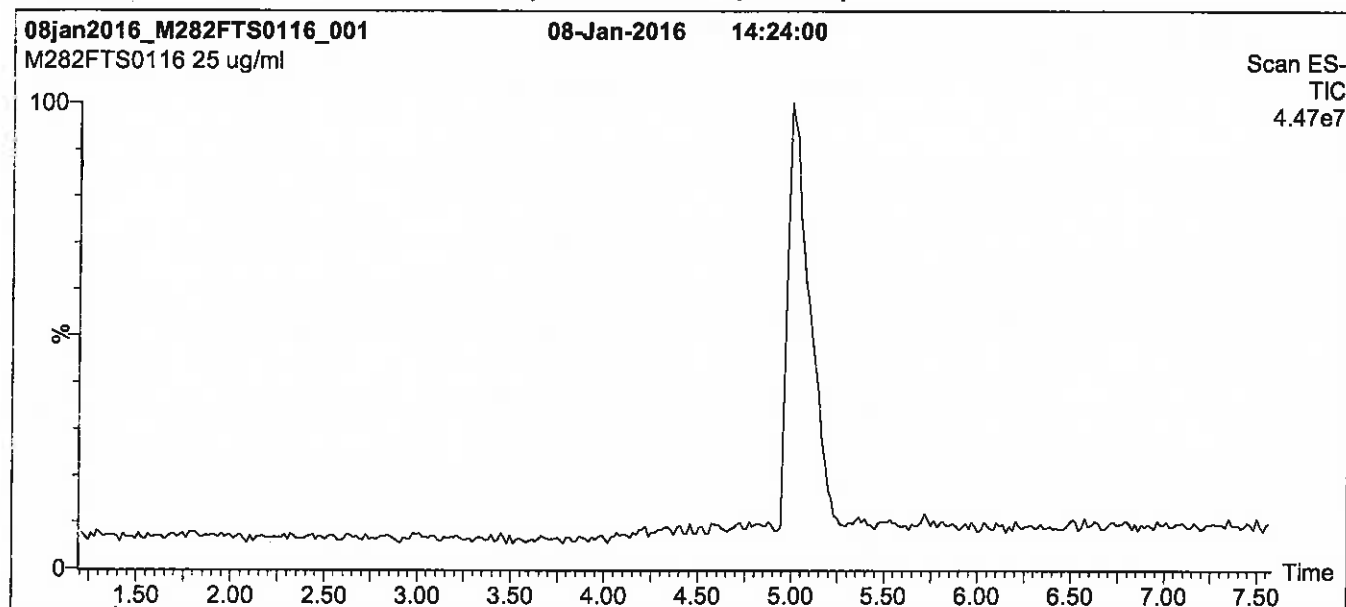
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**Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

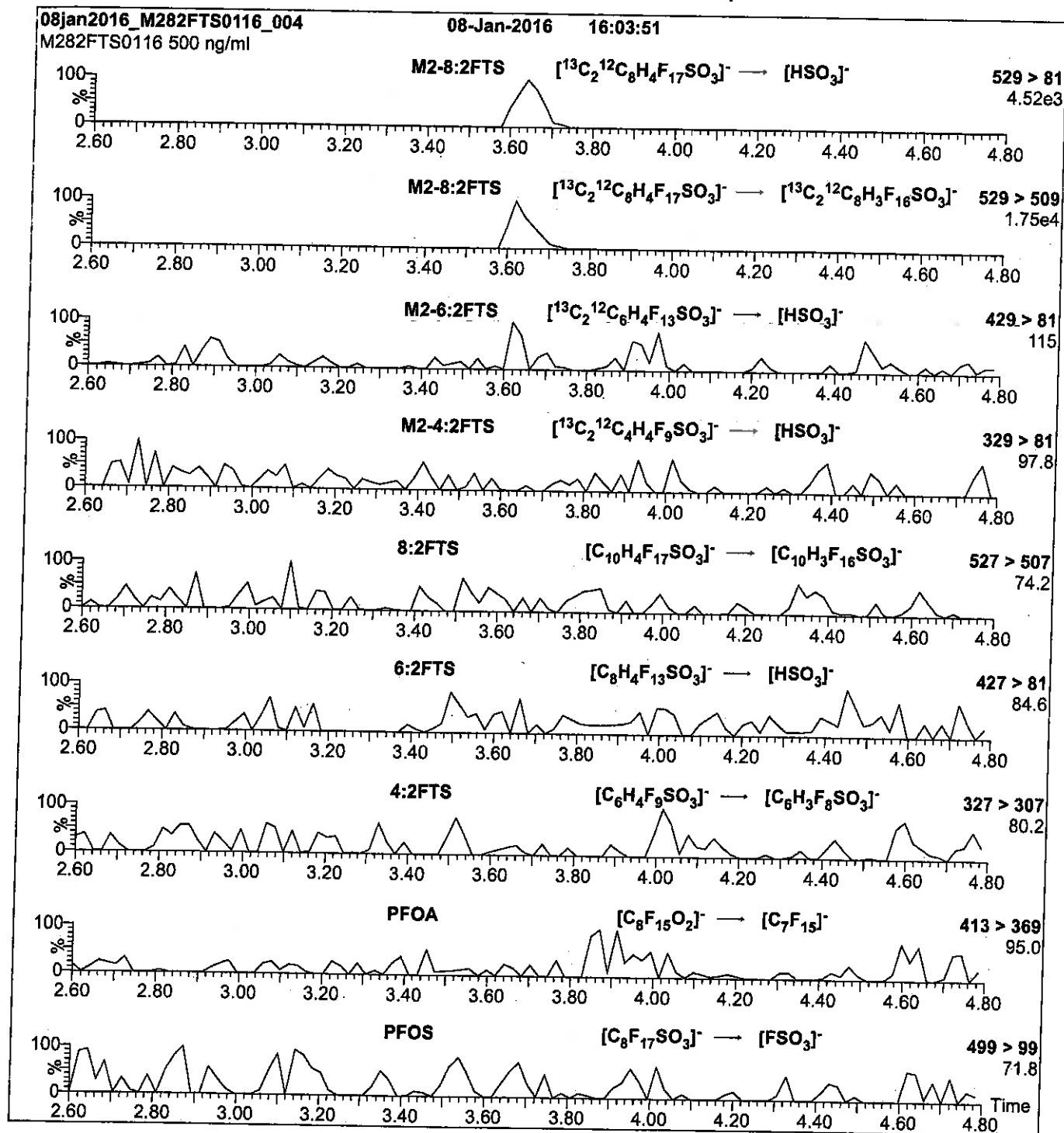
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 30.00  
Cone Gas Flow (l/hr) = 100  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M2-8:2FTS)

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) = 3.20e-3  
Collision Energy (eV) = 30

Reagent

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**LCM2PFHxDA\_00008**

R: 8BC 9/22/16

739512  
ID: LCM2PFHxDA\_00008  
Exp: 01/07/21 Prod: SBC  
13C2-PFHxDA at 50ug/mL

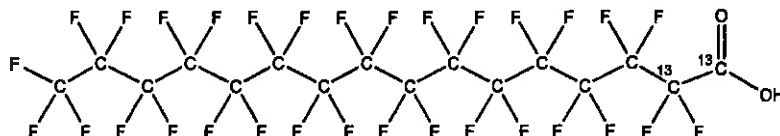


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2PFHxDA **LOT NUMBER:** M2PFHxDA1112  
**COMPOUND:** Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]hexadecanoic acid

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



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>14</sub>HF<sub>31</sub>O<sub>2</sub> **MOLECULAR WEIGHT:** 816.11  
**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) 01/07/2016 (1,2-<sup>13</sup>C<sub>2</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 01/07/2021  
**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 ~ 0.3% of native perfluoro-n-hexadecanoic acid.

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

Certified By:

B.G. Chittim

Date: 01/11/2016  
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
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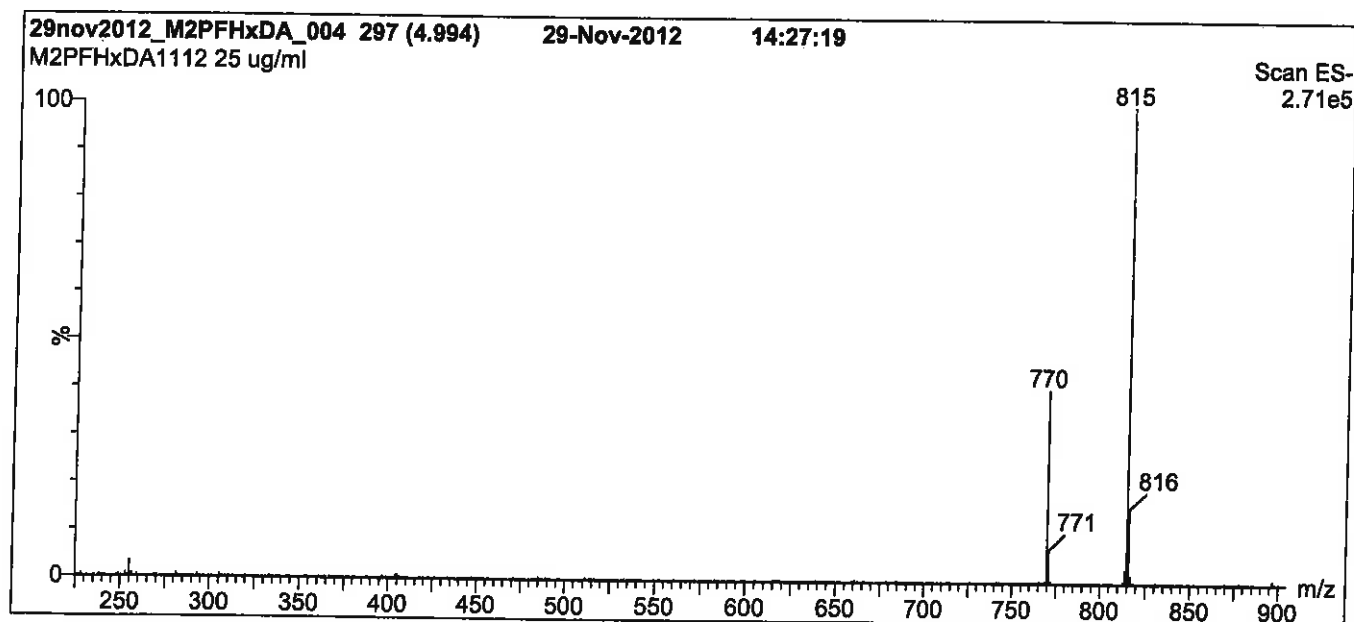
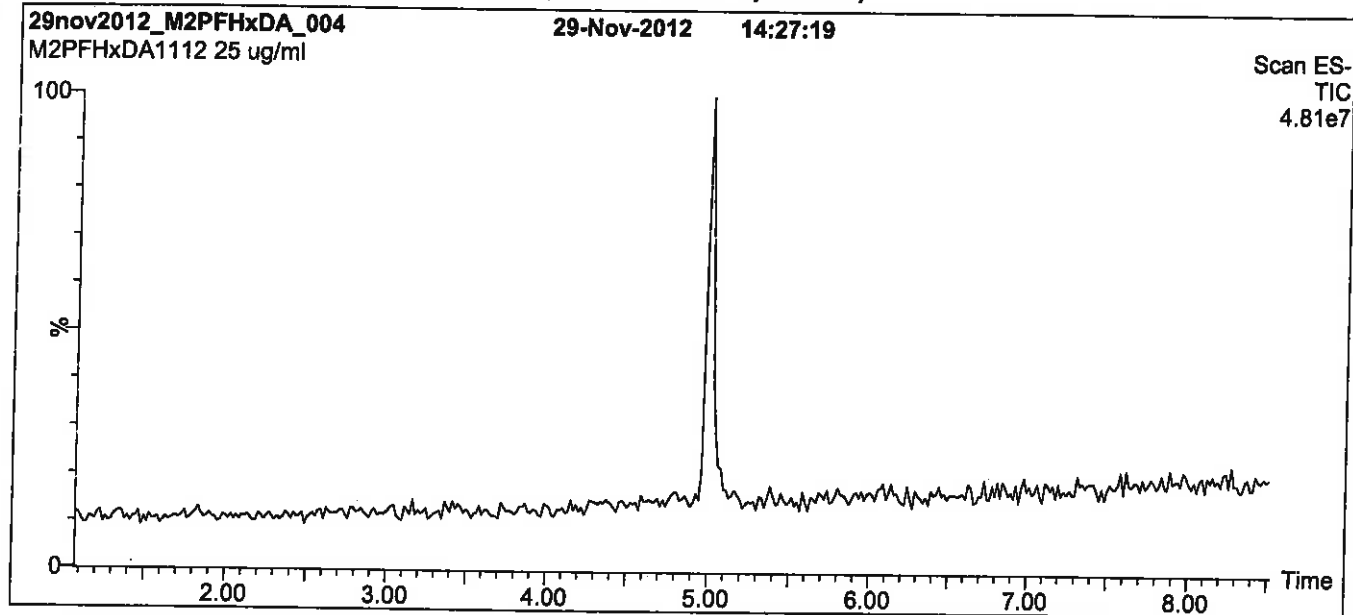
**QUALITY MANAGEMENT:**

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



\*\*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: M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 100% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

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

**MS Parameters**

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)

Capillary Voltage (kV) = 2.00

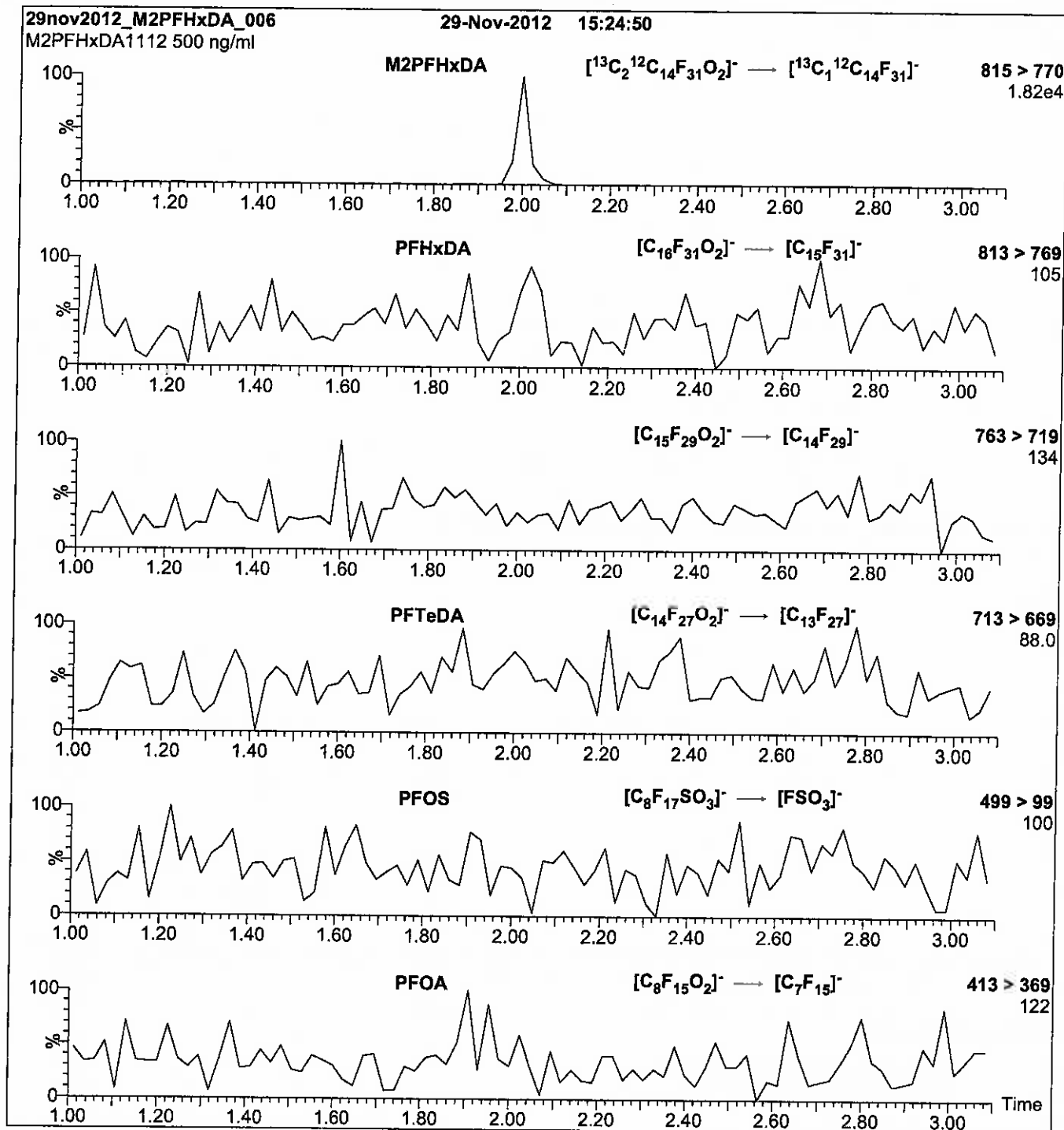
Cone Voltage (V) = 25.00

Cone Gas Flow (l/hr) = 60

Desolvation Gas Flow (l/hr) = 750



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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M2PFHxDA)

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

Reagent

---

**LCM2PFTeDA\_00007**



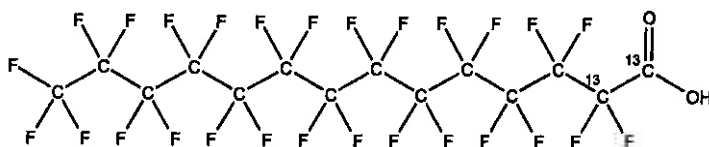
Scanned 10/14/16 R: 800 9/27/16  
**WELLINGTON**  
LABORATORIES

**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION

739563  
ID: LCM2PFTeDA\_00007  
Exp: 12/07/20 Prod: SEC  
13C2-PFTeDA at 50ug/mL

**PRODUCT CODE:** M2PFTeDA  
**COMPOUND:** Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]tetradecanoic acid  
**LOT NUMBER:** M2PFTeDA1115

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



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>12</sub>HF<sub>27</sub>O<sub>2</sub>  
**CONCENTRATION:** 50 ± 2.5 µg/ml  
**MOLECULAR WEIGHT:** 716.10  
**SOLVENT(S):** Methanol  
Water (<1%)  
**CHEMICAL PURITY:** >98%  
**ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
(1,2-<sup>13</sup>C<sub>2</sub>)  
**LAST TESTED:** (mm/dd/yyyy) 12/07/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 12/07/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

B.G. Chittim

Date: 12/08/2015  
(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

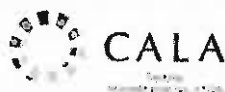
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**LIMITED WARRANTY:**

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

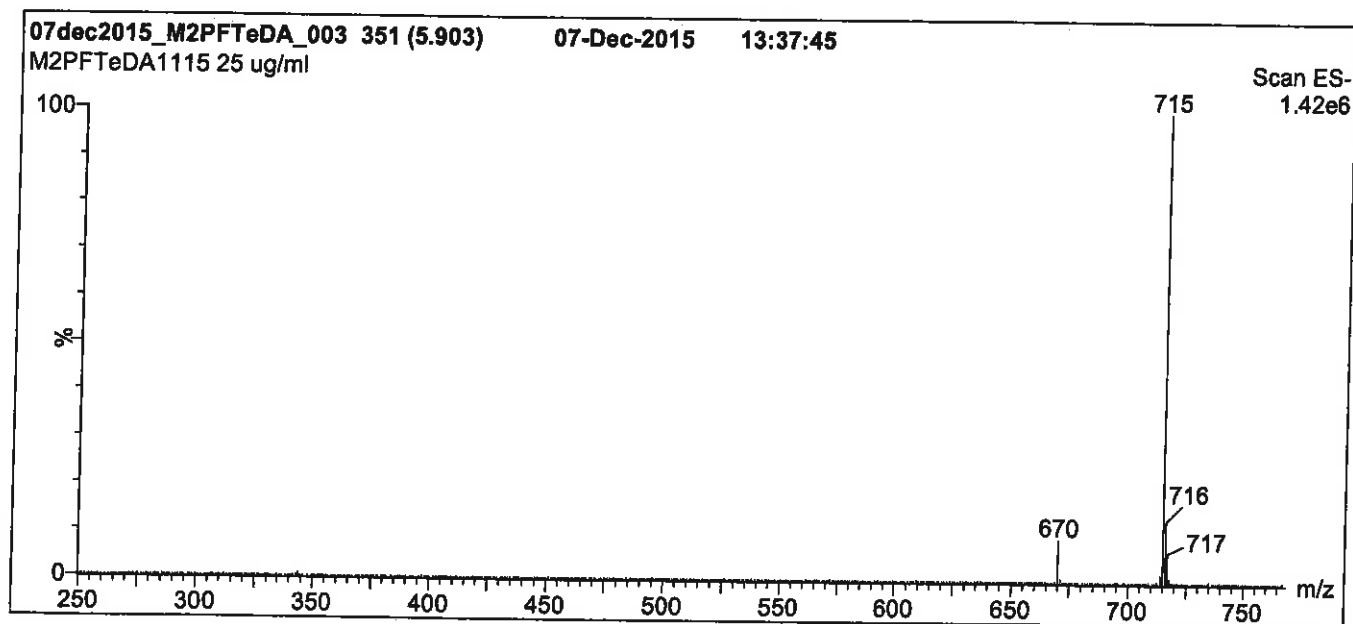
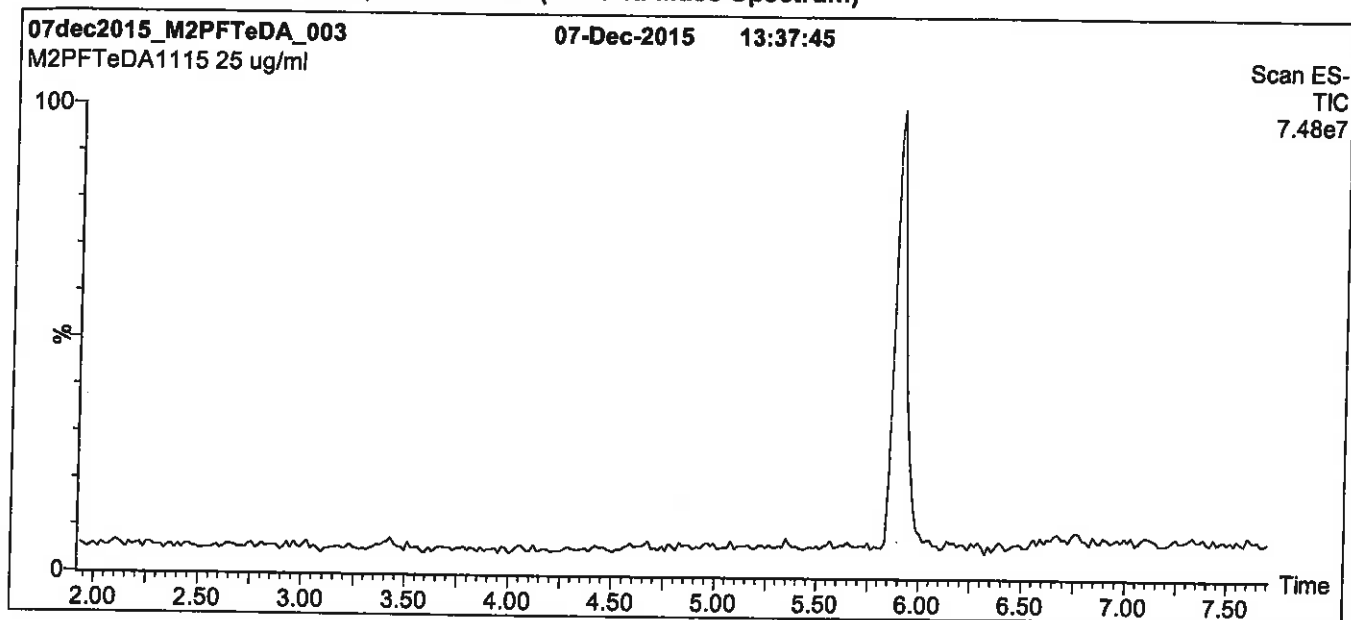
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**Figure 1: M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient  
Start: 65% (80:20 MeOH:ACN) / 35% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

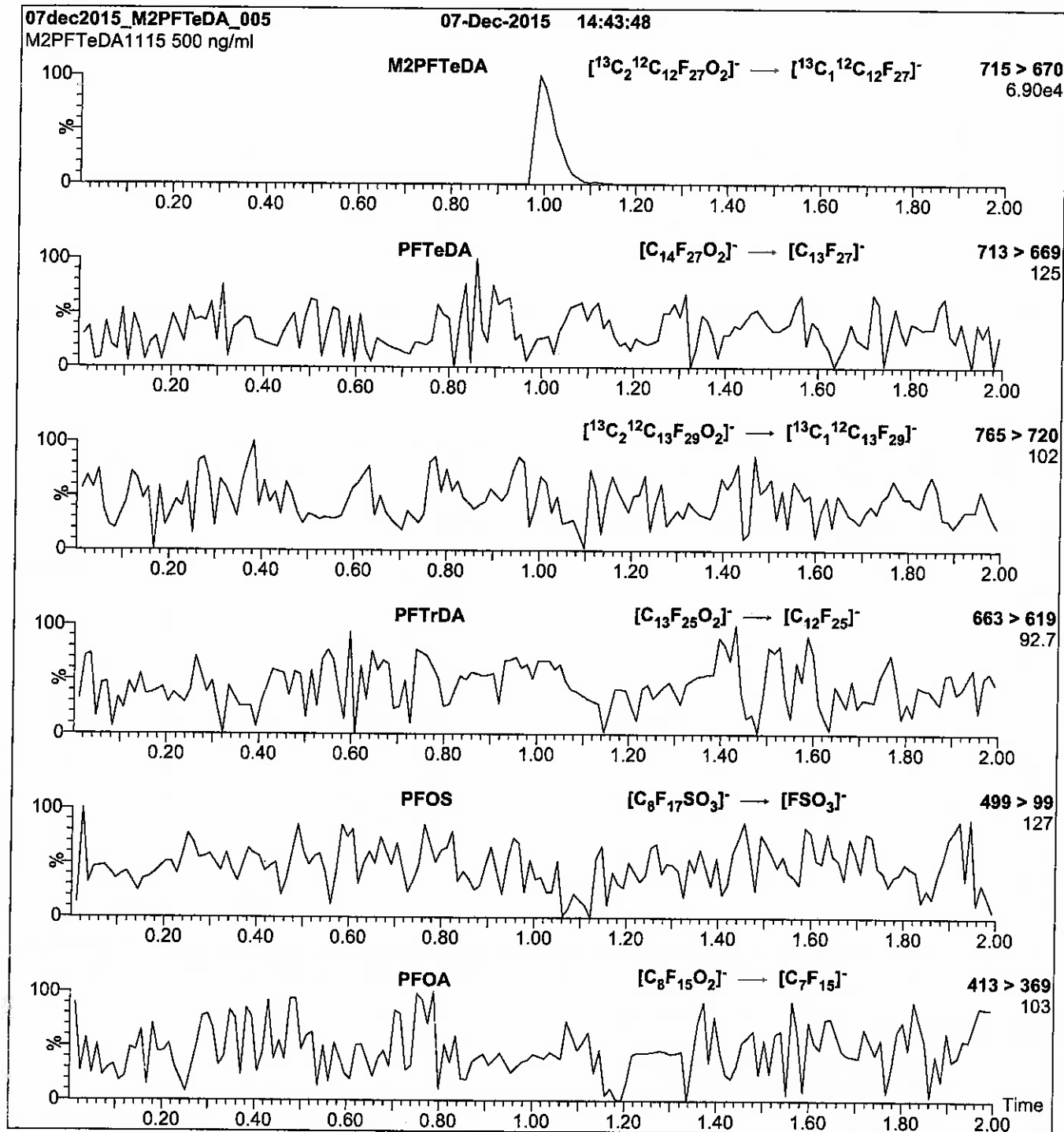
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (250 - 1250 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 15.00  
**Cone Gas Flow (l/hr)** = 60  
**Desolvation Gas Flow (l/hr)** = 750

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
 10  $\mu\text{l}$  (500 ng/ml M2PFTeDA)

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) =  $3.28\text{e-}3$   
 Collision Energy (eV) = 14

Reagent

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**LCM4PFHPA\_00007**

f: SBC 9/22/16

739567  
ID: LCM4PFHPA\_00007  
Exp: 05/27/21 Prpd: SBC  
13C4-Perfluoroheptanoic a



WELLINGTON  
LABORATORIES

CERTIFICATE OF ANALYSIS  
DOCUMENTATION

Scanned 10/14/16 SK

**PRODUCT CODE:**

M4PFHpA

**LOT NUMBER:**

M4PFHpA0516

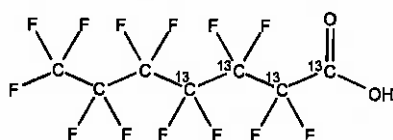
**COMPOUND:**

Perfluoro-n-[1,2,3,4-<sup>13</sup>C<sub>4</sub>]heptanoic acid

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>4</sub><sup>12</sup>C<sub>3</sub>HF<sub>13</sub>O<sub>2</sub>

**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

368.03

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99%<sup>13</sup>C

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

05/27/2016

(1,2,3,4-<sup>13</sup>C<sub>4</sub>)

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

05/27/2021

**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: 07/05/2016

(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:**

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**SYNTHESIS / CHARACTERIZATION:**

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

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

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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:**

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

**LIMITED WARRANTY:**

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

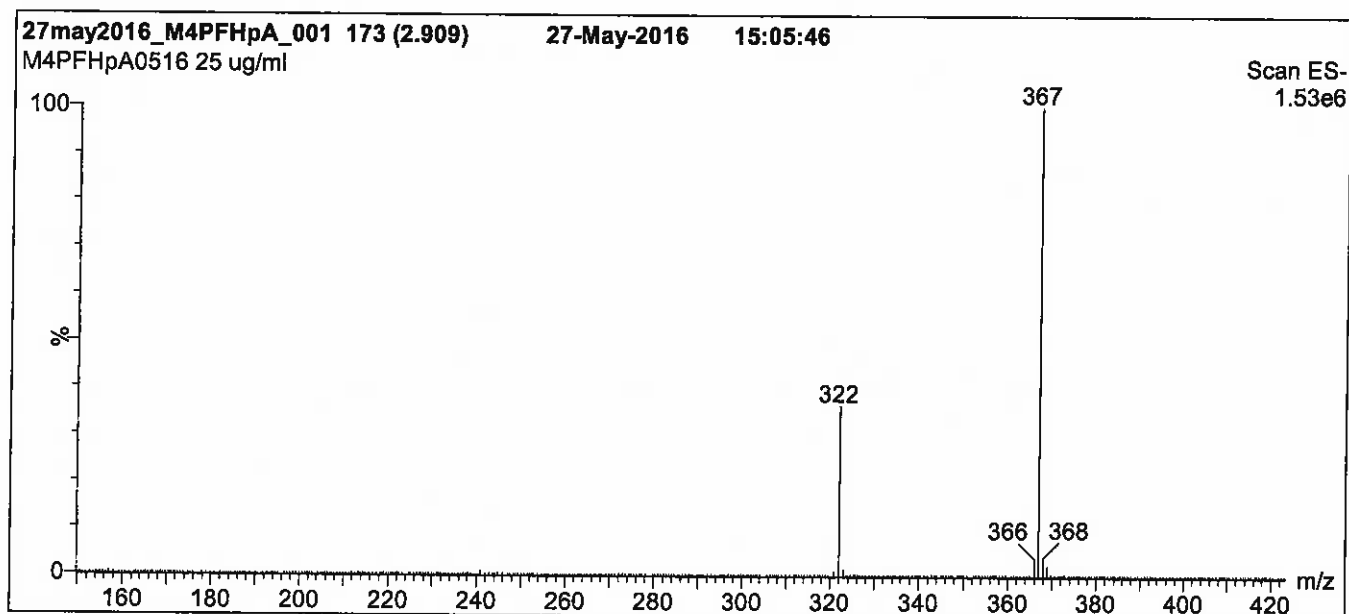
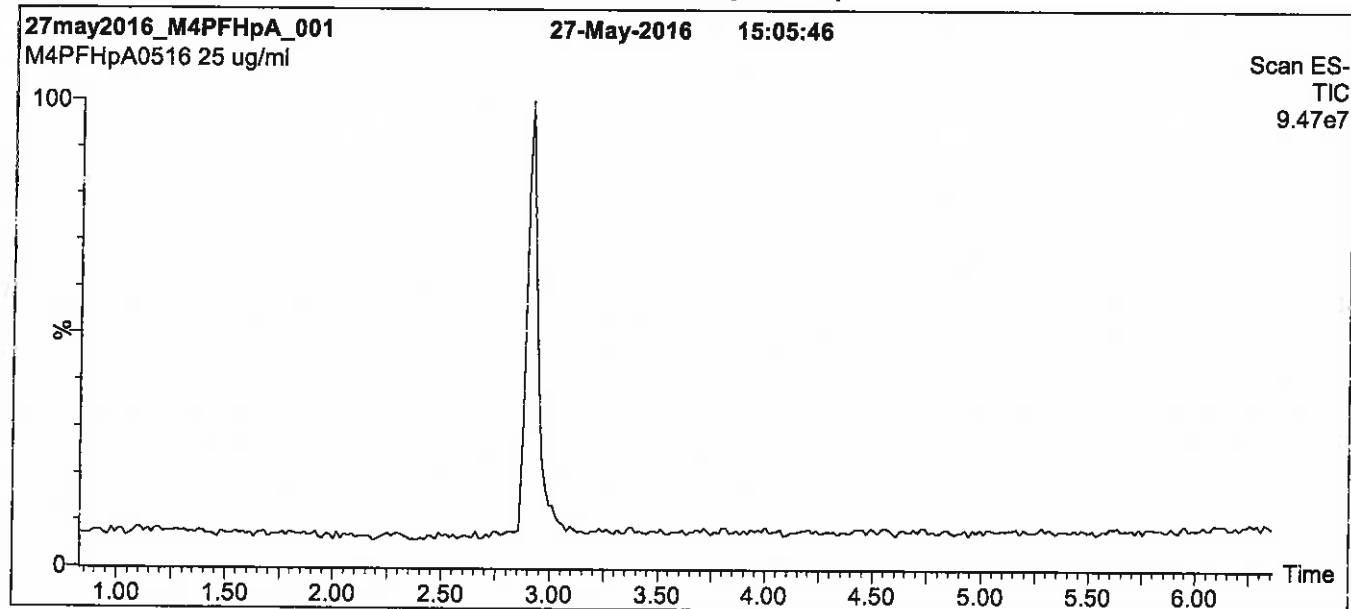
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**Figure 1:** M4PFHpA; LC/MS Data (TIC and Mass Spectrum)



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

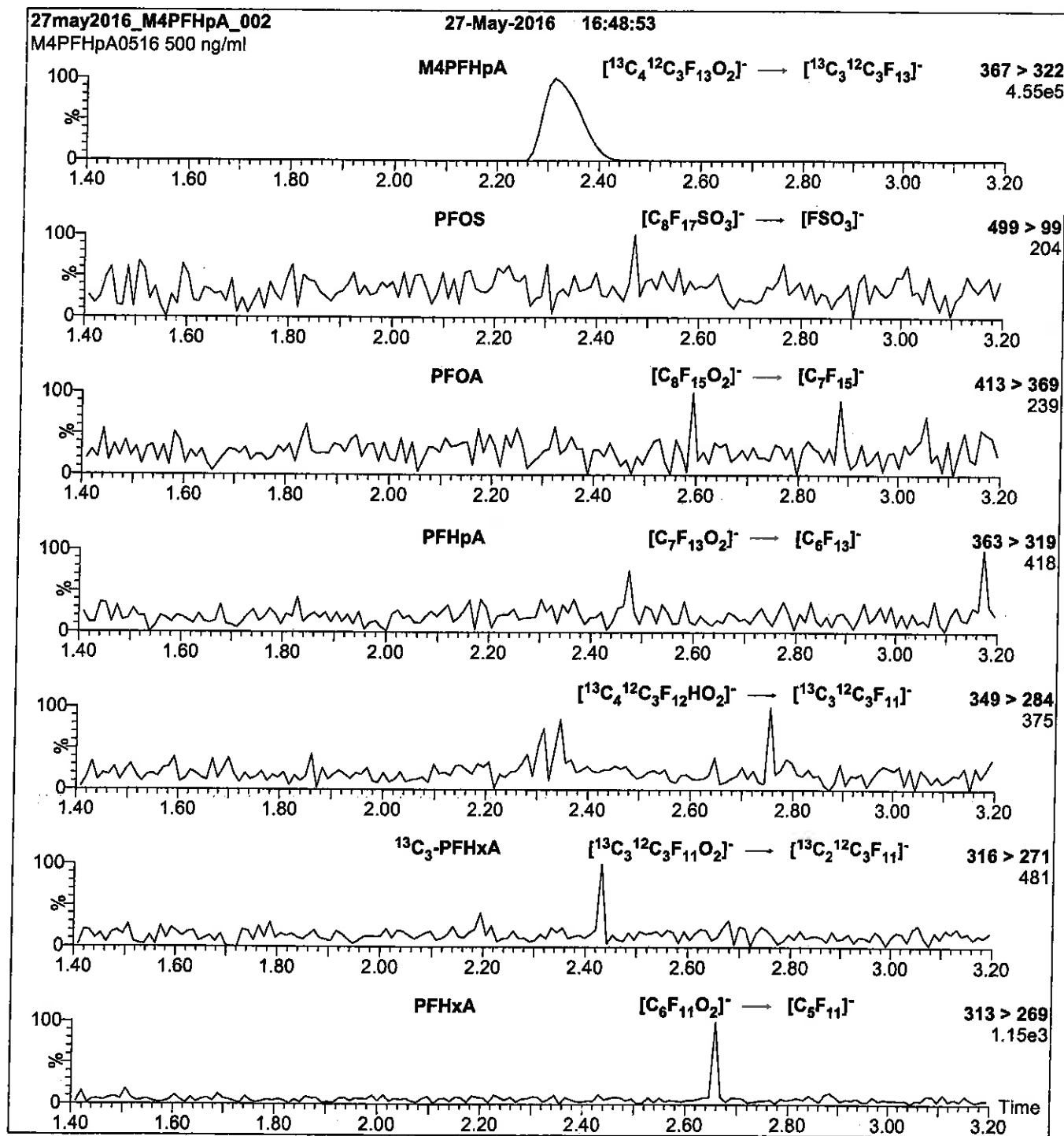
Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm  
Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.  
Time: 10 min

Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)  
Source: Electrospray (negative)  
Capillary Voltage (kV) = 2.00  
Cone Voltage (V) = 15.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M4PFHpA)

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

Reagent

---

**LCM5PFPEA\_00008**

R: 8BC 9/22/16



739590

ID: LCM5PFPEA\_00008

Exp: 05/22/20 Prpt: SAC

<sup>13</sup>C5-Perfluoropentanoic a



WELLINGTON  
LABORATORIES

CERTIFICATE OF ANALYSIS  
DOCUMENTATION

Scanned 10/14/16 LR

**PRODUCT CODE:**

M5PFPeA

**LOT NUMBER:**

M5PFPeA0515

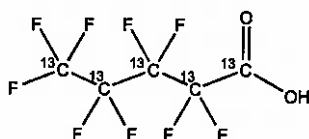
**COMPOUND:**

Perfluoro-n-[<sup>13</sup>C<sub>5</sub>]pentanoic acid

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>5</sub>HF<sub>9</sub>O<sub>2</sub>

**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

269.01

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99% <sup>13</sup>C

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

05/22/2015

(<sup>13</sup>C<sub>5</sub>)

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

05/22/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

B.G. Chittim

Date: 05/25/2015

(mm/dd/yyyy)

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

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

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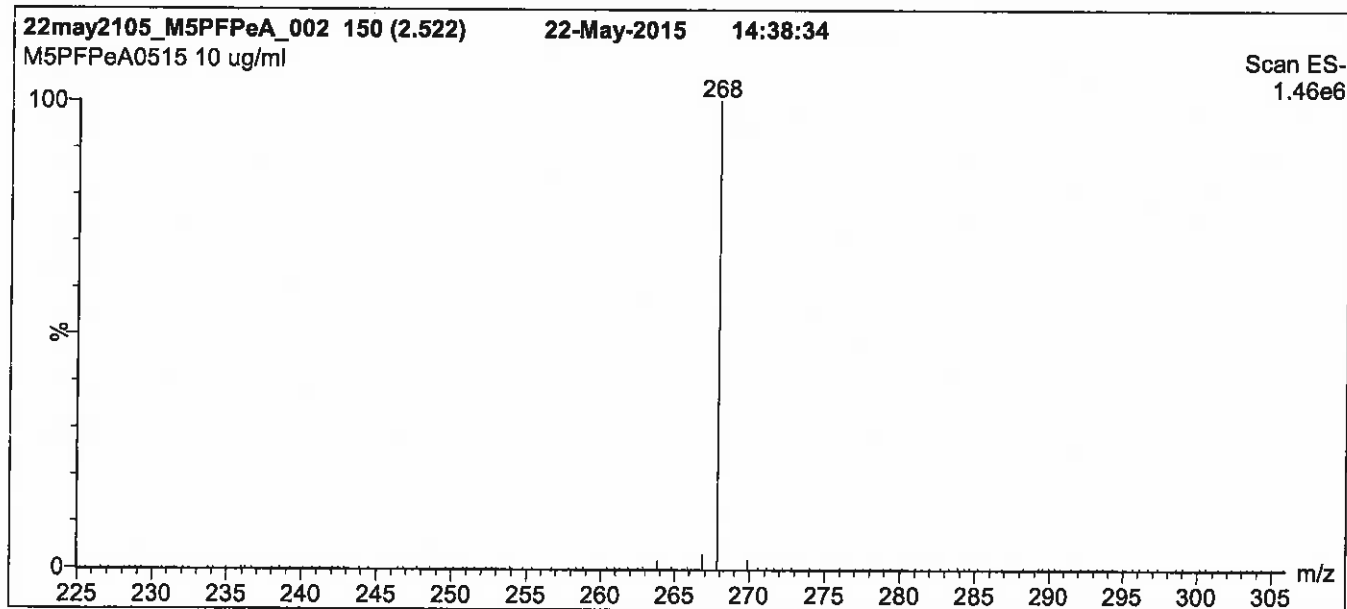
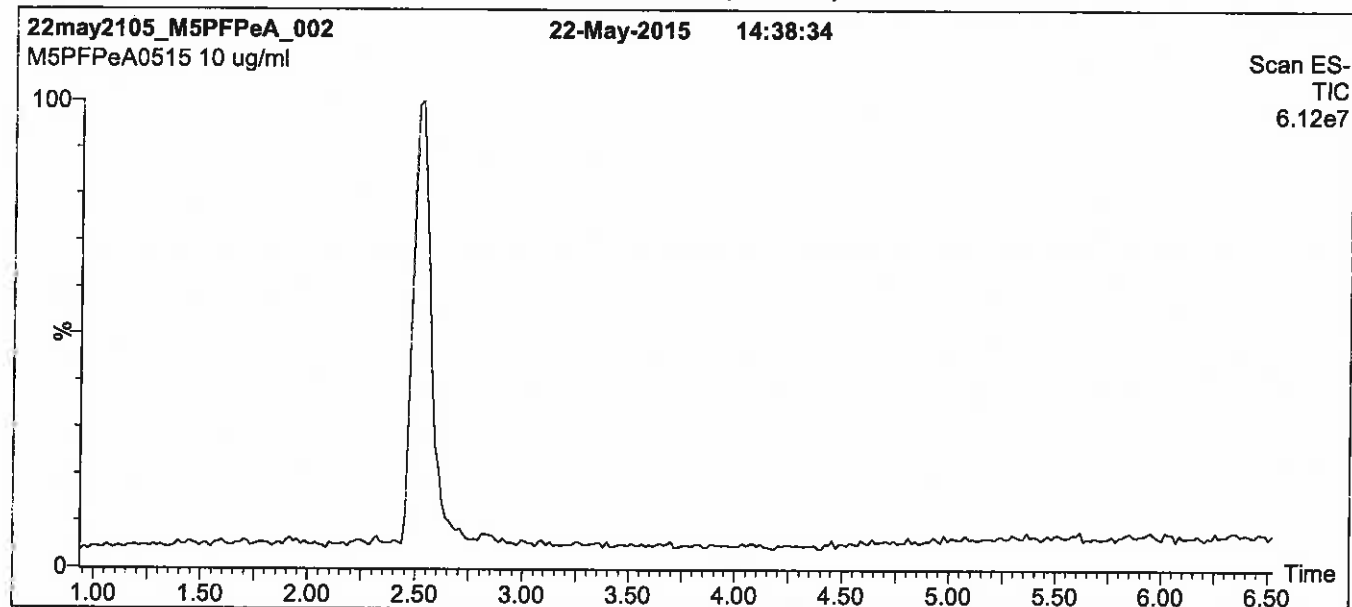
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**Figure 1:** M5PFPeA; LC/MS Data (TIC and Mass Spectrum)



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 40% (80:20 MeOH:ACN) / 60% 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

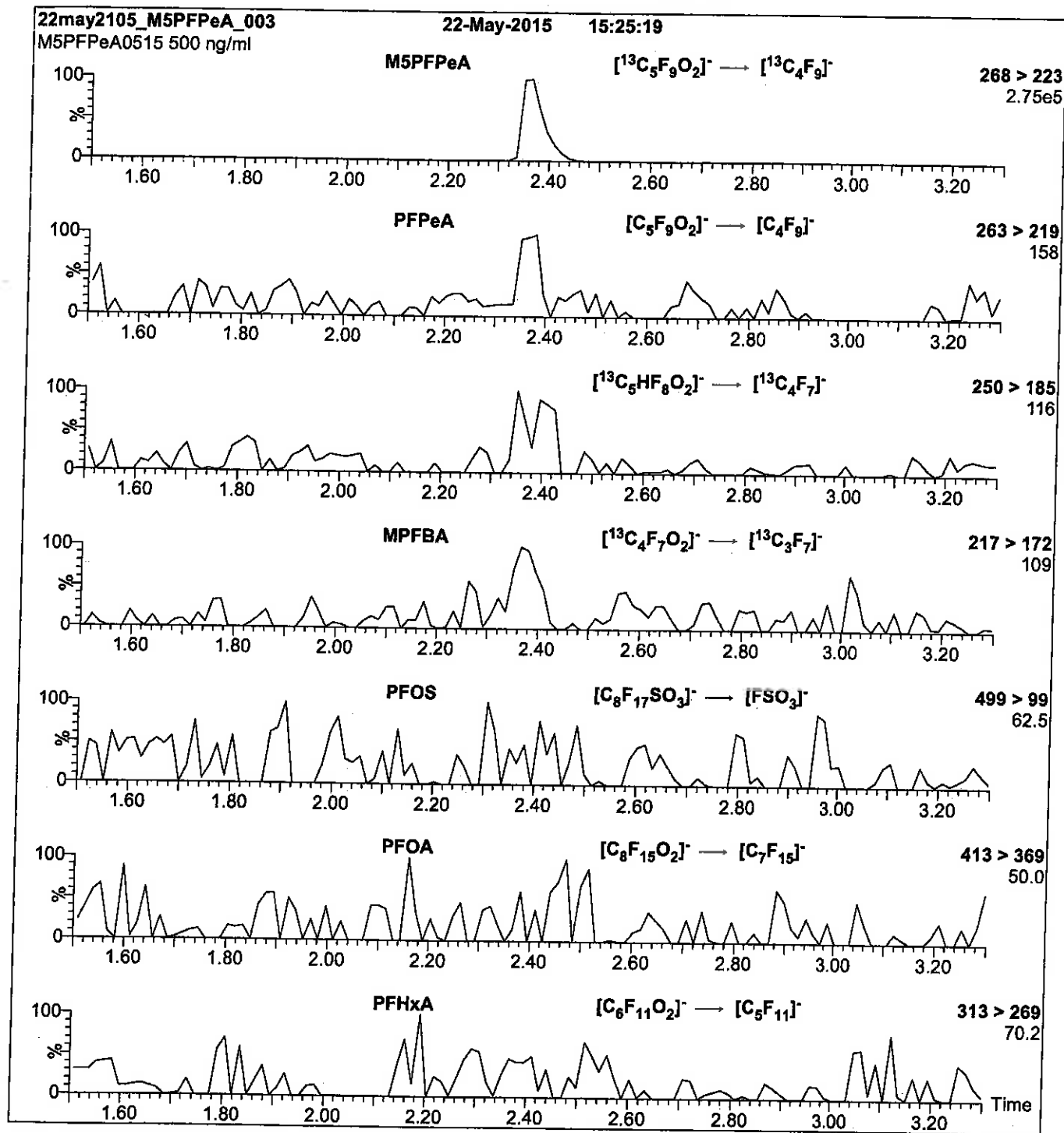
Flow: 300  $\mu$ l/min

**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) = 60  
Desolvation Gas Flow (l/hr) = 750

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M5PFPeA)

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



Reagent

---

**LCM8FOSA\_00011**



WELLINGTON  
LABORATORIES

CERTIFICATE OF ANALYSIS  
DOCUMENTATION



739615

ID: LCM8FOSA\_00011

Exp: 12/22/17 Prod: SBC  
13C8-Perfluorooctanesulfo

R: SBC 9/22/16  
Scanned 10/14/16

**PRODUCT CODE:**

M8FOSA-I

**LOT NUMBER:**

M8FOSA1215I

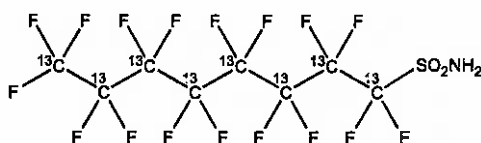
**COMPOUND:**

Perfluoro-1-[<sup>13</sup>C<sub>8</sub>]octanesulfonamide

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>8</sub>H<sub>2</sub>F<sub>17</sub>NO<sub>2</sub>S

**CONCENTRATION:**

50 ± 2.5 µg/ml

**CHEMICAL PURITY:**

>98%

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

12/22/2015

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

12/22/2017

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**MOLECULAR WEIGHT:**

507.09

**SOLVENT(S):**

Isopropanol

**ISOTOPIC PURITY:**

≥99% <sup>13</sup>C  
(<sup>13</sup>C<sub>8</sub>)

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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

Certified By:

B.G. Chittim

Date: 01/14/2016

(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.

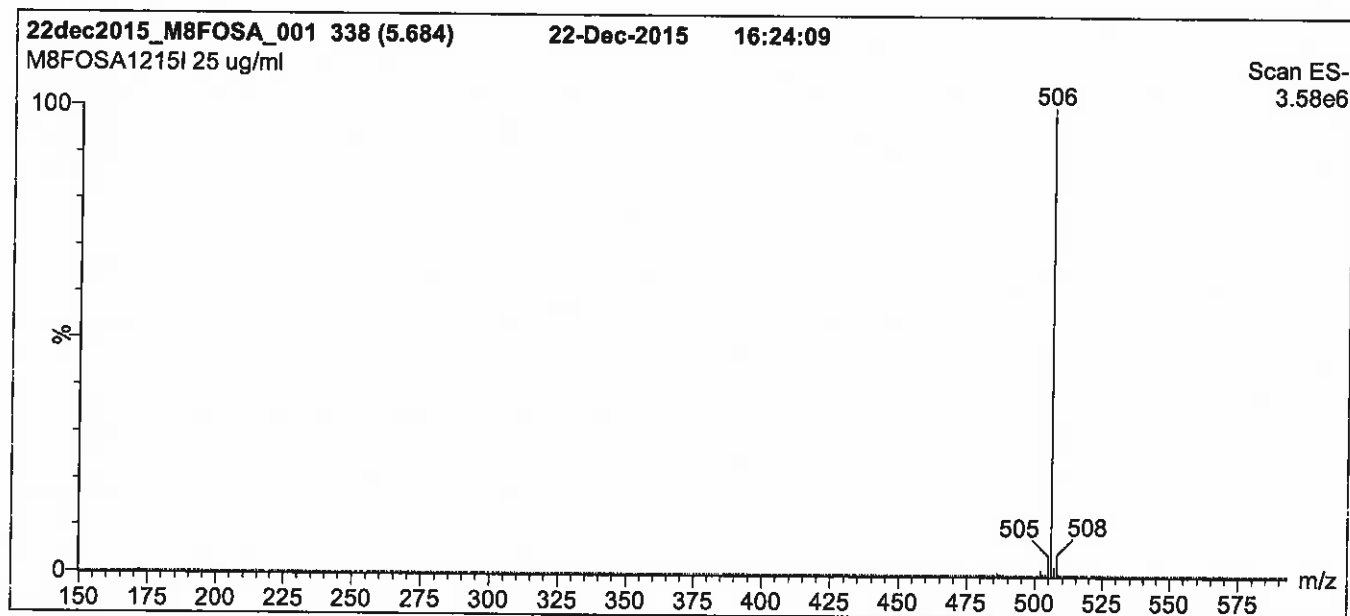
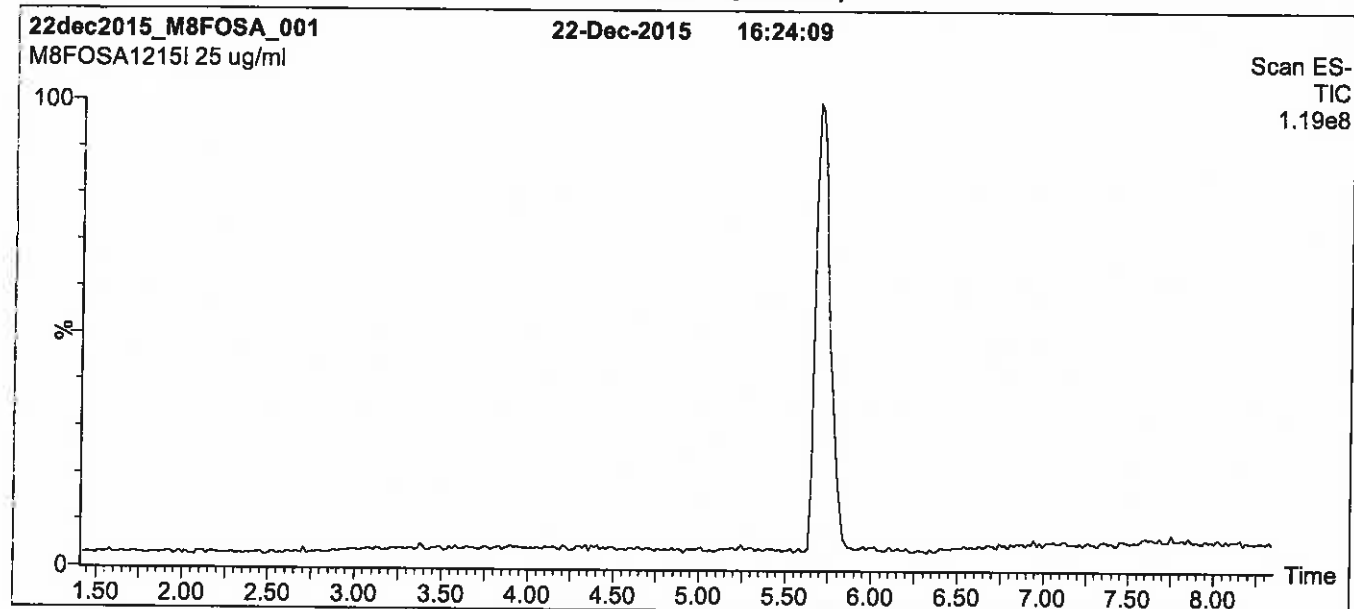
**QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

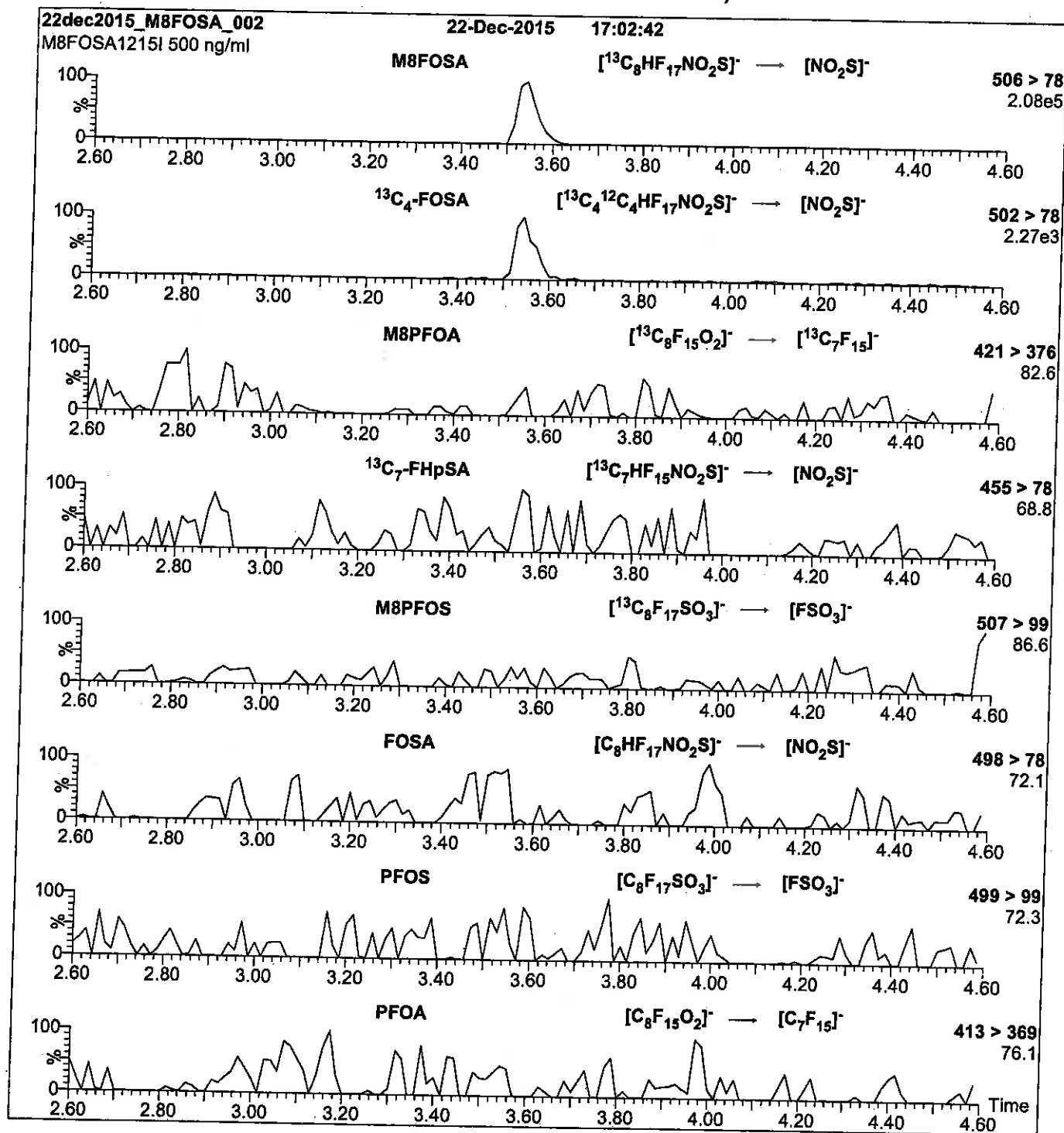
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

**Injection:** Direct loop injection  
 10  $\mu\text{l}$  (500 ng/ml M8FOSA-I)

**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) = 3.39e-3  
 Collision Energy (eV) = 30

Reagent

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**LCMPFBA\_00008**

R: 8BC 9/22/16



739593

ID: LCMFBA\_00008

Exp: 05/24/21 Prod: SEC

<sup>13</sup>C4-Perfluorobutanoic ac



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SP

**PRODUCT CODE:**

MPFBA

**LOT NUMBER:**

MPFBA0516

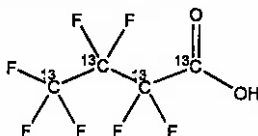
**COMPOUND:**

Perfluoro-n-[1,2,3,4-<sup>13</sup>C<sub>4</sub>]butanoic acid

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>4</sub>HF<sub>9</sub>O<sub>2</sub>

**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

218.01

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99%<sup>13</sup>C

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

05/24/2016

(1,2,3,4-<sup>13</sup>C<sub>4</sub>)

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

05/24/2021

**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:** 05/30/2016

(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:**

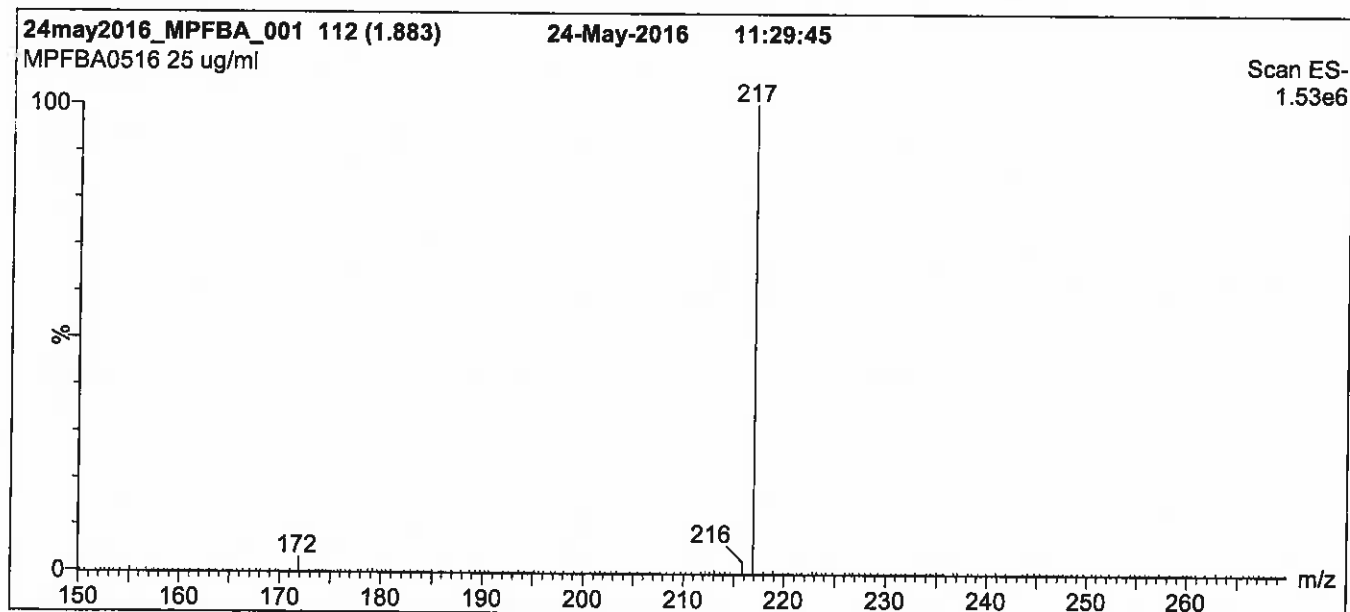
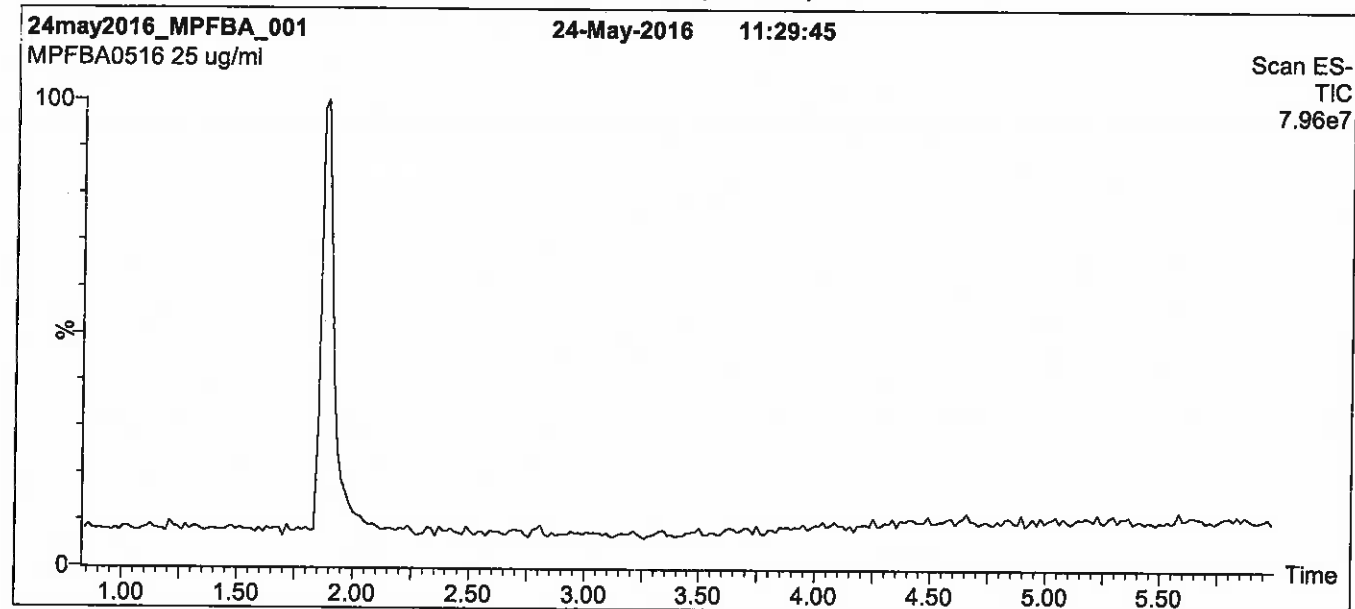
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 30% (80:20 MeOH:ACN) / 70% 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

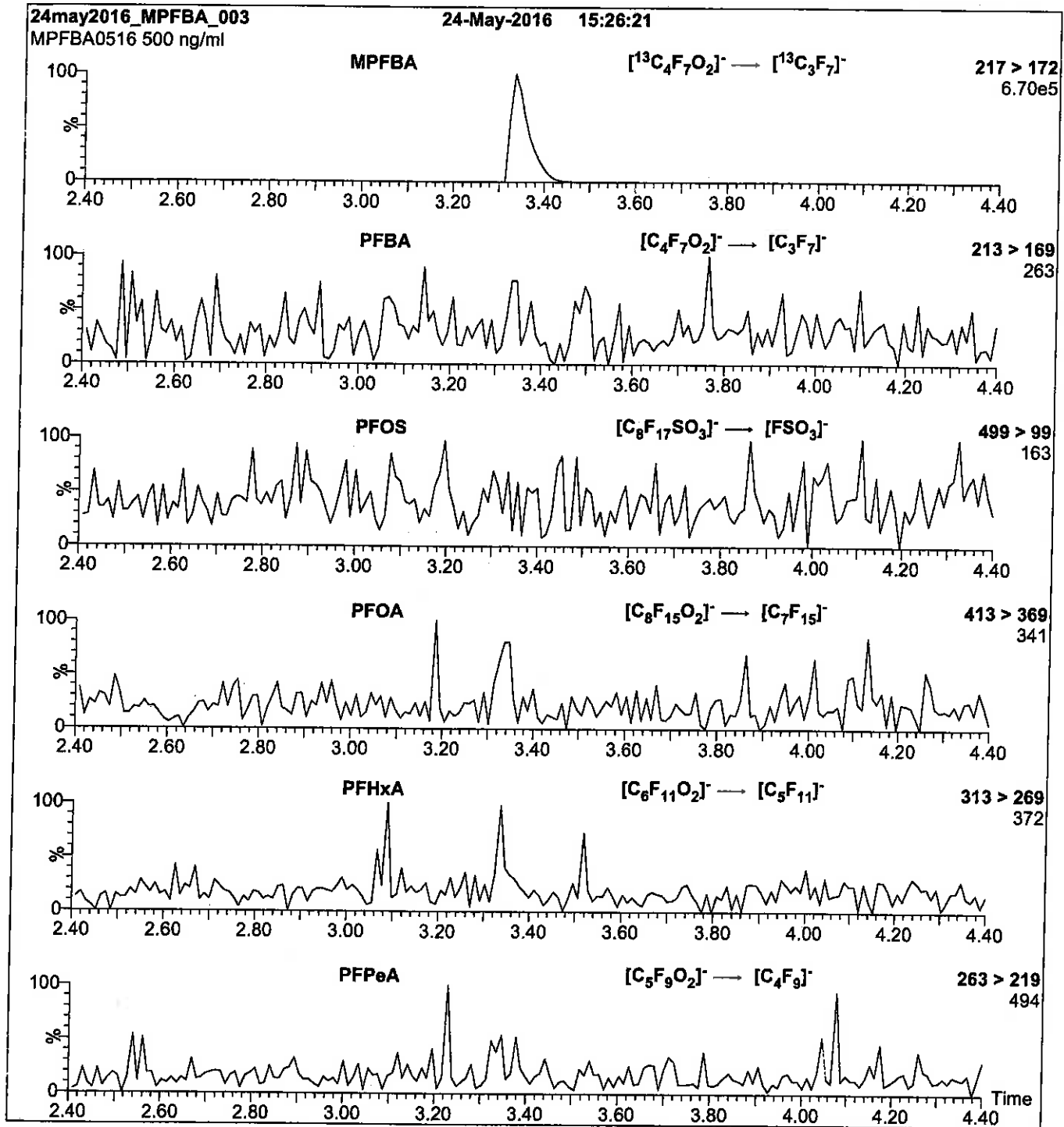
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 10.00  
Cone Gas Flow (l/hr) = 100  
Desolvation Gas Flow (l/hr) = 750

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



**Conditions for Figure 2:**

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

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) = 3.50e-3  
Collision Energy (eV) = 10

Reagent

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**LCMPFDA\_00011**



Scanned 10/14/16 R: SBC 9/22/16  
WELLINGTON  
LABORATORIES

CERTIFICATE OF ANALYSIS  
DOCUMENTATION

739609  
ID: LCMFDA\_00011  
Exp: 08/19/20 Prep: SBC  
13C2-Perfluorodecanoic a

**PRODUCT CODE:**

MPFDA

**LOT NUMBER:**

MPFDA0815

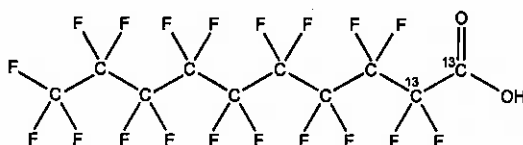
**COMPOUND:**

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

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>8</sub>HF<sub>18</sub>O<sub>2</sub>

**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

516.07

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99% <sup>13</sup>C

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

08/19/2015

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

08/19/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

B.G. Chittim

Date: 08/21/2015

(mm/dd/yyyy)

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

**INTENDED USE:**

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

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**TRACEABILITY:**

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**EXPIRY DATE / PERIOD OF VALIDITY:**

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**LIMITED WARRANTY:**

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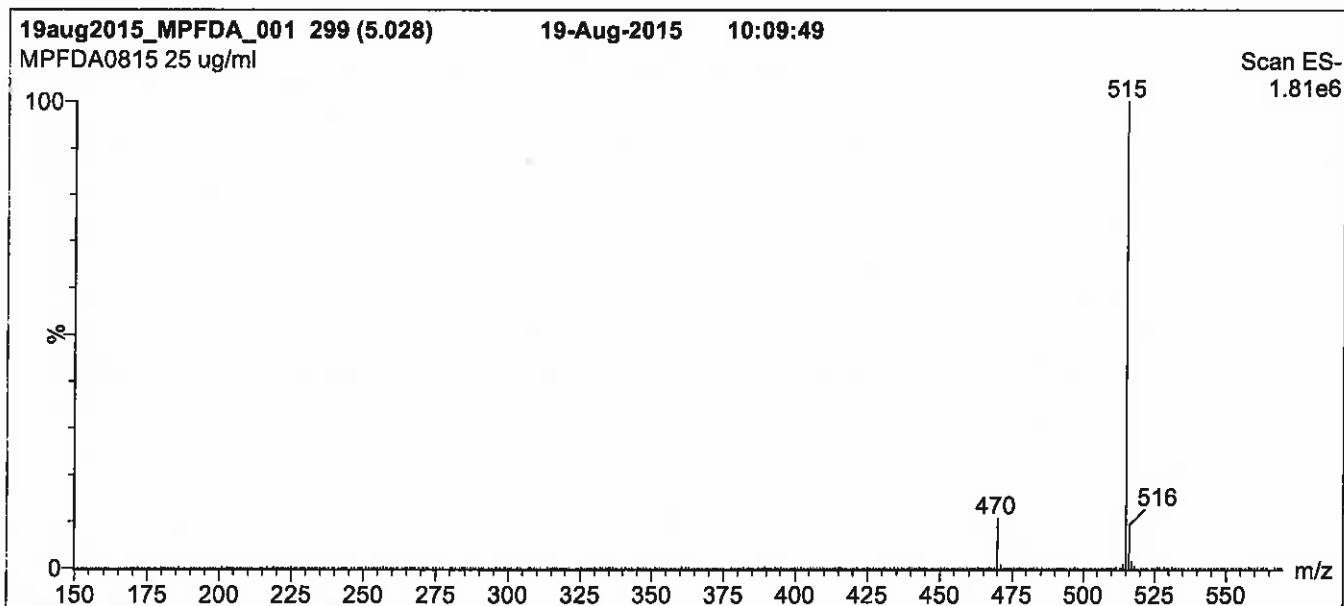
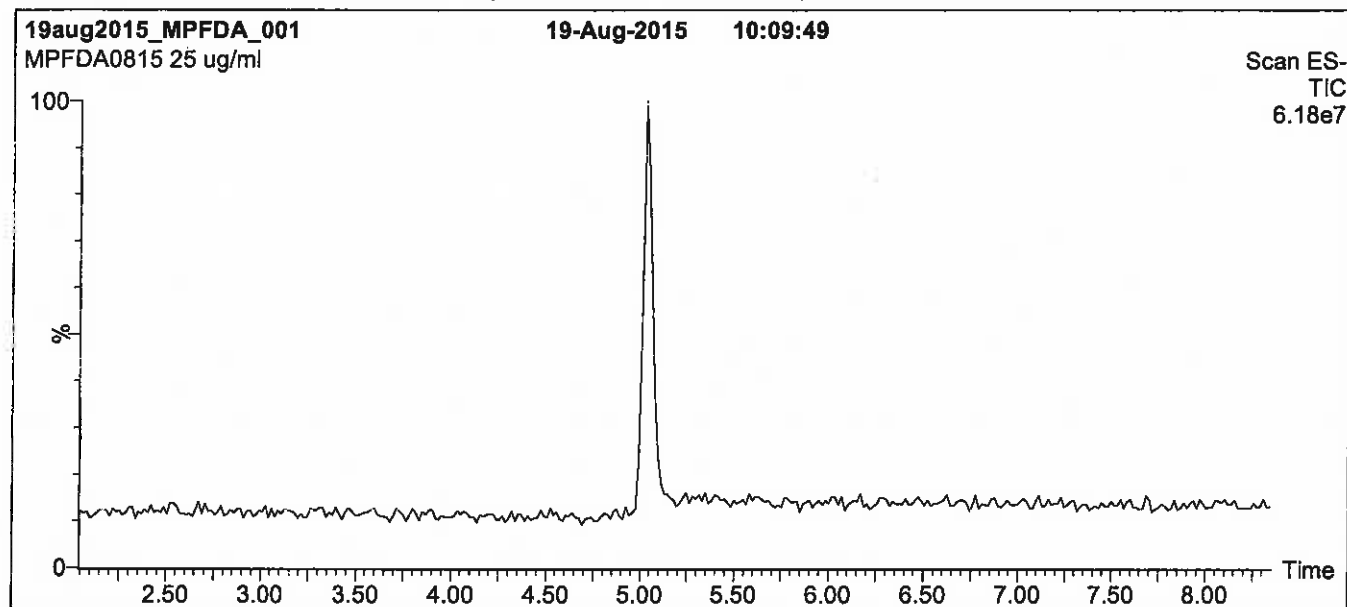
**QUALITY MANAGEMENT:**

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



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

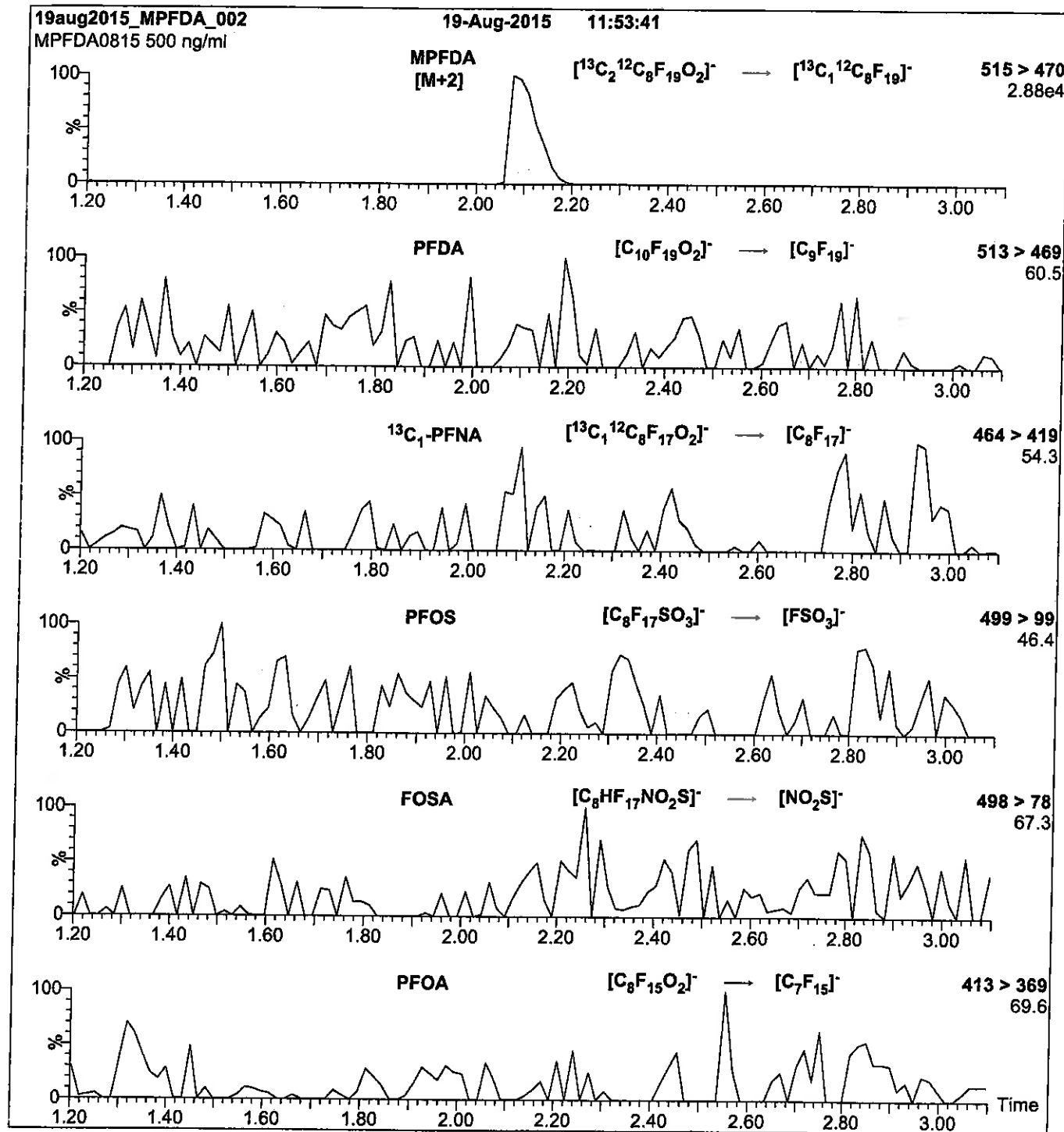
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCMPFD<sub>o</sub>A\_00008**



R: 888 9/22/16



739598

ID: LCMFDoA\_00008

Exp: 04/06/21 Prod: SBC

13C2-Perfluorododecanoic



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SR

**PRODUCT CODE:**

MPFDoA

**LOT NUMBER:**

MPFDoA0416

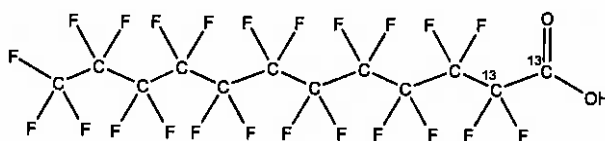
**COMPOUND:**

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

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>10</sub>HF<sub>23</sub>O<sub>2</sub>

**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

616.08

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99% <sup>13</sup>C

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

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

04/08/2016

**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.

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

Certified By:

B.G. Chittim

Date: 04/15/2016

(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.

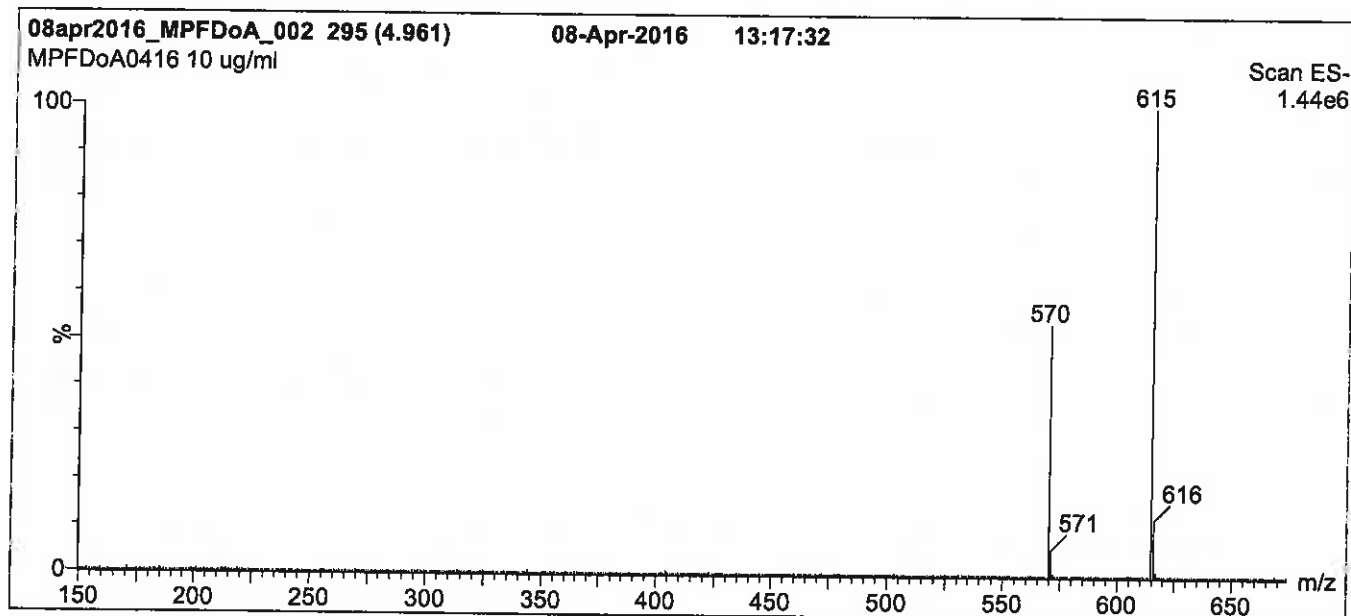
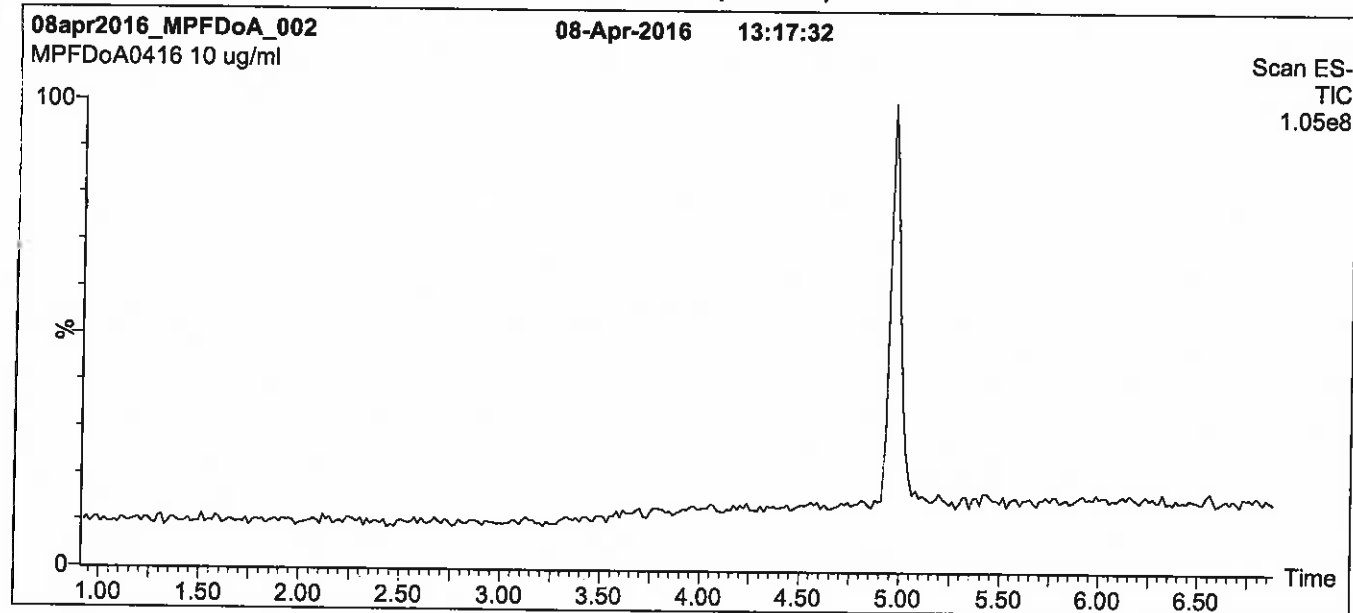
**QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

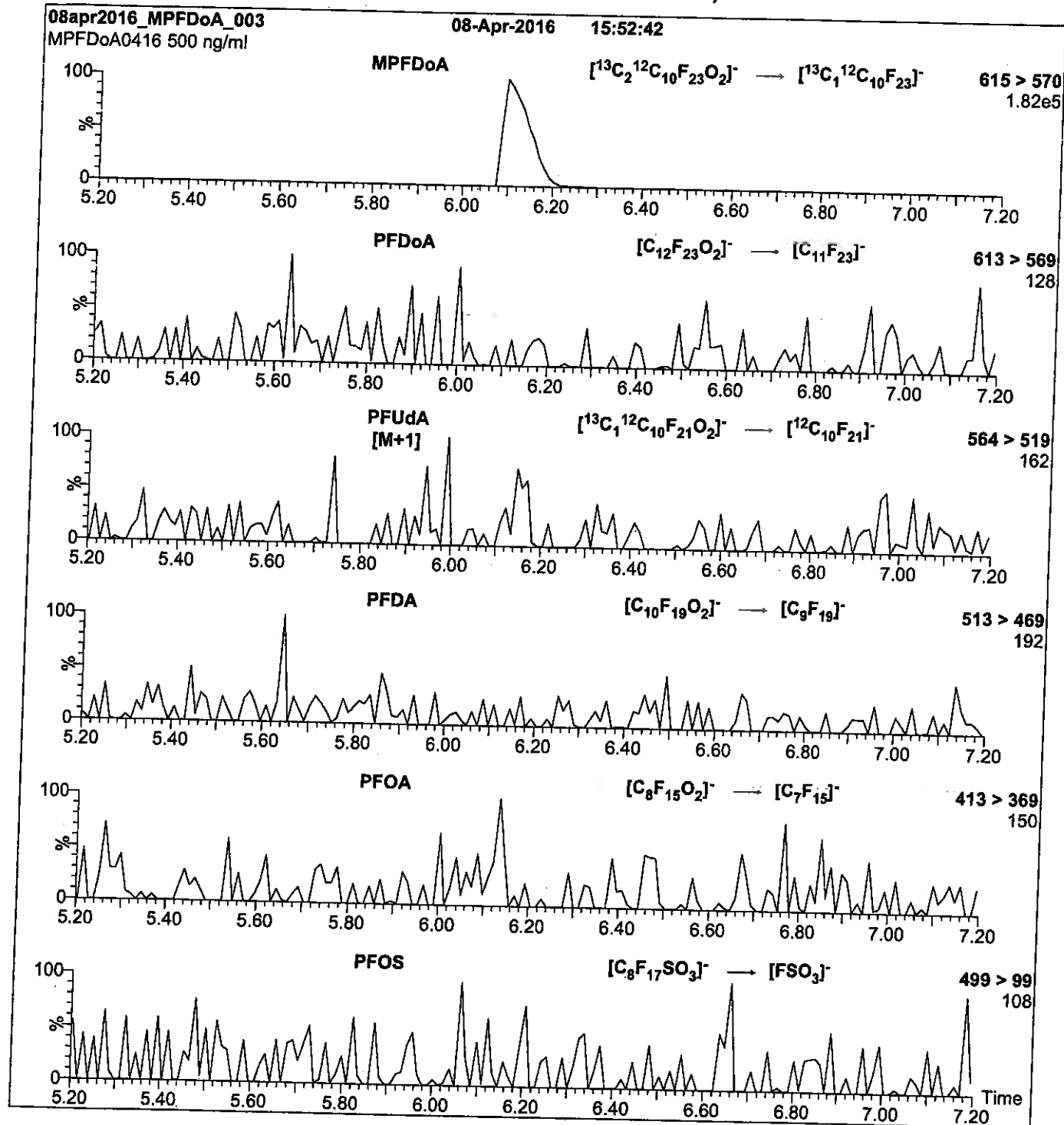
**Flow:** 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml MPFD0A)

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) = 3.24e-3  
Collision Energy (eV) = 13

Reagent

---

**LCMPFHxA\_00012**

Scanned 10/14/16 R: SBC 9/22/16

739612  
ID: LCMFHX\_A\_00012  
Exp: 04/08/21 Prep: SBC  
13C2-Perfluorohexanoic ac



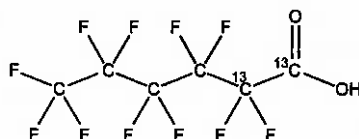
# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

**LOT NUMBER:** MPFHxA0416

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



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

**MOLECULAR WEIGHT:** 316.04  
**SOLVENT(S):** Methanol  
Water (<1%)  
**ISOTOPIC PURITY:** ≥99%<sup>13</sup>C  
(1,2-<sup>13</sup>C<sub>2</sub>)

**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 04/08/2016  
**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

### **INTENDED USE:**

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### **HOMOGENEITY:**

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### **UNCERTAINTY:**

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

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

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

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

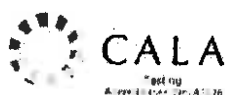
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

### **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.

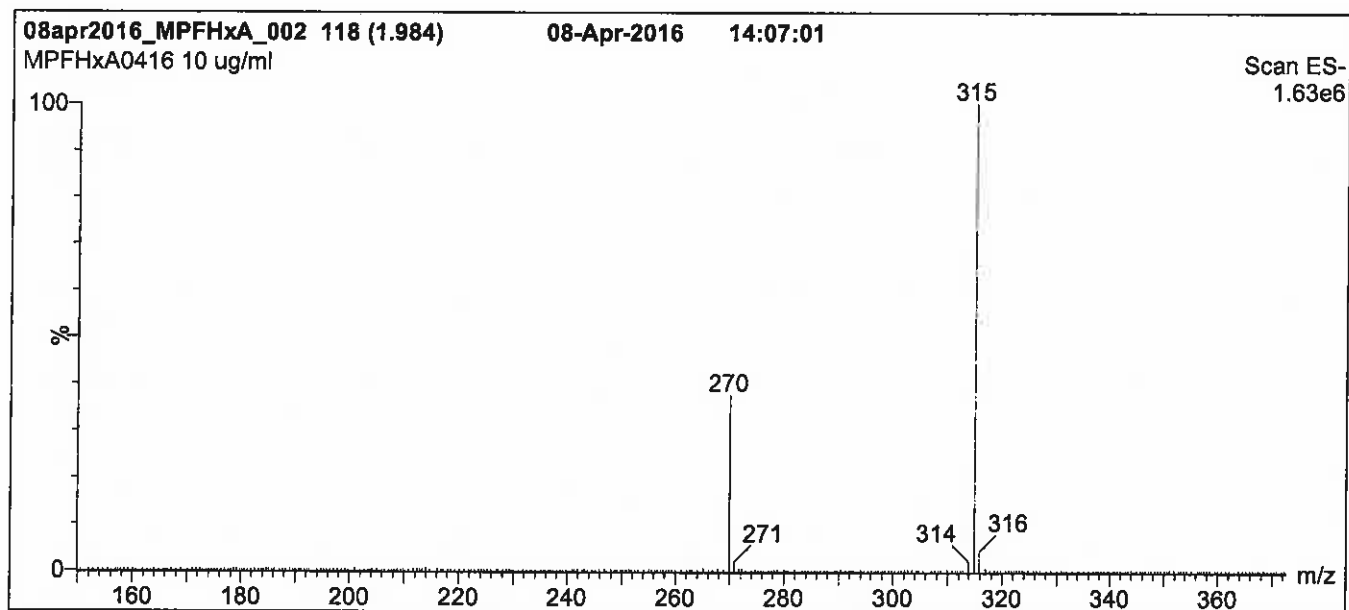
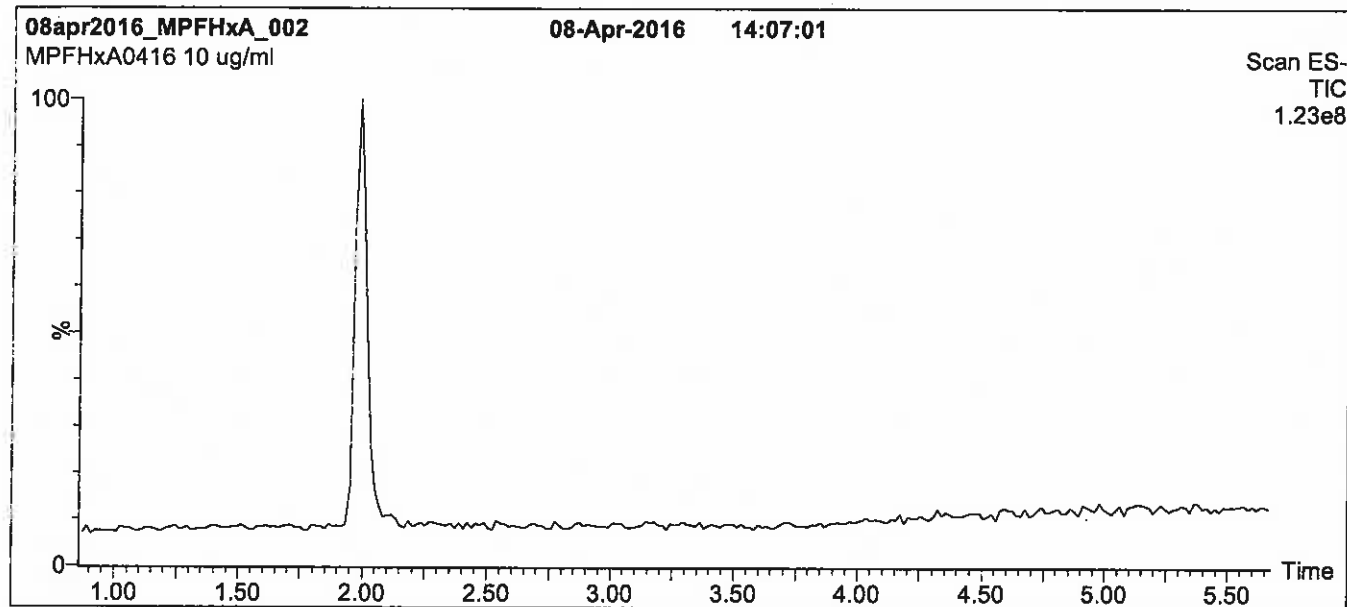
### **QUALITY MANAGEMENT:**

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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

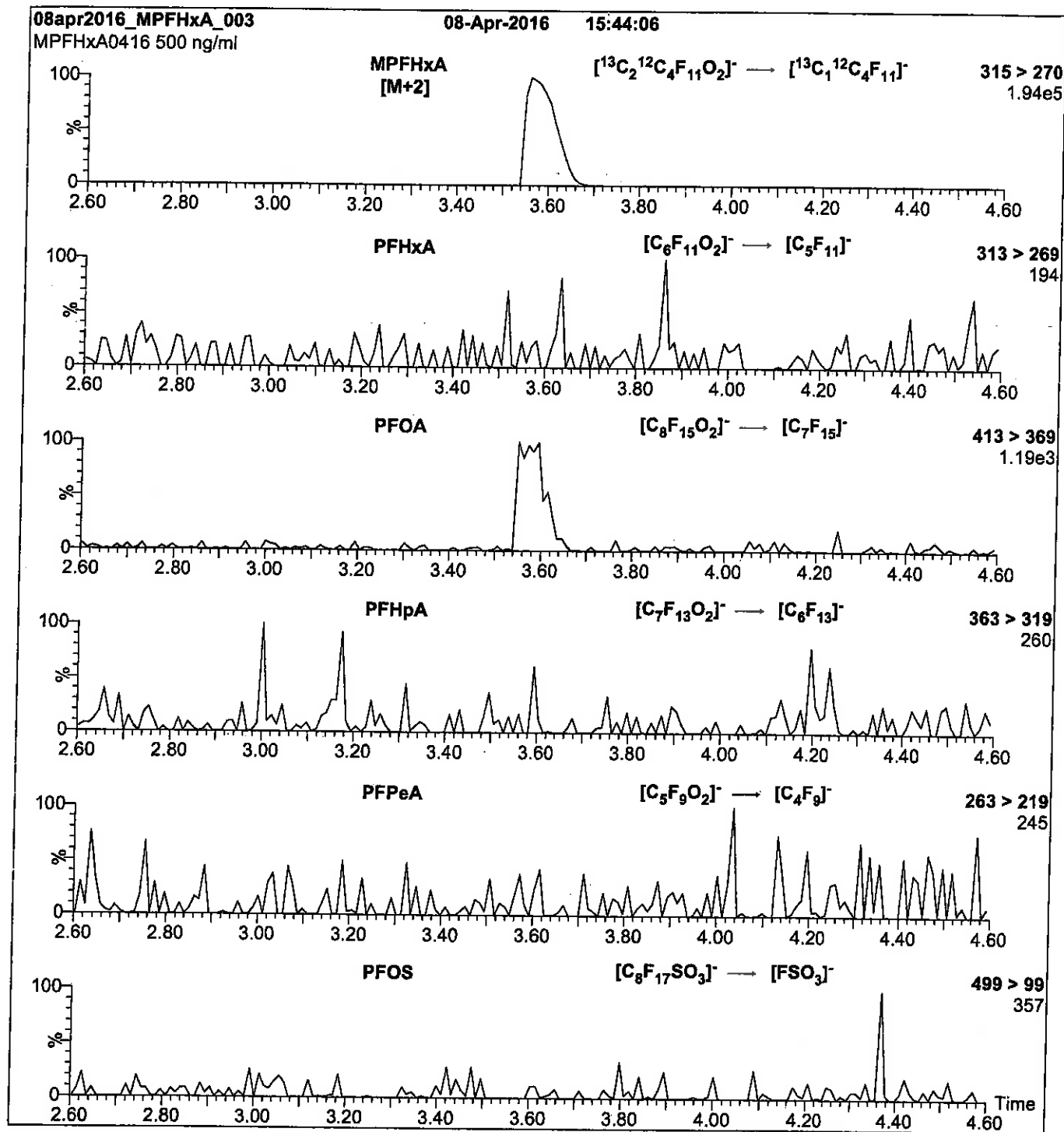
**MS Parameters**

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

Reagent

---

**LCMPFHxS\_00008**

f: 8BC 9/22/16



739601

ID: LCMFHX\_S\_00008

Exp: 10/23/20 Prod: SBC

18O2-Perfluorohexanesulfo



**WELLINGTON**  
LABORATORIES

**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION

*Scanned 10/14/16 SK*

**PRODUCT CODE:**

MPFHxS

**LOT NUMBER:**

MPFHxS1015

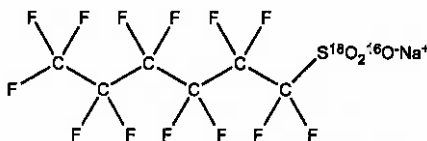
**COMPOUND:**

Sodium perfluoro-1-hexane[<sup>18</sup>O<sub>2</sub>]sulfonate

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

C<sub>6</sub>F<sub>13</sub>S<sup>18</sup>O<sub>2</sub><sup>16</sup>ONa

**MOLECULAR WEIGHT:**

426.10

**CONCENTRATION:**

50.0 ± 2.5 µg/ml (Na salt)

**SOLVENT(S):**

Methanol

47.3 ± 2.4 µg/ml (MPFHxS anion)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

>94% (<sup>18</sup>O<sub>2</sub>)

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

10/23/2015

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

10/23/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- The response factor for MPFHxS (C<sub>6</sub>F<sub>13</sub>S<sup>18</sup>O<sub>2</sub><sup>16</sup>O<sup>-</sup>) has been observed to be up to 10% lower than for PFHxS (C<sub>6</sub>F<sub>13</sub>S<sup>18</sup>O<sub>3</sub><sup>-</sup>) when both compounds are injected together. This difference may vary between instruments.
- Due to the isotopic purity of the starting material (<sup>18</sup>O<sub>2</sub> >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

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

Certified By:

*B.G. Chittim*  
B.G. Chittim

Date: 10/28/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

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

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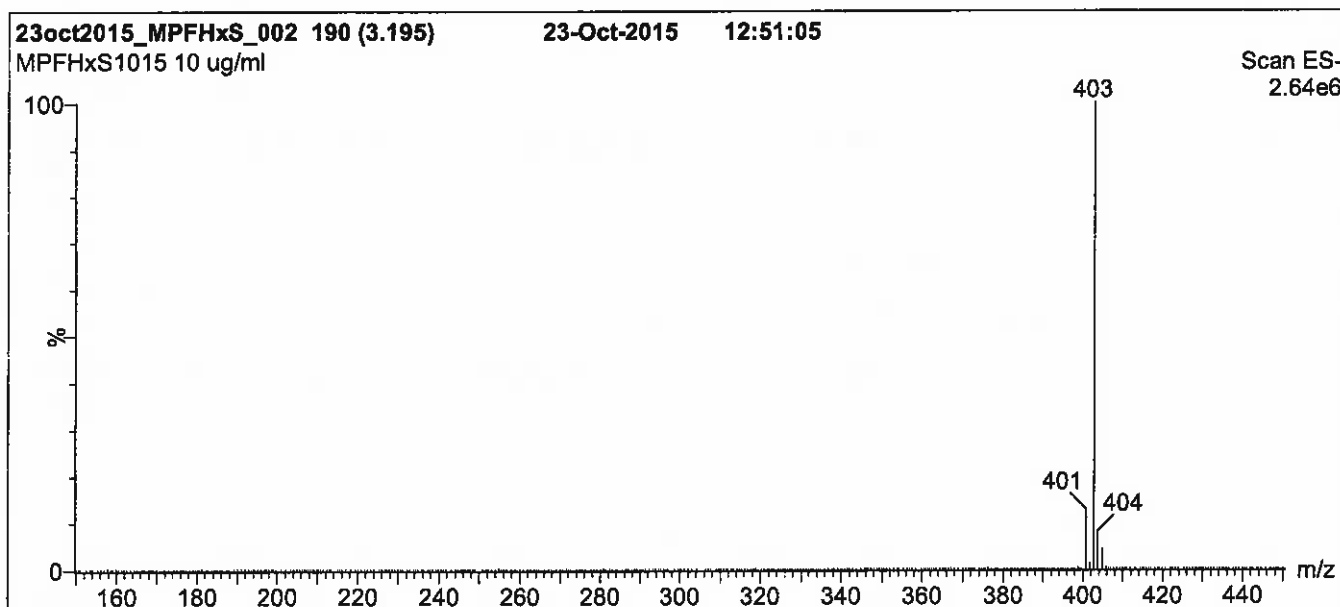
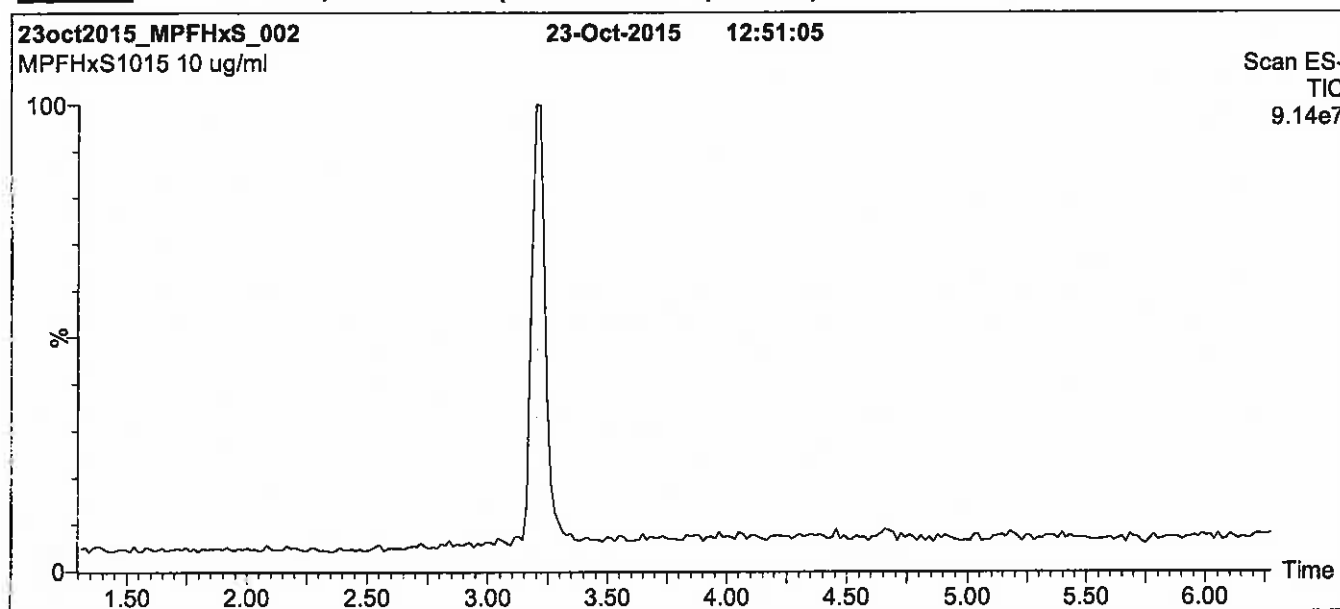
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**Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

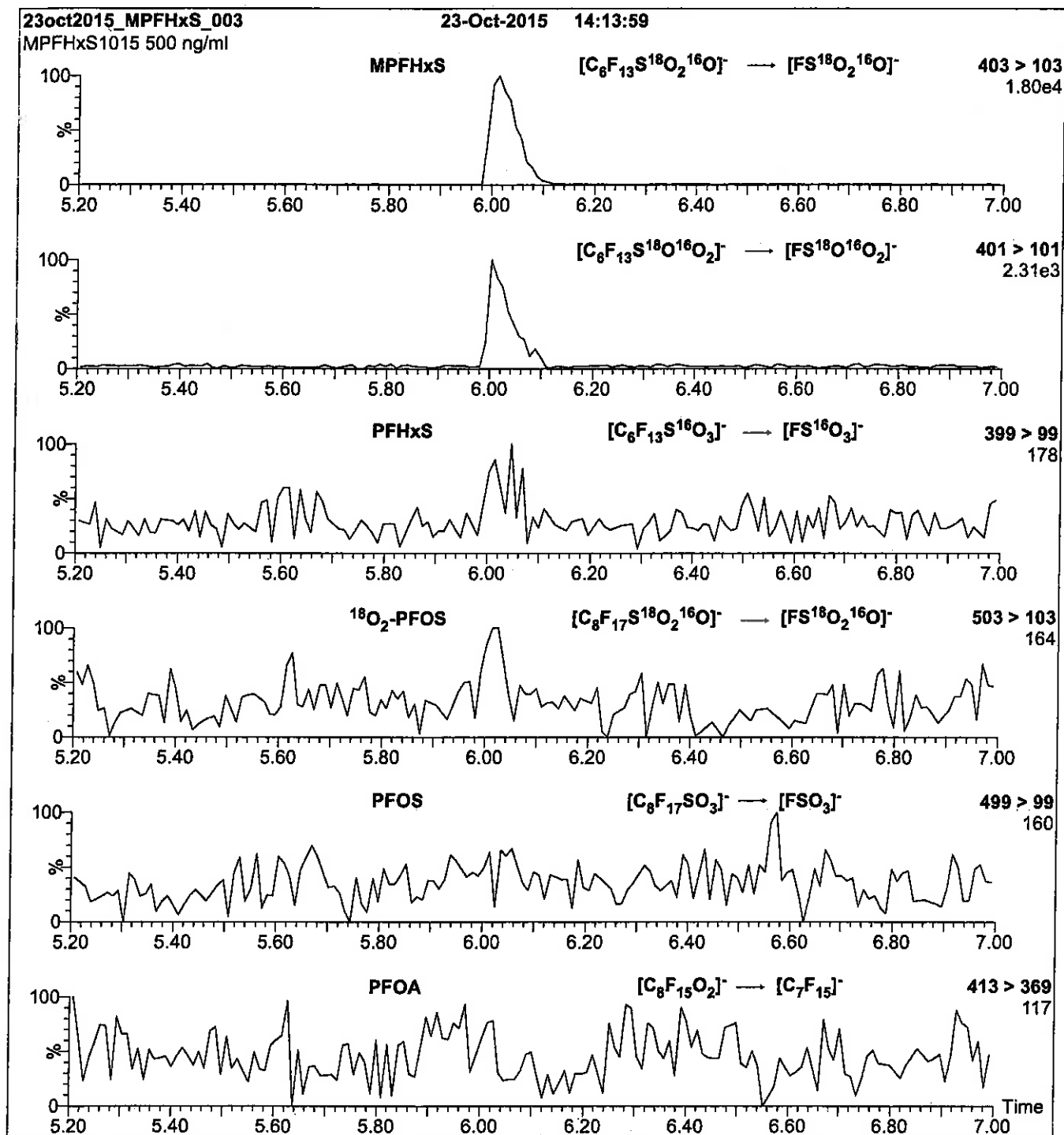
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCMPFNA\_00008**

Scanned 10/14/16 R: SBC 9/22/16



739637  
ID: LCM:PFNA\_00008  
Exp: 04/13/19 Prod: SBC  
13C5-Perfluoronanoic aci



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

MPFNA

**LOT NUMBER:**

MPFNA0414

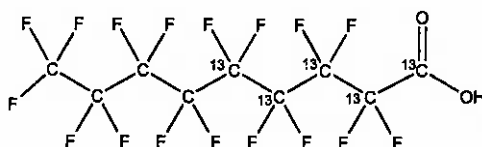
**COMPOUND:**

Perfluoro-n-[1,2,3,4,5-<sup>13</sup>C<sub>5</sub>]nonanoic acid

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>5</sub><sup>12</sup>C<sub>4</sub>HF<sub>17</sub>O<sub>2</sub>

**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

469.04

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99%<sup>13</sup>C

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

04/13/2014

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

04/13/2019

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

(1,2,3,4,5-<sup>13</sup>C<sub>5</sub>)

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

B.G. Chittim

Date: 04/01/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
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### **HAZARDS:**

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

### **SYNTHESIS / CHARACTERIZATION:**

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

### **HOMOGENEITY:**

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

### **UNCERTAINTY:**

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

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

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

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

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

### **TRACEABILITY:**

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

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

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

### **LIMITED WARRANTY:**

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

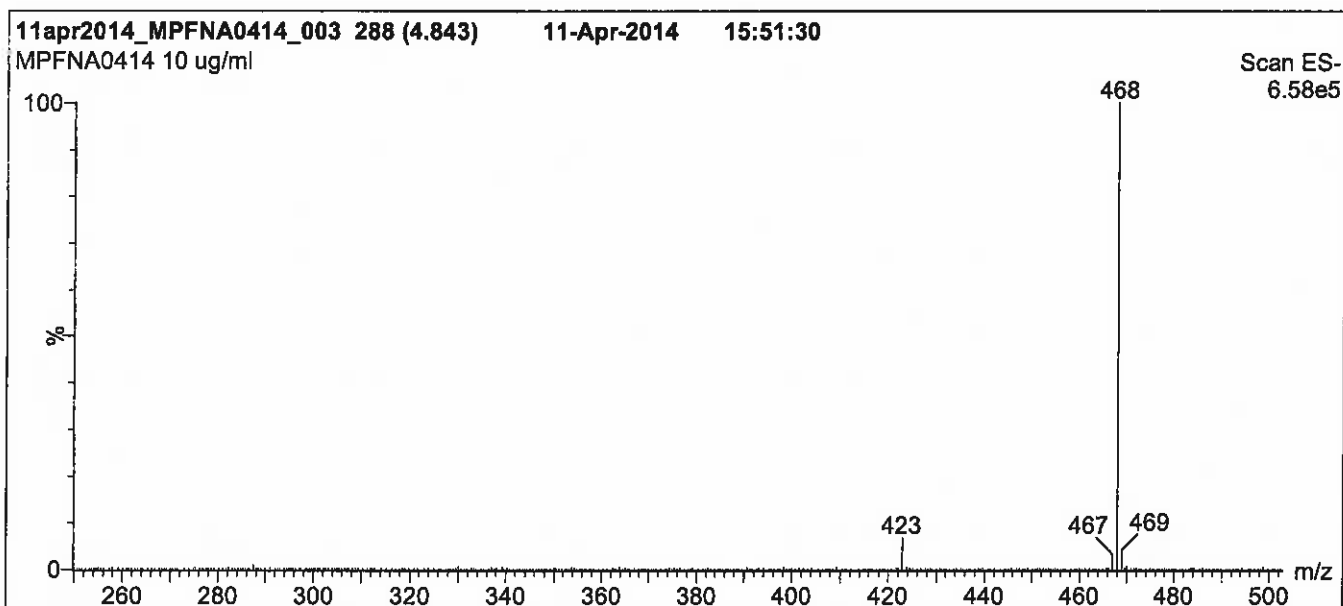
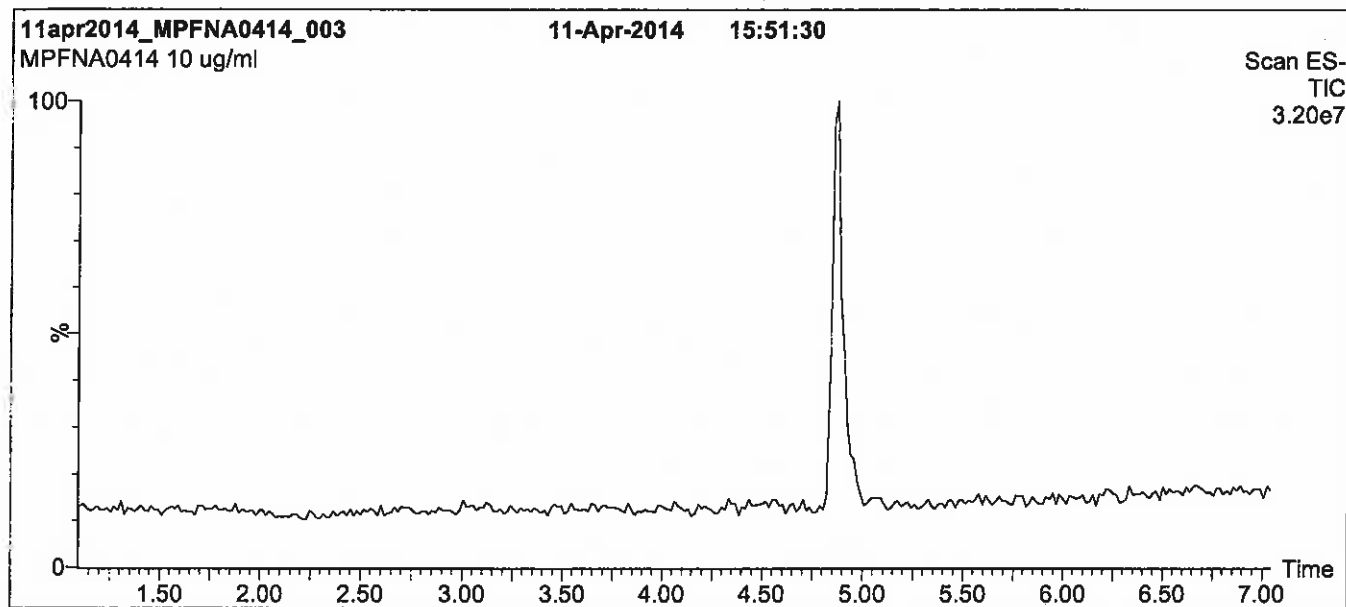
### **QUALITY MANAGEMENT:**

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



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

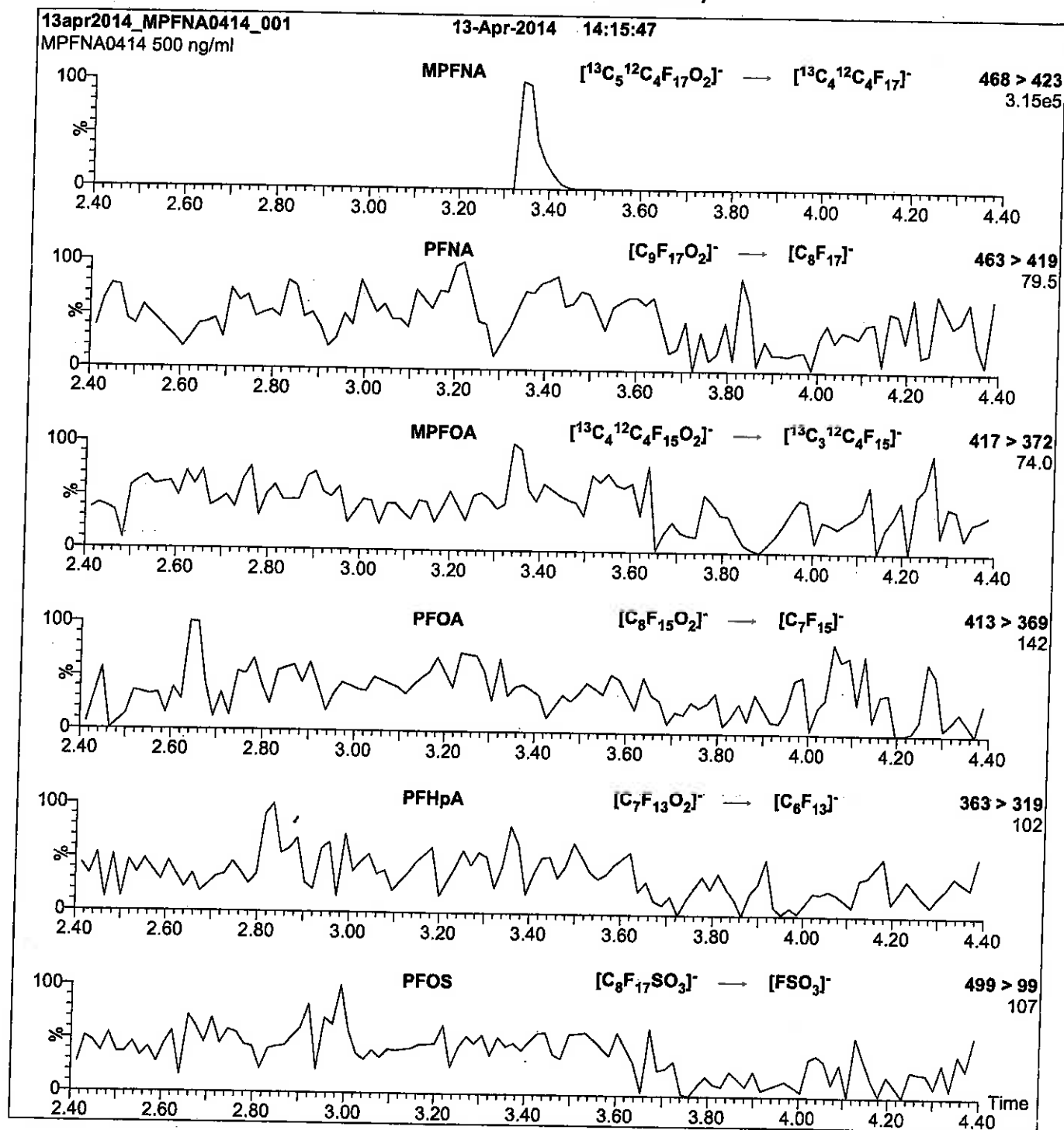
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (250 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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) =  $3.28\text{e-}3$   
Collision Energy (eV) = 11

Reagent

---

**LCMPFOA\_00012**

R: SBC 9/22/16



738683

ID: LCMFOA\_00012

Exp: 01/22/21 Prod: SBC  
13C4-Perfluorooctanoic ac



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

MPFOA

**LOT NUMBER:**

MPFOA0116

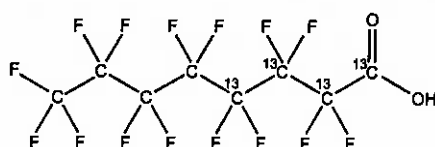
**COMPOUND:**

Perfluoro-n-[1,2,3,4-<sup>13</sup>C<sub>4</sub>]octanoic acid

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>4</sub><sup>12</sup>C<sub>4</sub>HF<sub>15</sub>O<sub>2</sub>

**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

418.04

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99% <sup>13</sup>C

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

01/22/2016

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

01/22/2021

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

(1,2,3,4-<sup>13</sup>C<sub>4</sub>)

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

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

Certified By:

B.G. Chittim

Date: 02/01/2016

(mm/dd/yyyy)

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

**INTENDED USE:**

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**EXPIRY DATE / PERIOD OF VALIDITY:**

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**LIMITED WARRANTY:**

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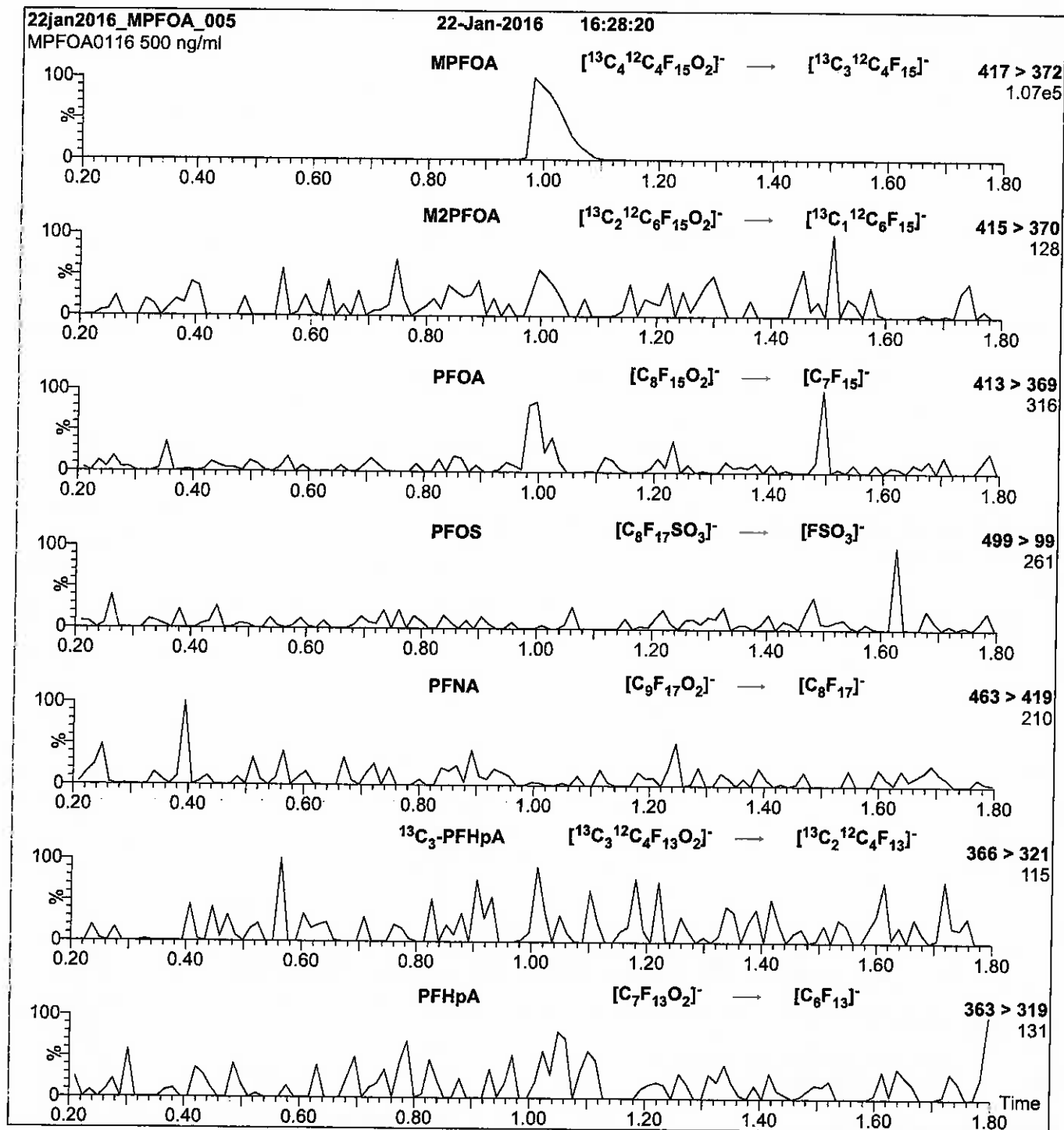
**QUALITY MANAGEMENT:**

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



**Conditions for Figure 2:**

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

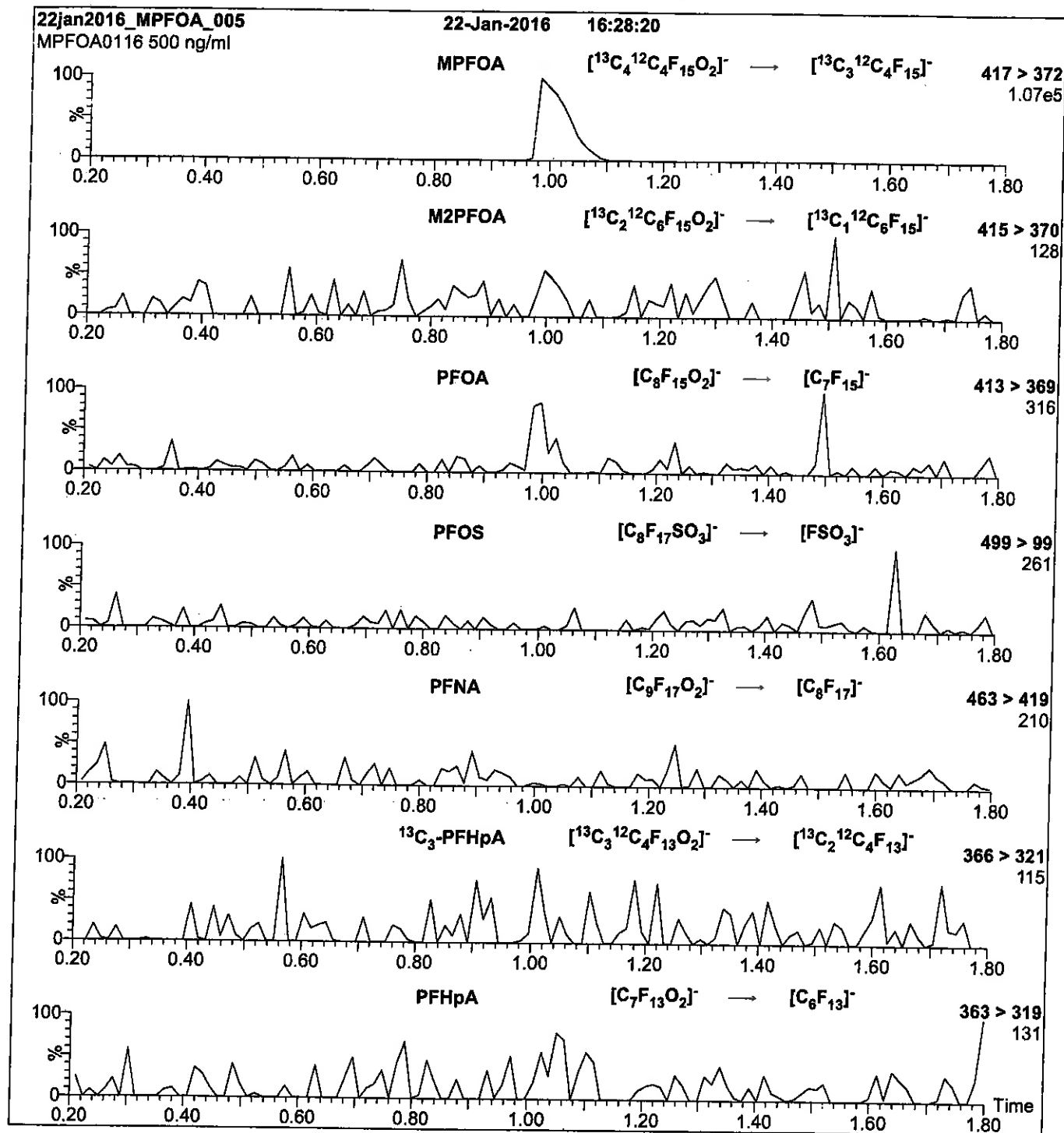
Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20%  $\text{H}_2\text{O}$   
(both with 10 mM  $\text{NH}_4\text{OAc}$  buffer)

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

**MS Parameters**

Collision Gas (mbar) =  $3.58\text{e-}3$   
Collision Energy (eV) = 10

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



**Conditions for Figure 2:**

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

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) = 3.58e-3  
Collision Energy (eV) = 10



Reagent

---

**LCMPFOS\_00017**

R: 9/9/16 802

728309  
ID: LCMFOS\_00017  
Exp: 08/03/21 Prod: SBC  
13C4-Perfluorooctanesulfonate

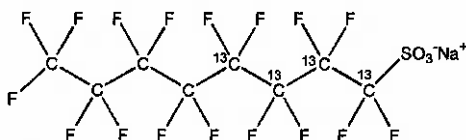


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



|                                  |                                                                                              |                          |                                                                  |
|----------------------------------|----------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------|
| <b>MOLECULAR FORMULA:</b>        | <sup>13</sup> C <sub>4</sub> <sup>12</sup> C <sub>4</sub> F <sub>17</sub> SO <sub>3</sub> Na | <b>MOLECULAR WEIGHT:</b> | 526.08                                                           |
| <b>CONCENTRATION:</b>            | 50.0 ± 2.5 µg/ml (Na salt)<br>47.8 ± 2.4 µg/ml (MPFOS anion)                                 | <b>SOLVENT(S):</b>       | Methanol                                                         |
| <b>CHEMICAL PURITY:</b>          | >98%                                                                                         | <b>ISOTOPIC PURITY:</b>  | ≥99% <sup>13</sup> C<br>(1,2,3,4- <sup>13</sup> C <sub>4</sub> ) |
| <b>LAST TESTED:</b> (mm/dd/yyyy) | 08/03/2016                                                                                   |                          |                                                                  |
| <b>EXPIRY DATE:</b> (mm/dd/yyyy) | 08/03/2021                                                                                   |                          |                                                                  |
| <b>RECOMMENDED STORAGE:</b>      | 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:**

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**HAZARDS:**

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**HOMOGENEITY:**

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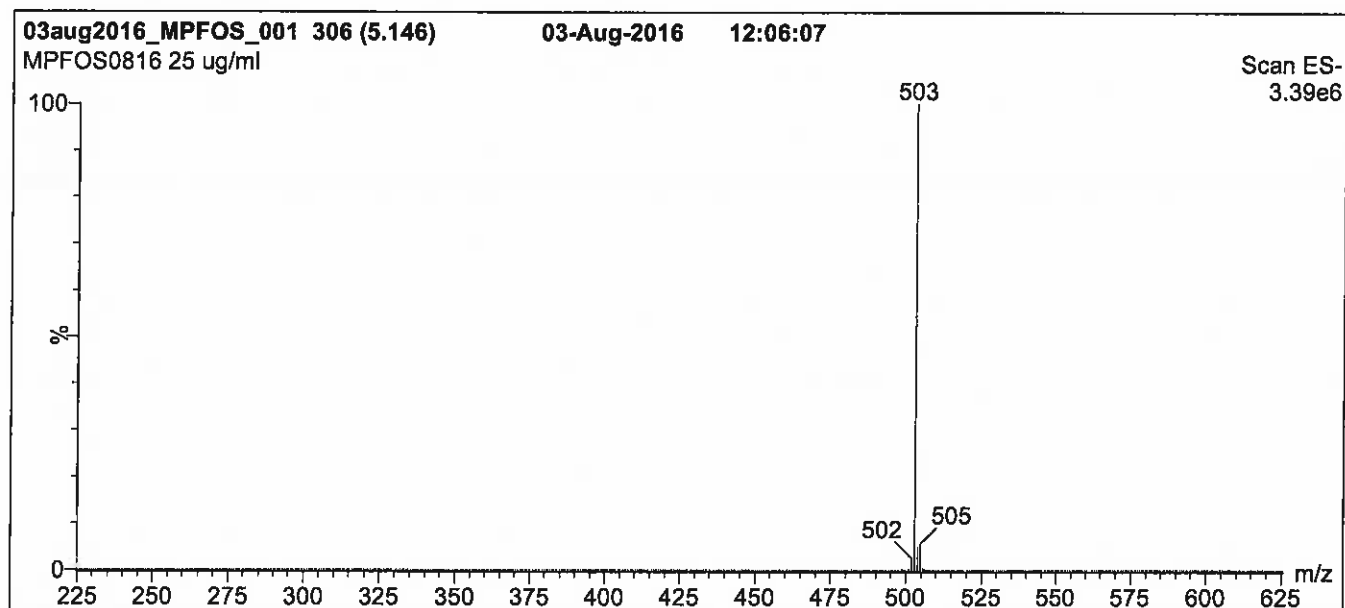
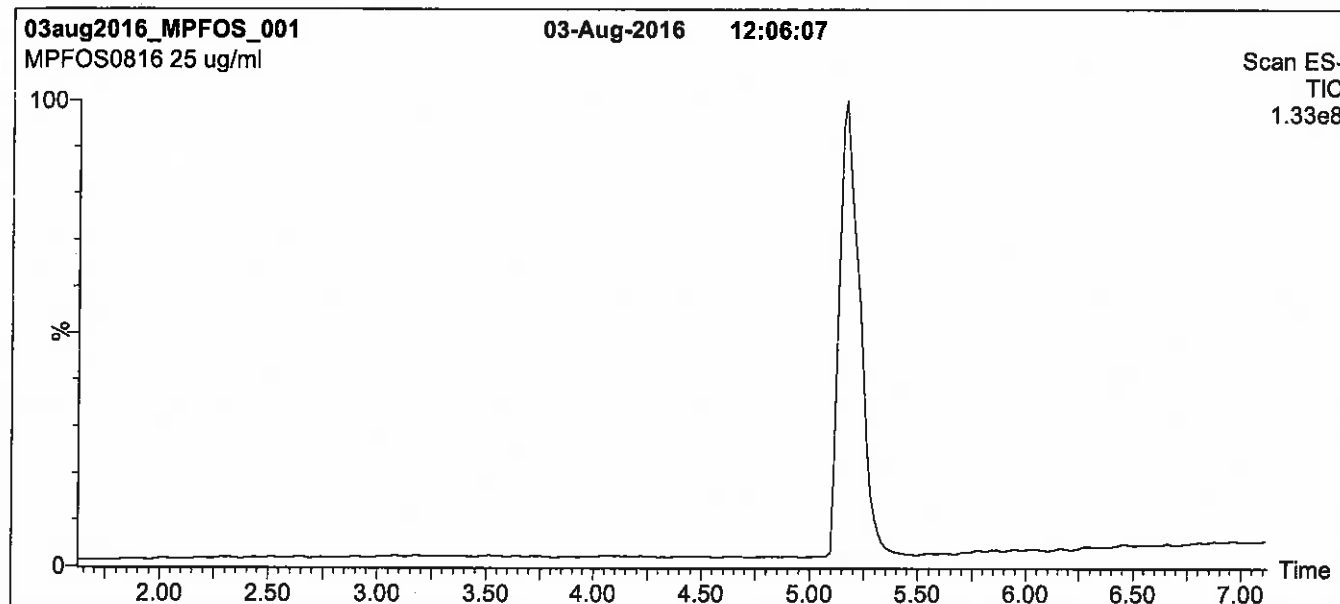
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**Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield 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

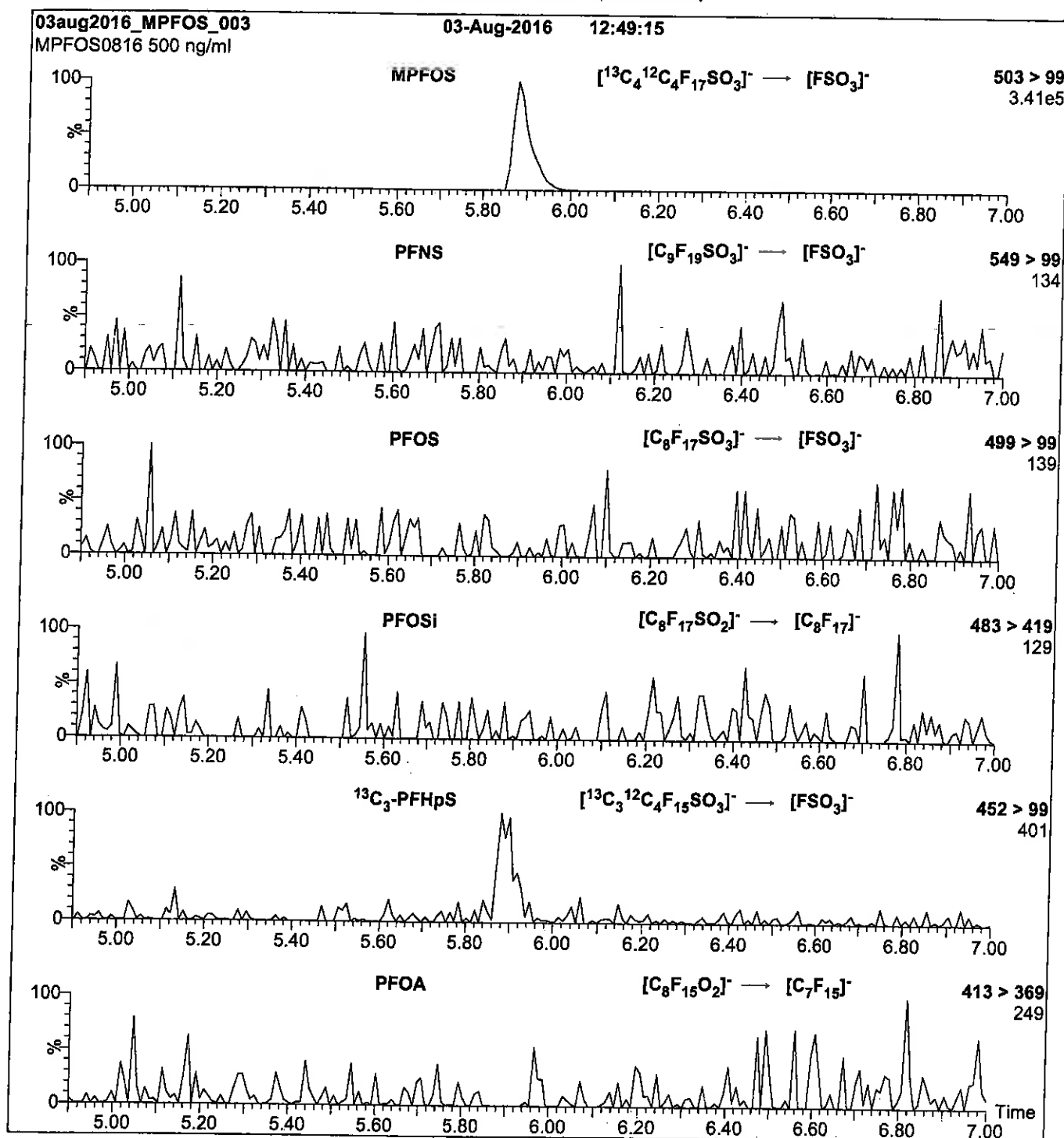
Flow: 300  $\mu$ l/min

**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

Reagent

---

**LCMPFUdA\_00009**

R: SBC 9/22/16



739604

ID: LCMFUDa\_00009

Exp: 02/12/21 Prod: SBC

<sup>13</sup>C2-Perfluoroundecanoic



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SK

**PRODUCT CODE:**

MPFUDa

**LOT NUMBER:**

MPFUDa0216

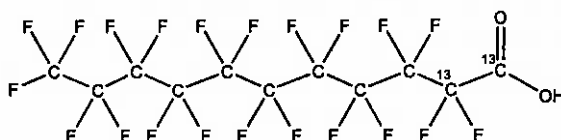
**COMPOUND:**

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

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>9</sub>HF<sub>21</sub>O<sub>2</sub>

**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

566.08

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99% <sup>13</sup>C

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

02/12/2016

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

**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.
- Presence of 1-<sup>13</sup>C<sub>1</sub>-PFUDa (~1%; see Figure 2), 2-<sup>13</sup>C<sub>1</sub>-PFUDa (~1%), and PFUDa (~0.2%; see Figure 2) are due to the isotopic purity of the <sup>13</sup>C-precursor.

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

Certified By:

B.G. Chittim

Date: 02/24/2016

(mm/dd/yyyy)

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

### **TRACEABILITY:**

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

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

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

### **LIMITED WARRANTY:**

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

### **QUALITY MANAGEMENT:**

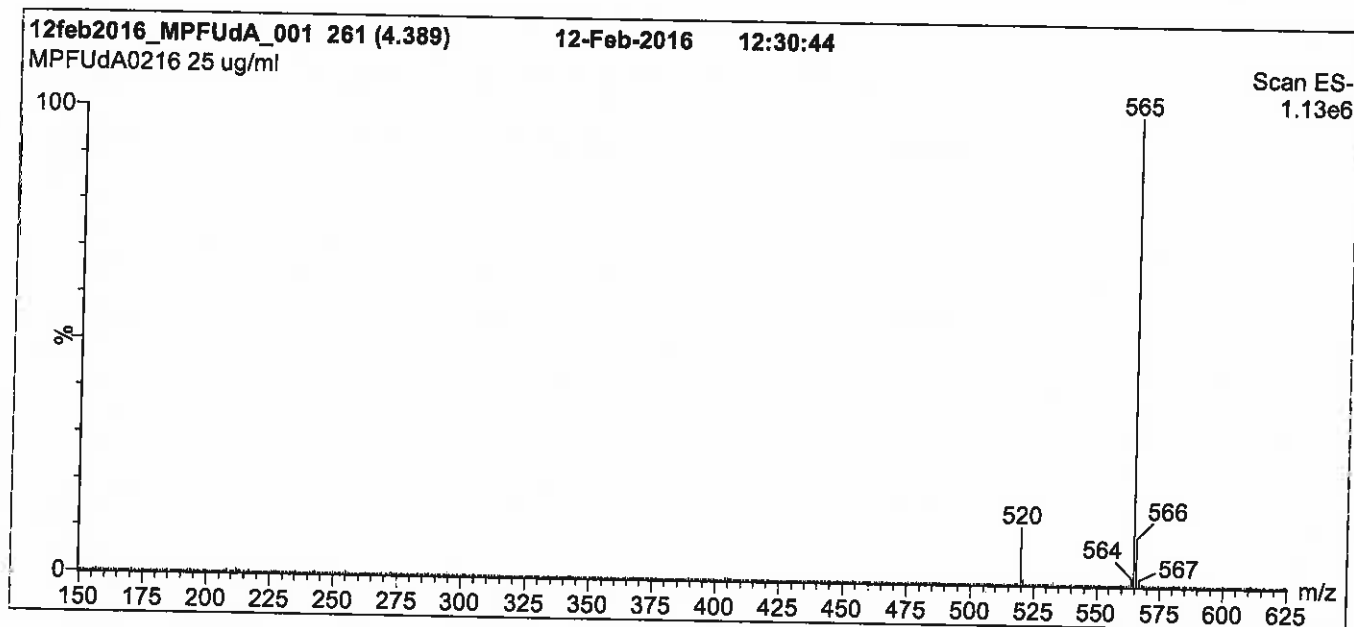
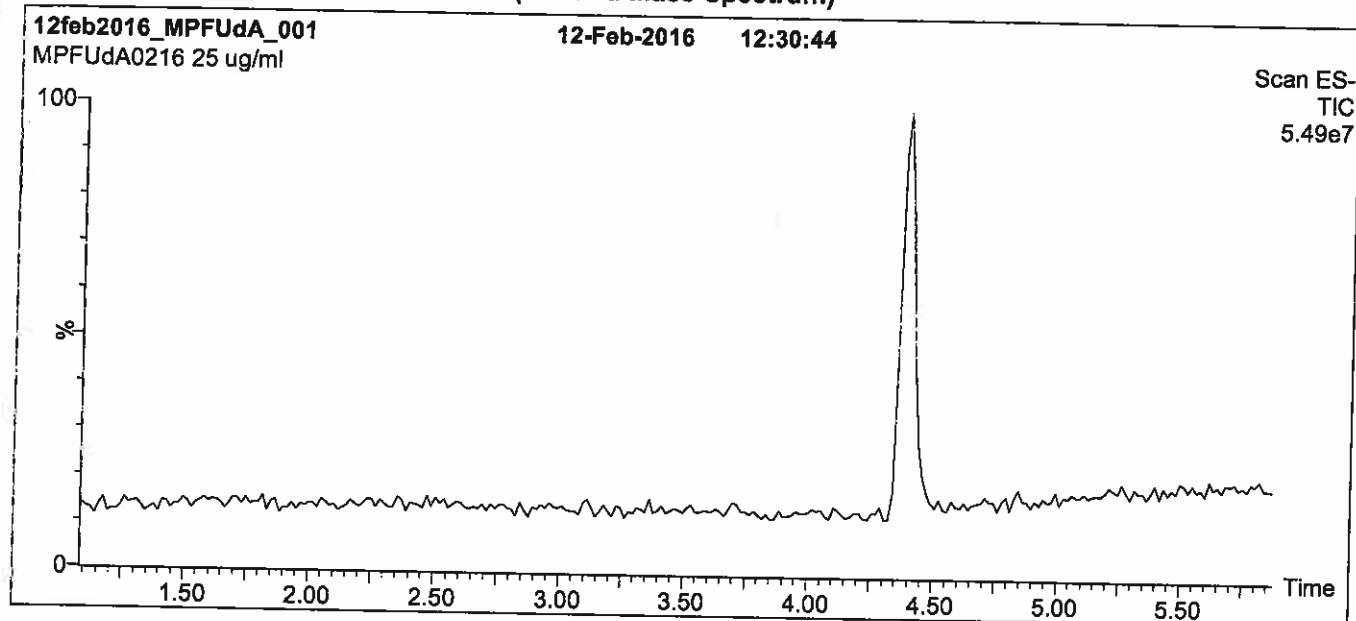
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for  
1.5 min before returning to initial conditions in 0.5 min.  
Time: 10 min

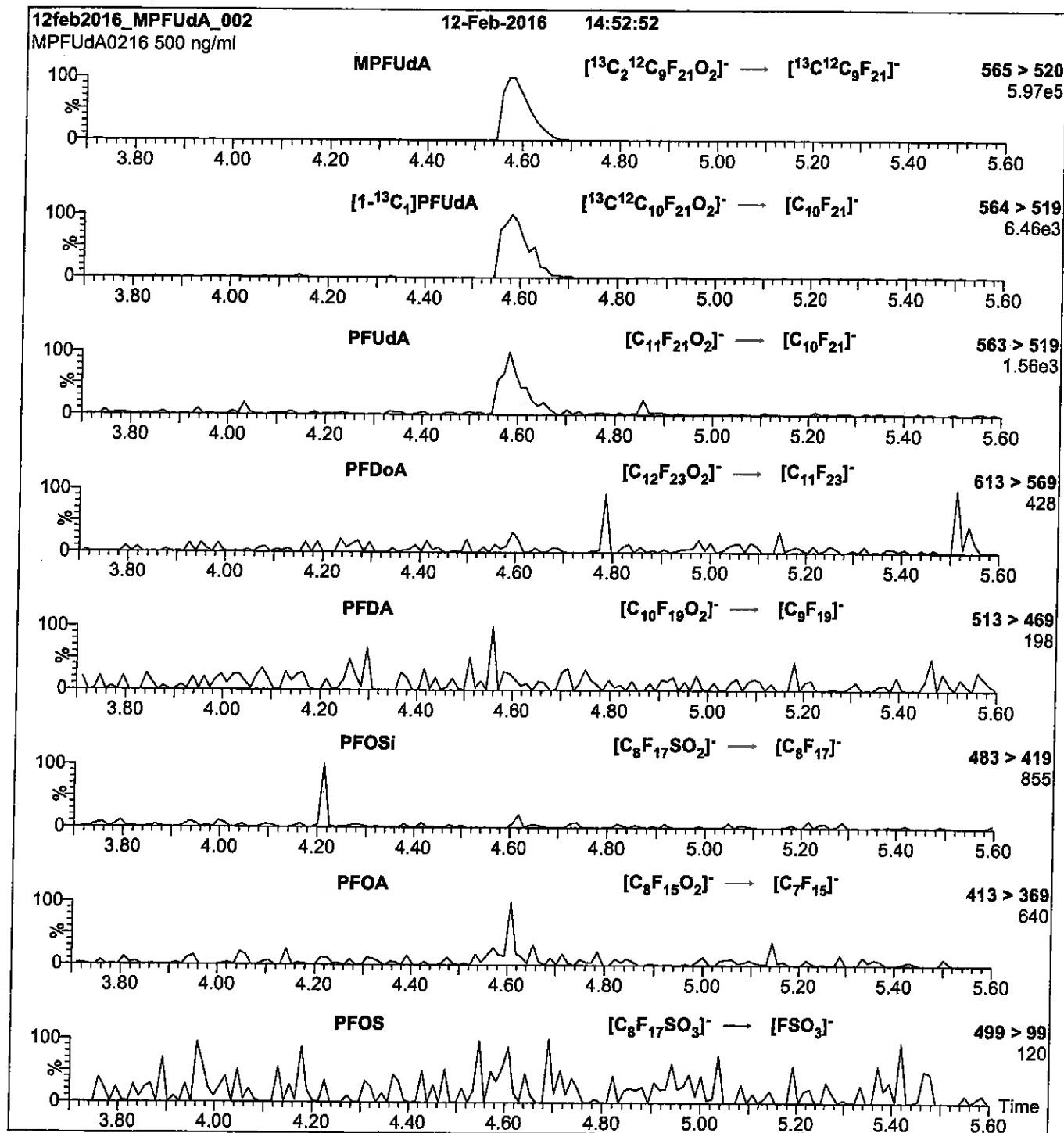
**Flow:** 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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

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

**MS Parameters**

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

Reagent

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**LCN-EtFOSA-M\_00002**

P: 7/16/15 SW



# WELLINGTON LABORATORIES

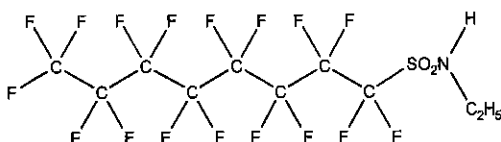
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** N-EtFOSA-M  
**COMPOUND:** N-ethylperfluoro-1-octanesulfonamide

**LOT NUMBER:** NEtFOSA0714M

**STRUCTURE:**

**CAS #:** 4151-50-2



**MOLECULAR FORMULA:** C<sub>10</sub>H<sub>6</sub>F<sub>17</sub>NO<sub>2</sub>S  
**CONCENTRATION:** 50 ± 2.5 µg/ml  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 07/14/2014  
**EXPIRY DATE:** (mm/dd/yyyy) 07/14/2019  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 527.20  
**SOLVENT(S):** Methanol

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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

Certified By:

B.G. Chittim

Date: 04/01/2015  
(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

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

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**LIMITED WARRANTY:**

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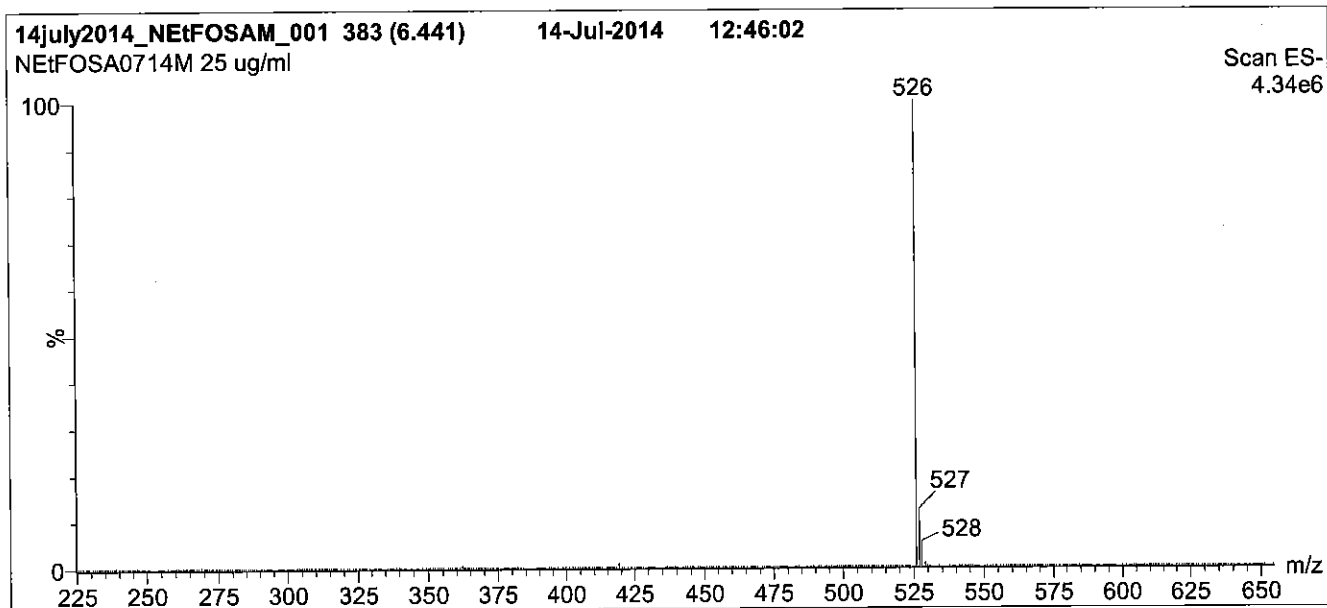
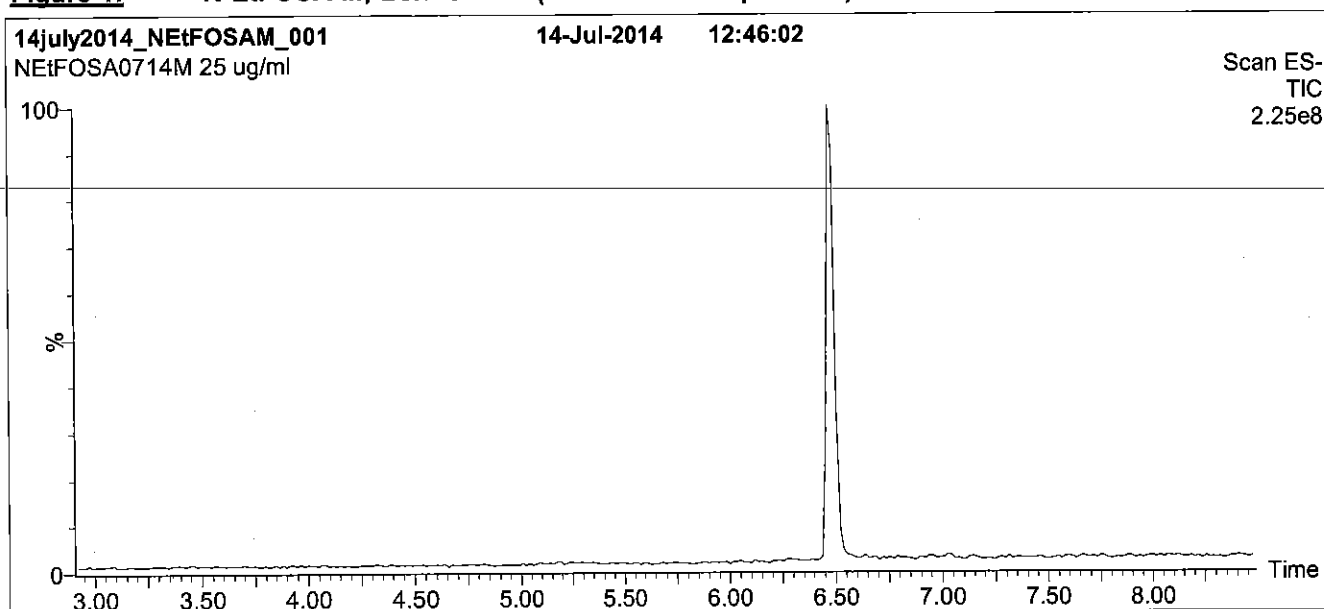
**QUALITY MANAGEMENT:**

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



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**Figure 1: N-EtFOSA-M; 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% H<sub>2</sub>O / 55% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

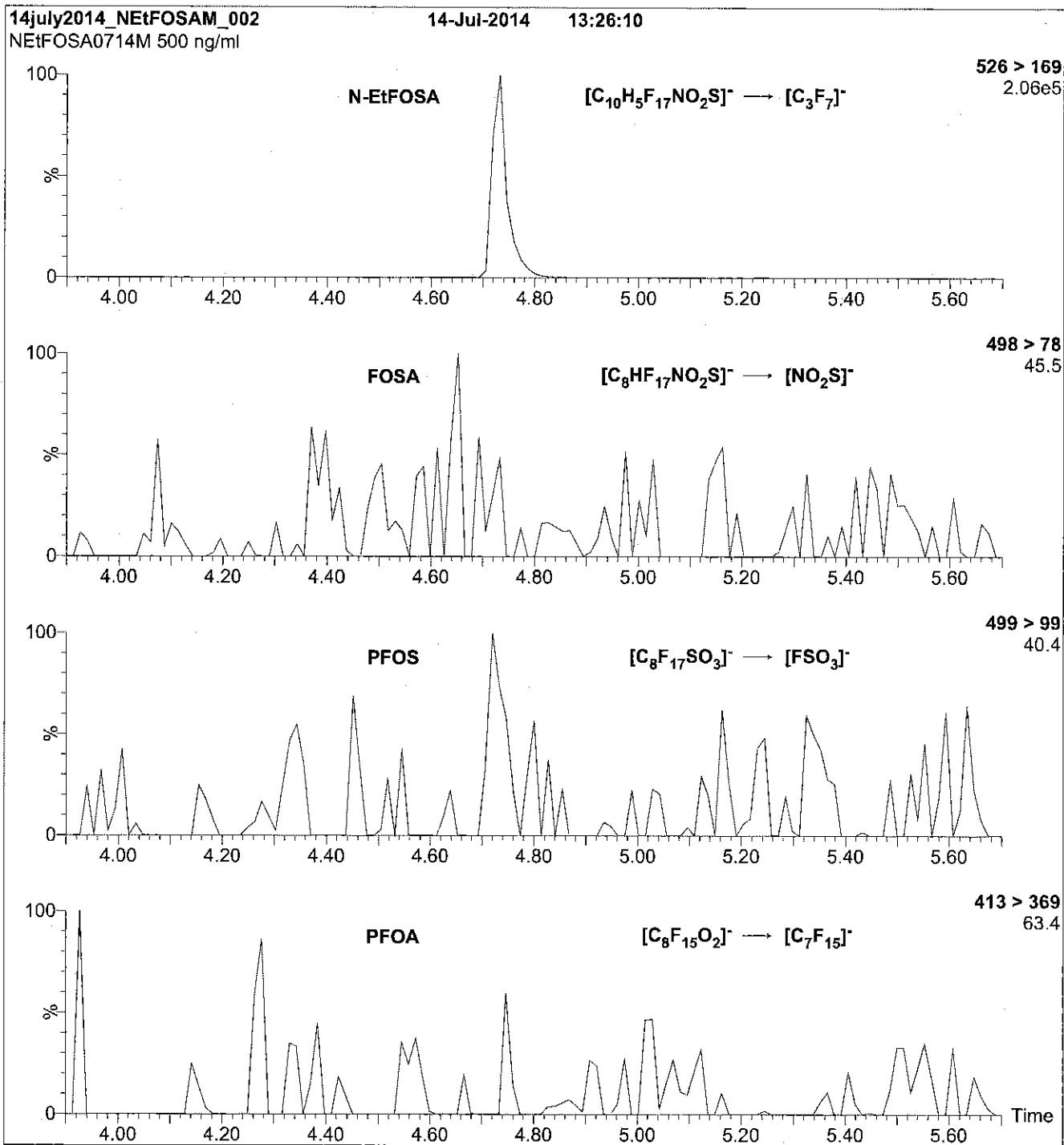
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 950 amu)

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

**Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

**Injection:** Direct loop injection  
10  $\mu$ l (500 ng/ml N-EtFOSA-M)

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

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

**MS Parameters**

Collision Gas (mbar) = 3.50e-3  
Collision Energy (eV) = 30

Reagent

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**LCN-EtFOSA-M\_00003**



R: 8/23/16 SBC



715563  
ID: LCN-EtFOSA-M\_00003  
Exp: 05/24/21 Prod: SBC  
N-EtFOSA-M



# WELLINGTON LABORATORIES

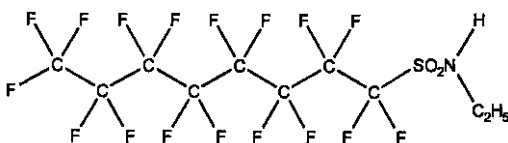
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** N-EtFOSA-M  
**COMPOUND:** N-ethylperfluoro-1-octanesulfonamide

**LOT NUMBER:** NEtFOSA0516M

**STRUCTURE:**

**CAS #:** 4151-50-2



**MOLECULAR FORMULA:** C<sub>10</sub>H<sub>8</sub>F<sub>17</sub>NO<sub>2</sub>S  
**CONCENTRATION:** 50 ± 2.5 µg/ml  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 05/24/2016  
**EXPIRY DATE:** (mm/dd/yyyy) 05/24/2021  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 527.20  
**SOLVENT(S):** Methanol

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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

**Certified By:**

B.G. Chittim

**Date:** 05/27/2016  
(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:**

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**HOMOGENEITY:**

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

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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:

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**LIMITED WARRANTY:**

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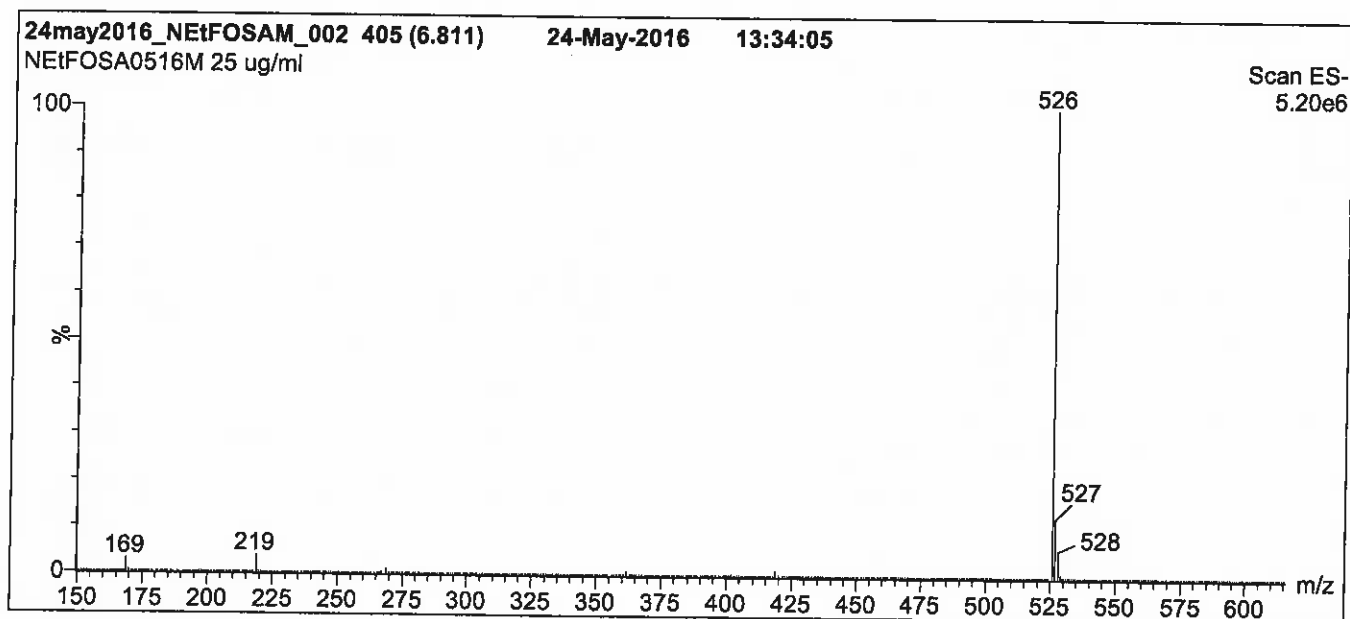
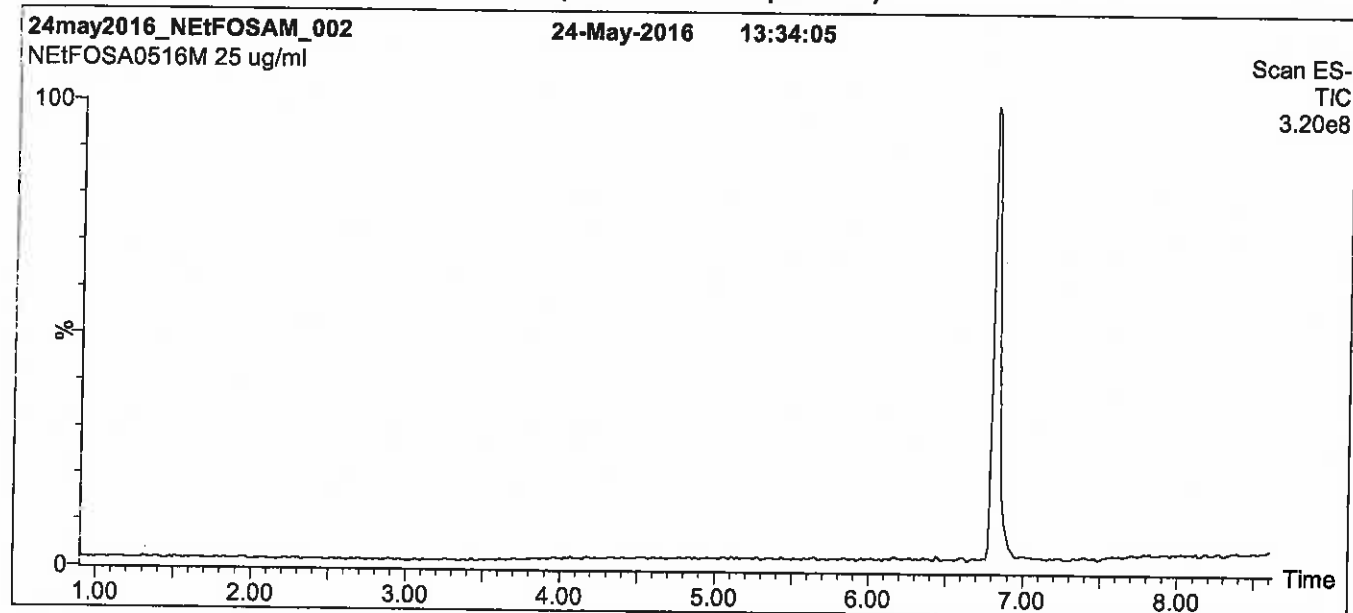
**QUALITY MANAGEMENT:**

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**Figure 1: N-EtFOSA-M; 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% H<sub>2</sub>O / 55% (80:20 MeOH:ACN)  
(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

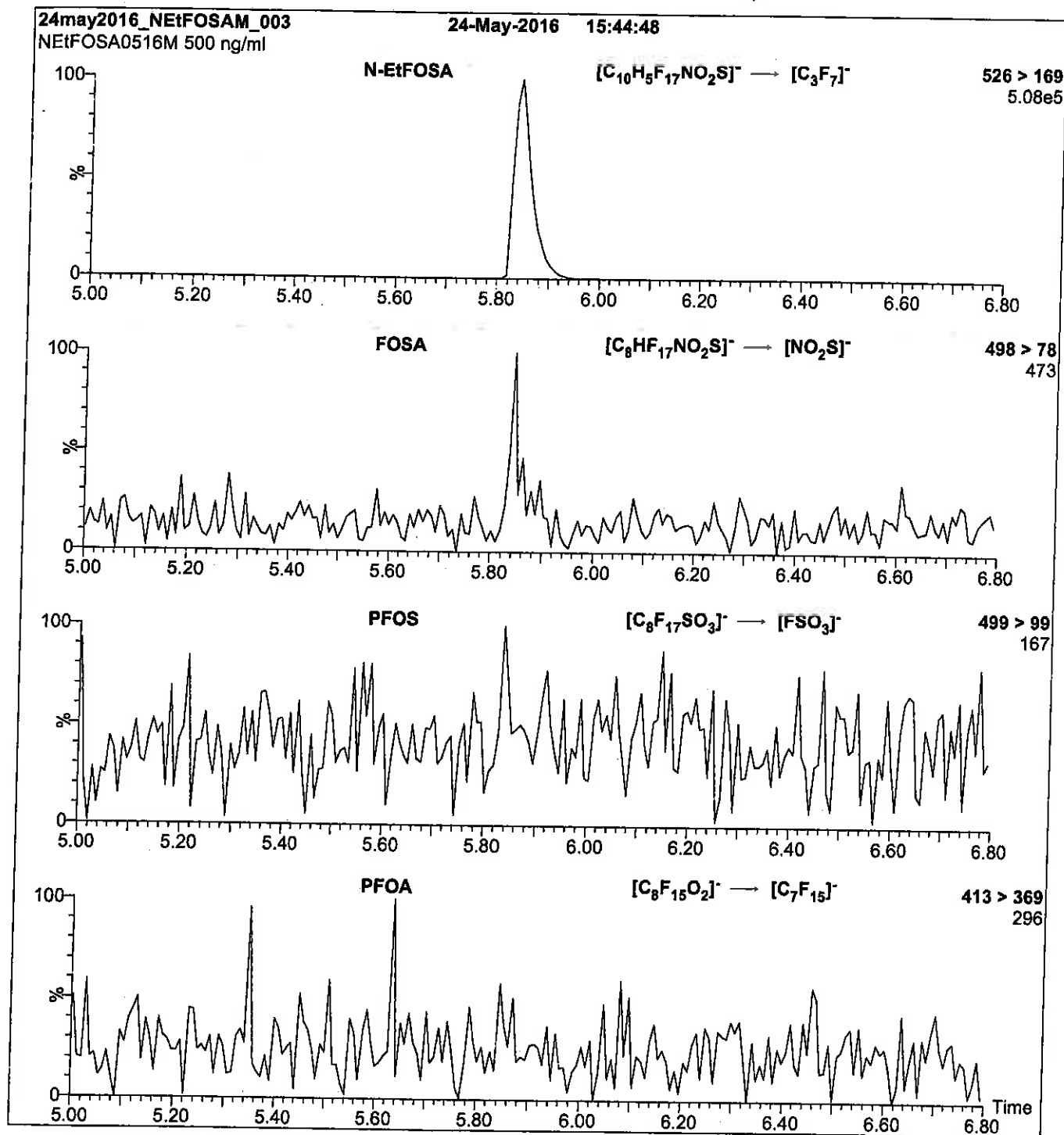
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

**Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml N-EtFOSA-M)

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.54e-3  
Collision Energy (eV) = 30

Reagent

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**LCN-EtFOSAA\_00001**

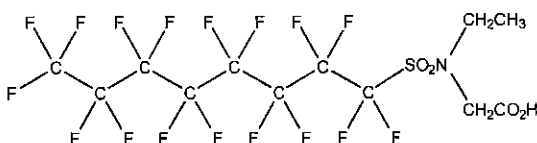


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** N-EtFOSAA **LOT NUMBER:** NEtFOSAA0113  
**COMPOUND:** N-ethylperfluoro-1-octanesulfonamidoacetic acid

**STRUCTURE:** **CAS #:** 2991-50-6



**MOLECULAR FORMULA:**  $C_{12}H_8F_{17}NO_4S$  **MOLECULAR WEIGHT:** 585.23  
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$  **SOLVENT(S):** Methanol  
 Water (<1%)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 01/29/2013  
**EXPIRY DATE:** (mm/dd/yyyy) 01/29/2018  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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

**Certified By:**

B.G. Chittim

**Date:** 04/06/2015

(mm/dd/yyyy)

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

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

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**EXPIRY DATE / PERIOD OF VALIDITY:**

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**LIMITED WARRANTY:**

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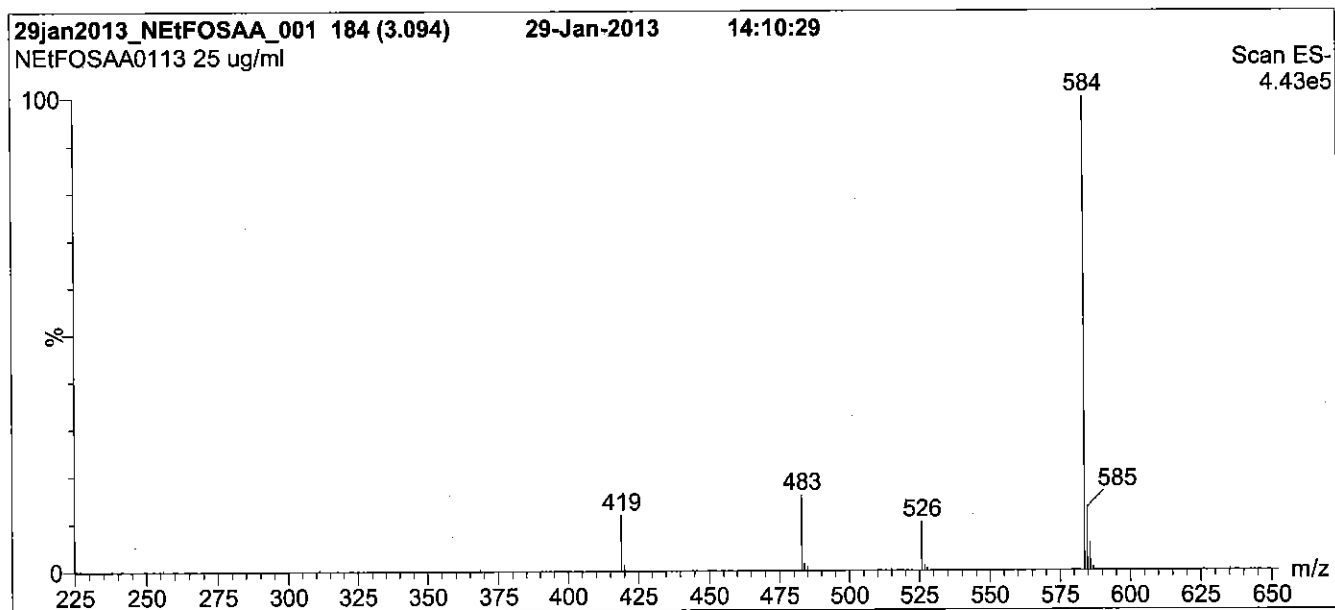
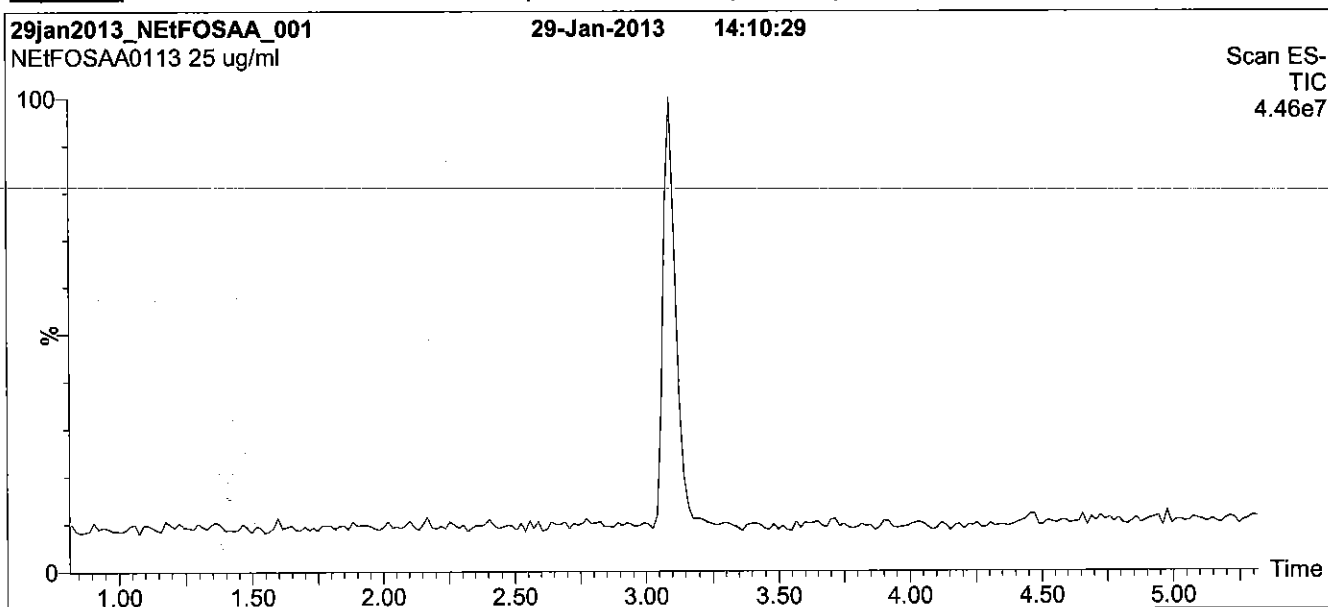
**QUALITY MANAGEMENT:**

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**Figure 1: N-EtFOSAA; 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: 65% (80:20 MeOH:ACN) / 35% 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

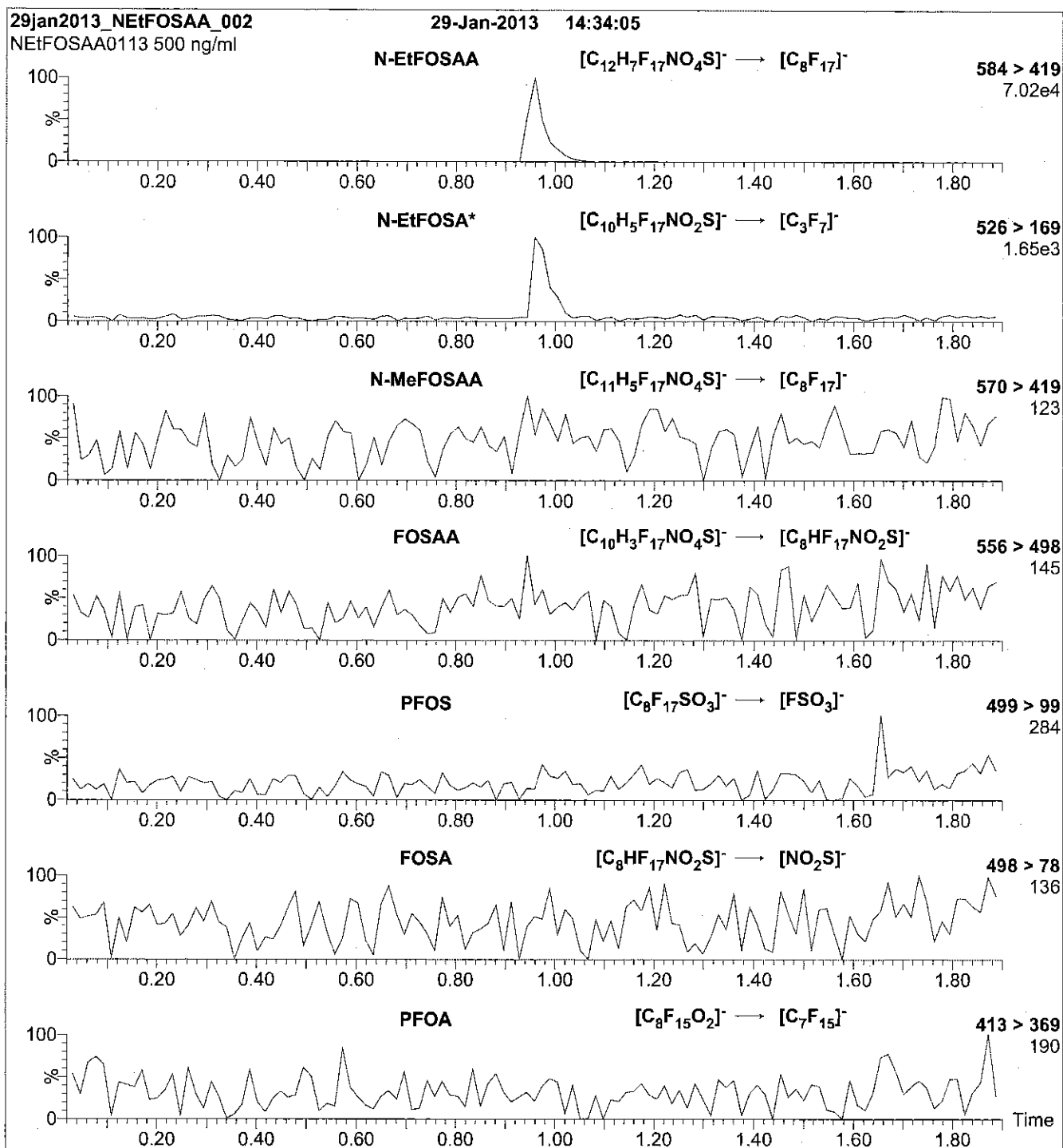
**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 35.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750



**Figure 2: N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



**Note:** N-EtFOSA is formed by fragmentation of N-EtFOSAA.

**Conditions for Figure 2:**

**Injection:** Direct loop injection  
10  $\mu$ l (500 ng/ml N-EtFOSAA)

**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) =  $3.43e-3$   
Collision Energy (eV) = 25

Reagent

---

**LCN-EtFOSAA\_00002**

R: 8/23/16 SBC



715561  
ID: LCN-EtFOSAA\_00002  
Exp: 01/20/21 Ppd: SBC  
N-EtFOSAA

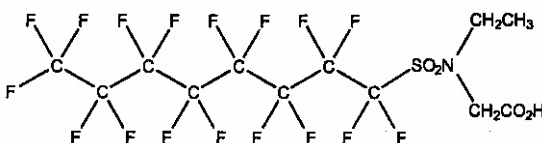


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** N-EtFOSAA **LOT NUMBER:** NEtFOSAA0116  
**COMPOUND:** N-ethylperfluoro-1-octanesulfonamidoacetic acid

**STRUCTURE:** **CAS #:** 2991-50-6



**MOLECULAR FORMULA:**  $C_{12}H_8F_{17}NO_4S$  **MOLECULAR WEIGHT:** 585.23  
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$  **SOLVENT(S):** Methanol  
Water (<1%)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 01/20/2016  
**EXPIRY DATE:** (mm/dd/yyyy) 01/20/2021  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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

Certified By:

B.G. Chittim

Date: 01/21/2016  
(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:**

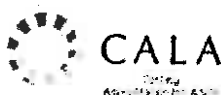
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**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.

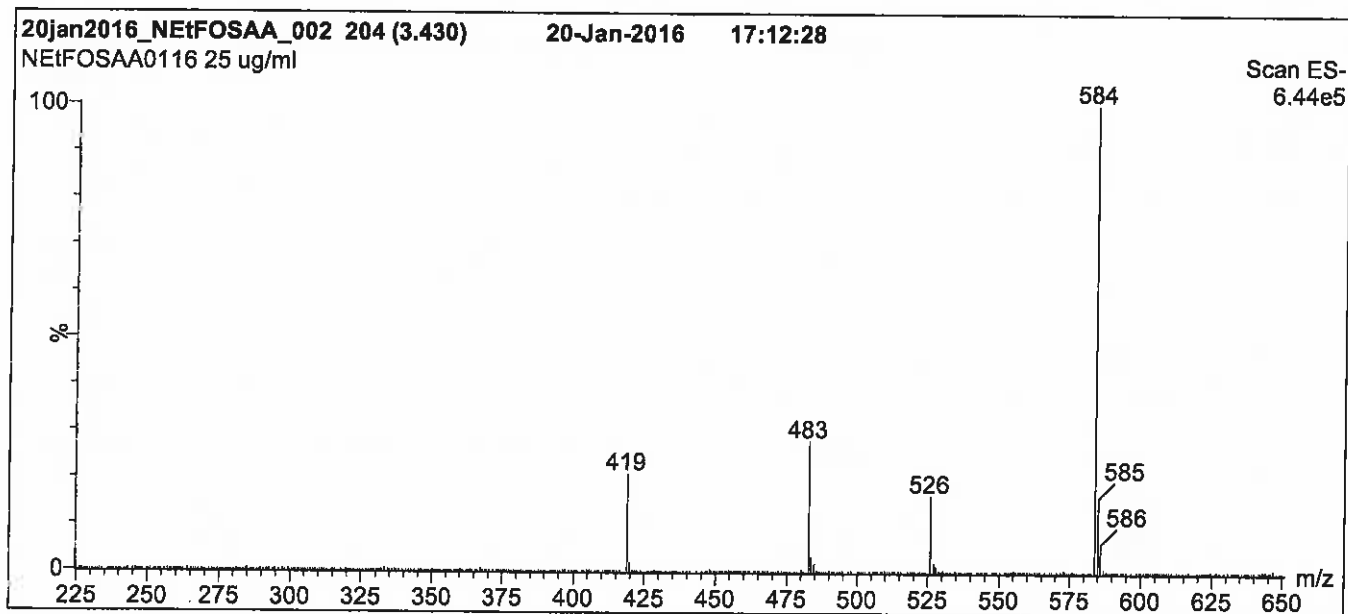
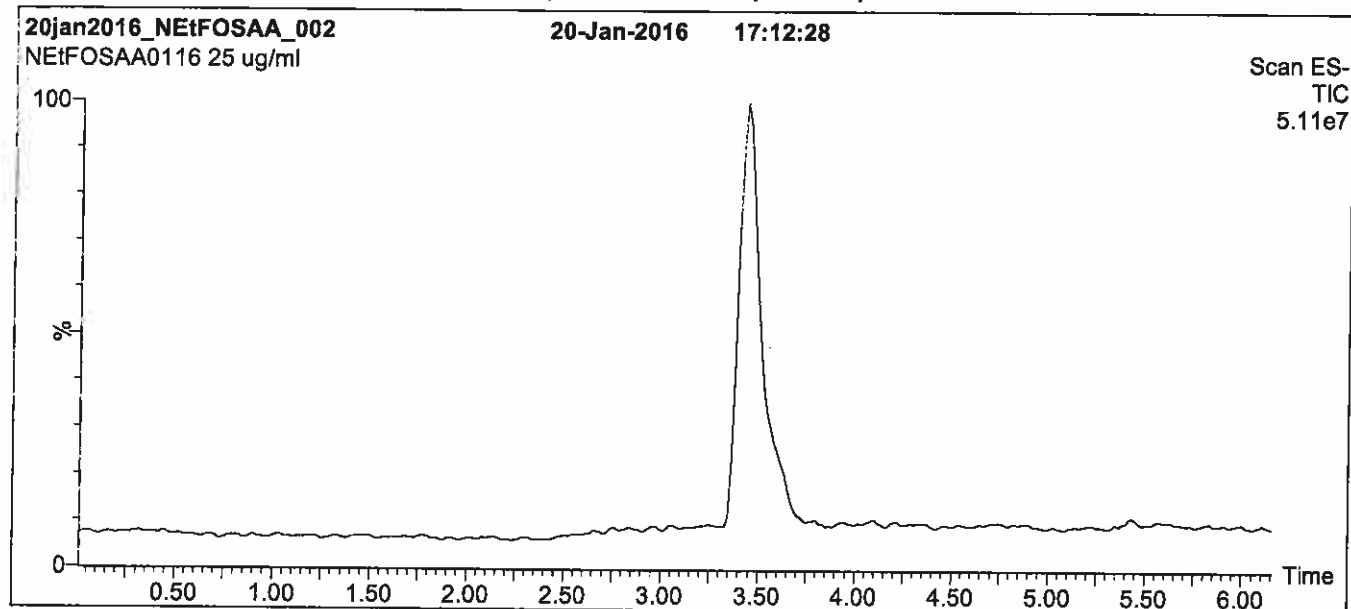
**QUALITY MANAGEMENT:**

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: N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

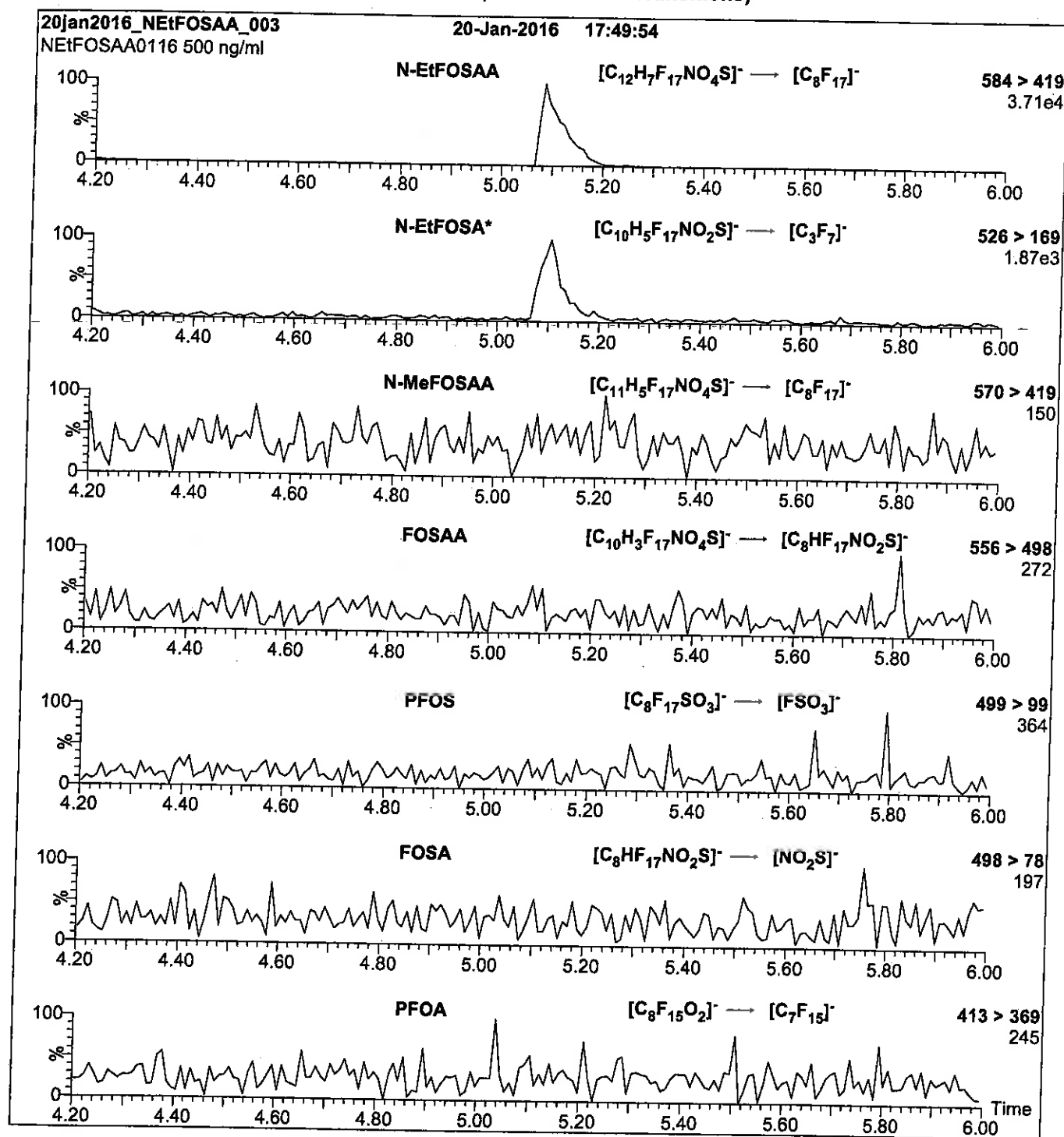
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 850 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 35.00  
**Cone Gas Flow (l/hr)** = 50  
**Desolvation Gas Flow (l/hr)** = 750

**Figure 2: N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



**Note:** N-EtFOSA is formed by fragmentation of N-EtFOSAA.

**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml N-EtFOSAA)

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) = 3.66e-3  
Collision Energy (eV) = 25

Reagent

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**LCN-MeFOSA-M\_00001**

R: 7/16/15 SPW



# WELLINGTON LABORATORIES

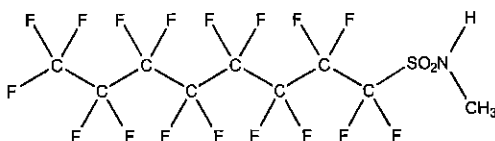
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** N-MeFOSA-M  
**COMPOUND:** N-methylperfluoro-1-octanesulfonamide

**LOT NUMBER:** NMeFOSA0714M

**STRUCTURE:**

**CAS #:** 31506-32-8



**MOLECULAR FORMULA:**  $C_9H_4F_{17}NO_2S$   
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$   
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 07/15/2014  
**EXPIRY DATE:** (mm/dd/yyyy) 07/15/2019  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 513.17  
**SOLVENT(S):** Methanol

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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

**Certified By:**

B.G. Chittim

**Date:** 04/01/2015

(mm/dd/yyyy)

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



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**SYNTHESIS / CHARACTERIZATION:**

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**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

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**TRACEABILITY:**

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**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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

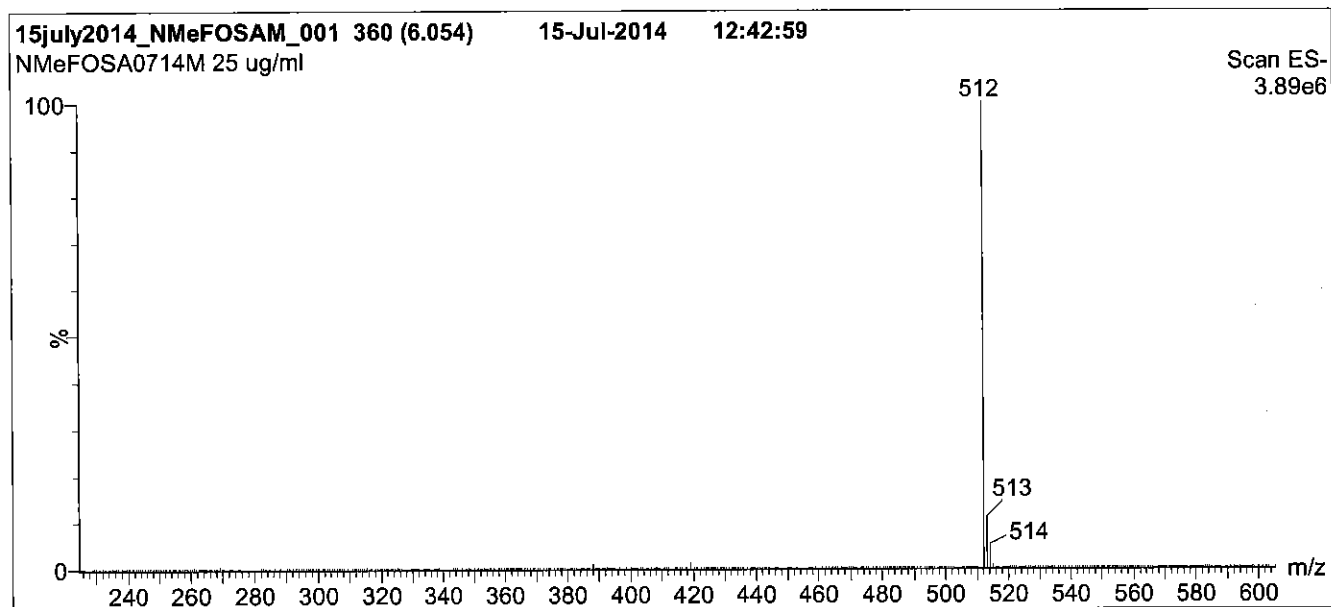
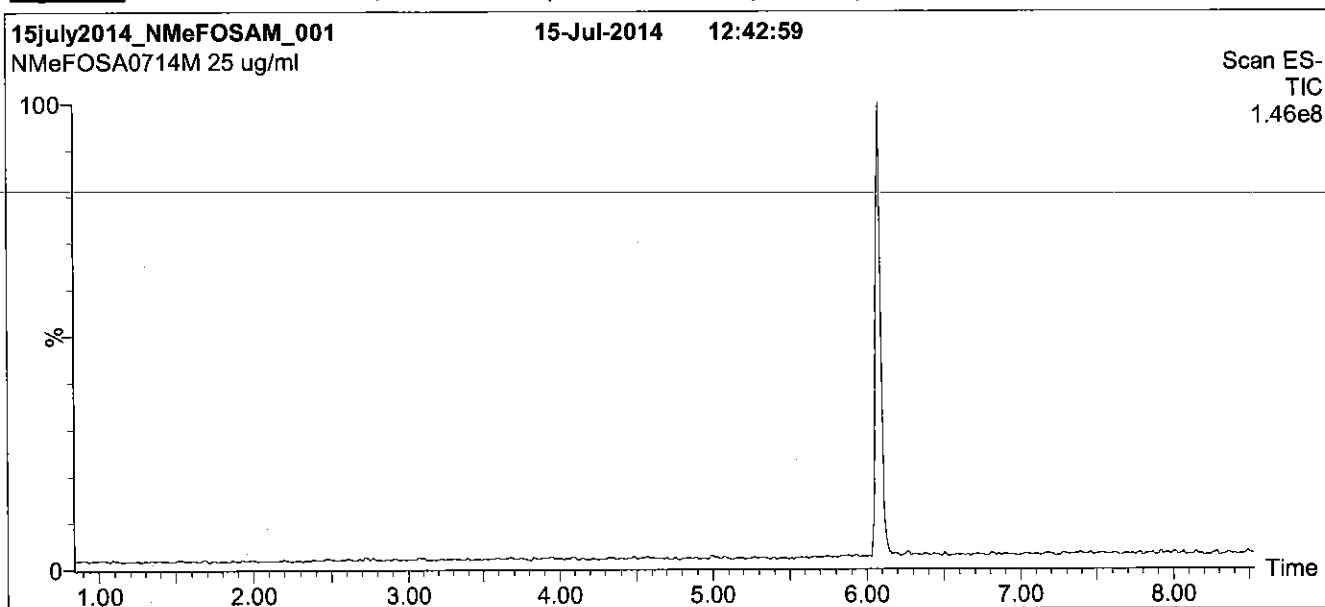
**QUALITY MANAGEMENT:**

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



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**Figure 1:** N-MeFOSA-M; 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% H<sub>2</sub>O / 55% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for  
2 min before returning to initial conditions in 0.5 min.  
Time: 10 min

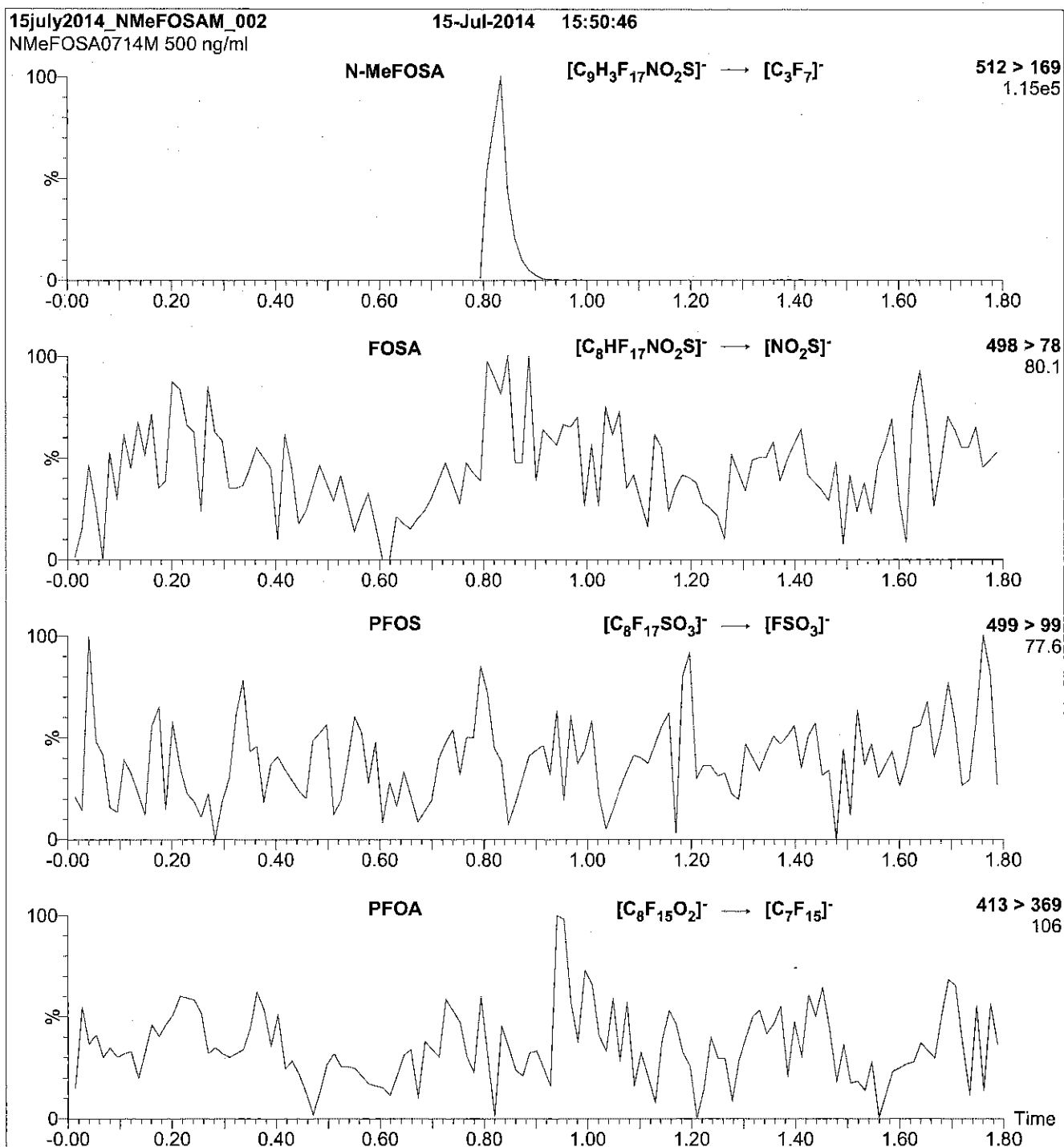
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 950 amu)

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

**Figure 2: N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml N-MeFOSA-M)

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) = 3.54e-3  
Collision Energy (eV) = 30

Reagent

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**LCN-MeFOSA-M\_00002**

R: 8/23/16 SBC



715564

ID: LCN-MeFOSA-M\_00002

Exp: 05/24/21 Prpt: SBC

N-MeFOSA-M



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

N-MeFOSA-M

**LOT NUMBER:**

NMeFOSA0516M

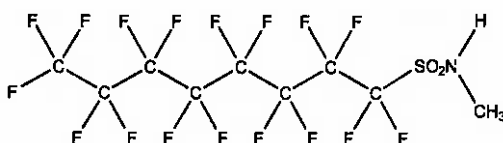
**COMPOUND:**

N-methylperfluoro-1-octanesulfonamide

**STRUCTURE:**

**CAS #:**

31506-32-8



**MOLECULAR FORMULA:**

C<sub>8</sub>H<sub>4</sub>F<sub>17</sub>NO<sub>2</sub>S

**CONCENTRATION:**

50 ± 2.5 µg/ml

**CHEMICAL PURITY:**

>98%

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

05/24/2016

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

05/24/2021

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:**

513.17

**SOLVENT(S):**

Methanol

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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

**Certified By:**

B.G. Chittim

**Date:** 05/26/2016

(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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**HOMOGENEITY:**

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

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**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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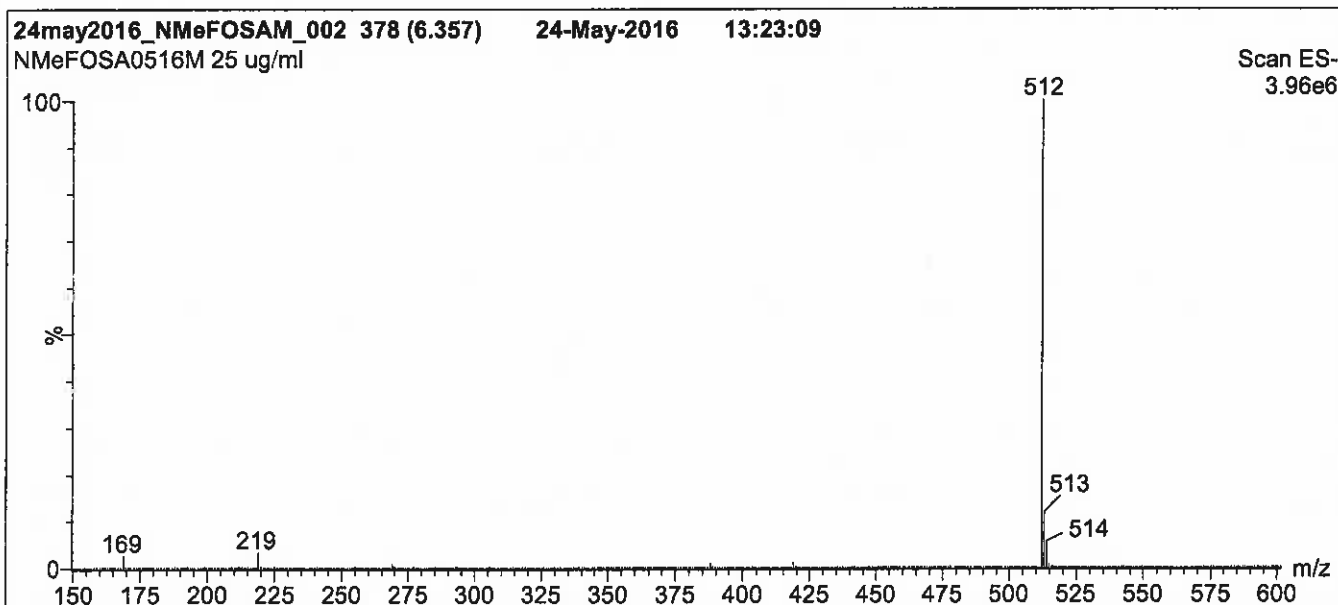
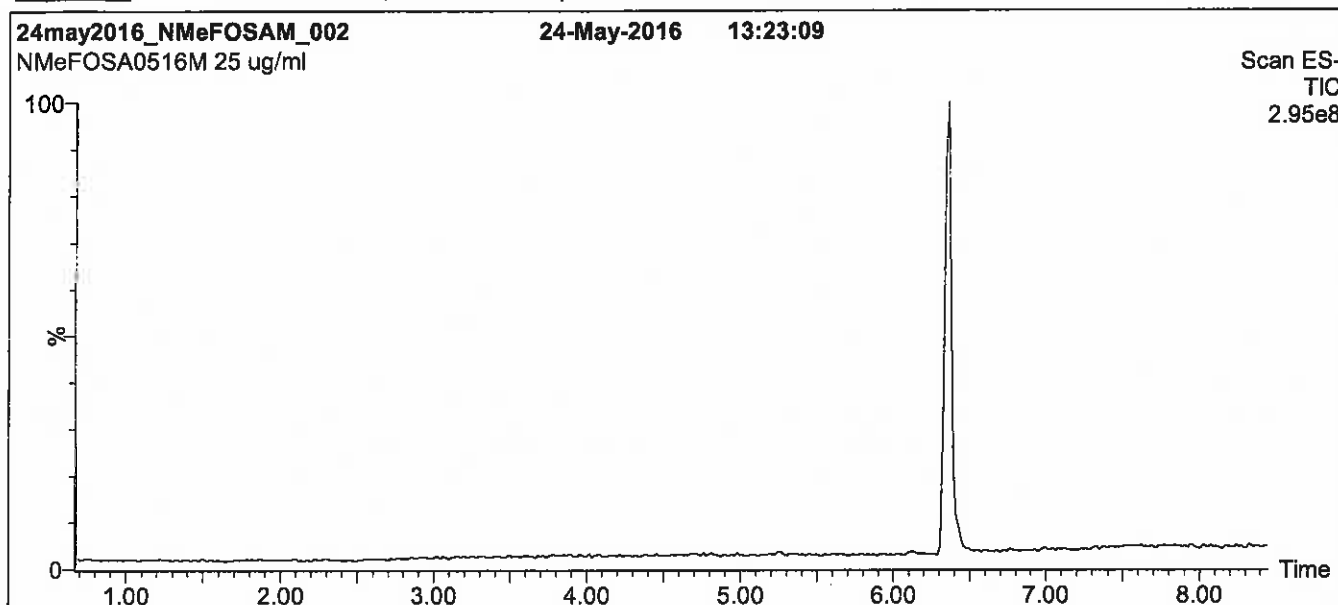
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**Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)**



**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% H<sub>2</sub>O / 55% (80:20 MeOH:ACN)  
(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

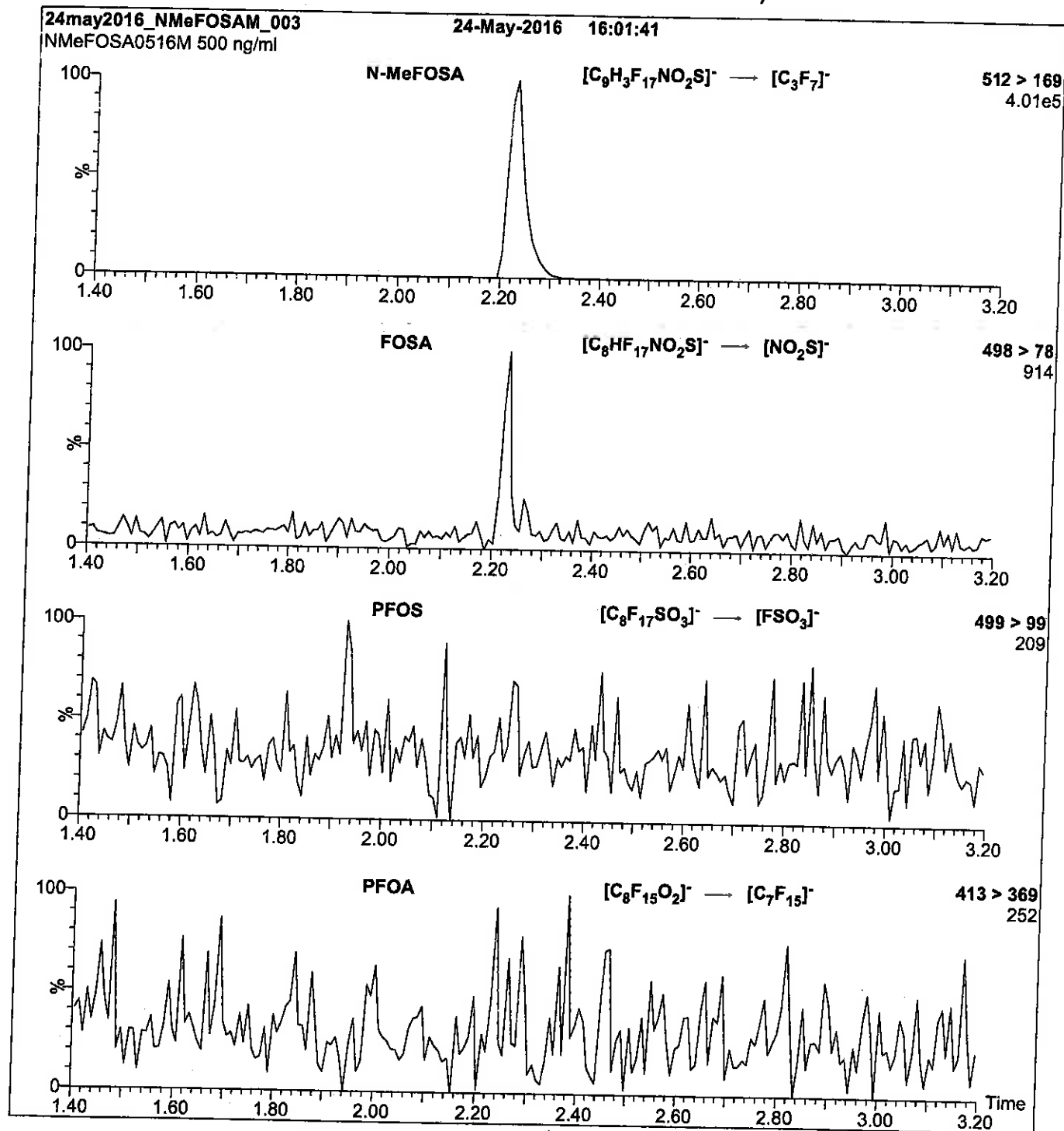
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (150 - 850 amu)

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

**Figure 2: N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10 µl (500 ng/ml N-MeFOSA-M)

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

Flow: 300 µl/min

**MS Parameters**

Collision Gas (mbar) = 3.54e-3  
Collision Energy (eV) = 30



Reagent

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**LCN-MeFOSAA\_00001**

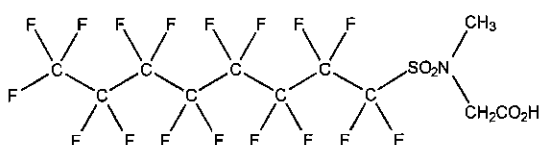


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** N-MeFOSAA **LOT NUMBER:** NMeFOSAA1214  
**COMPOUND:** N-methylperfluoro-1-octanesulfonamidoacetic acid

**STRUCTURE:** **CAS #:** 2355-31-9



**MOLECULAR FORMULA:**  $C_{11}H_6F_{17}NO_4S$  **MOLECULAR WEIGHT:** 571.21  
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$  **SOLVENT(S):** Methanol  
 Water (<1%)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 12/09/2014  
**EXPIRY DATE:** (mm/dd/yyyy) 12/09/2019  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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

Certified By:

B.G. Chittim

Date: 04/06/2015

(mm/dd/yyyy)

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

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**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:**

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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

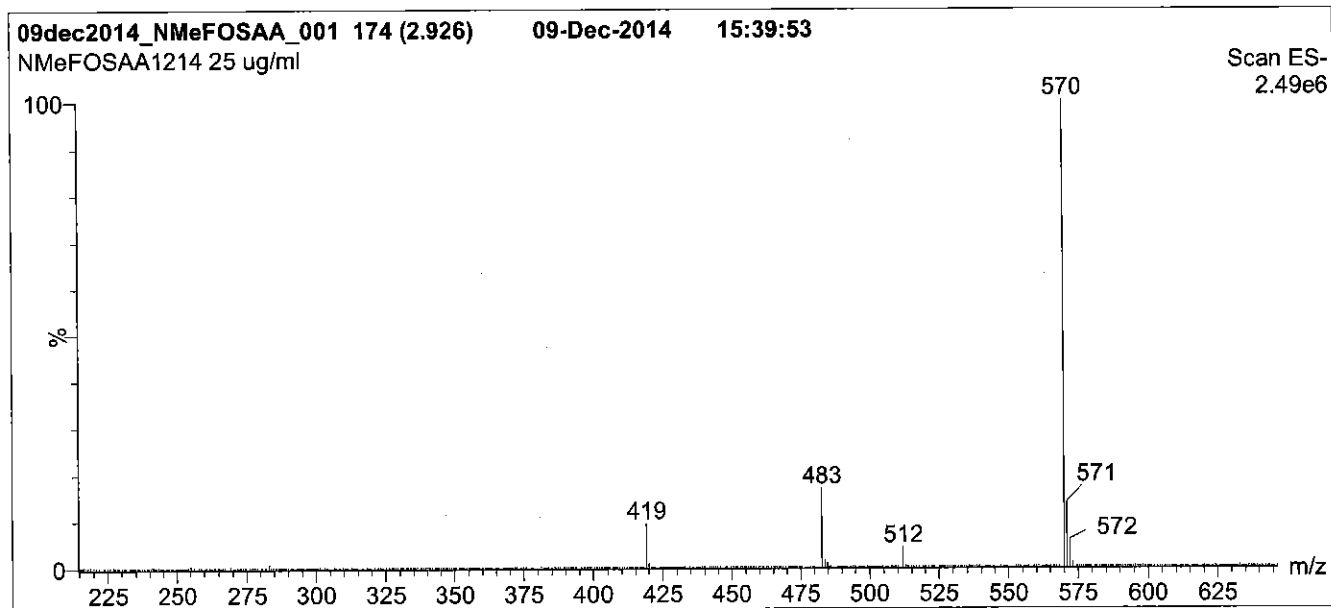
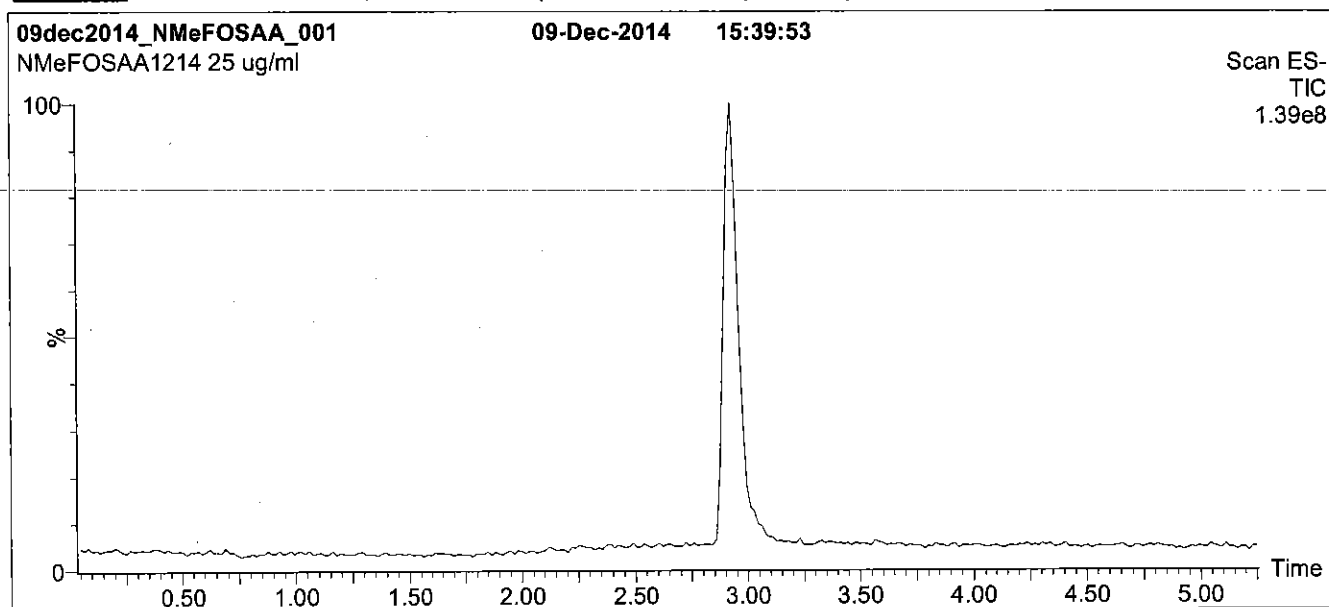
**QUALITY MANAGEMENT:**

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



\*\*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: N-MeFOSAA; 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: 65% (80:20 MeOH:ACN) / 35% 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

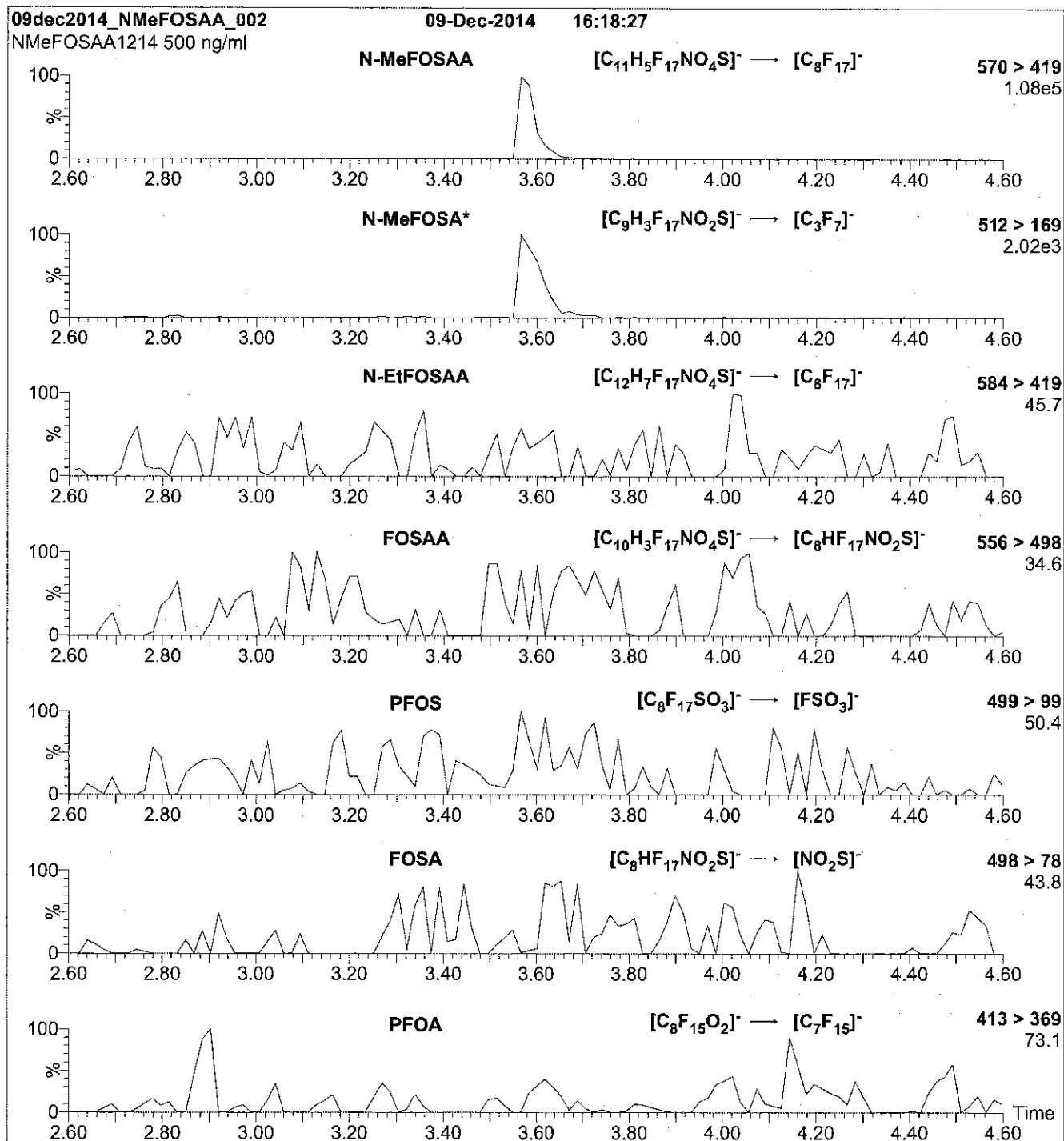
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (215 - 850 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV):** 3.00  
**Cone Voltage (V):** 35.00  
**Cone Gas Flow (l/hr):** 50  
**Desolvation Gas Flow (l/hr):** 750

**Figure 2: N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



**\*Note:** N-MeFOSA is formed by fragmentation of N-MeFOSAA.

**Conditions for Figure 2:**

**Injection:** Direct loop injection  
10  $\mu$ l (500 ng/ml N-MeFOSAA)

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

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

**MS Parameters**

Collision Gas (mbar) = 3.31e-3  
Collision Energy (eV) = 25

Reagent

---

**LCN-MeFOSAA\_00003**

R: 8/23/16 SAE

715562  
ID: LCN-MeFOSAA\_00003  
Exp: 01/20/21 Prod. SEC  
N-MeFOSAA

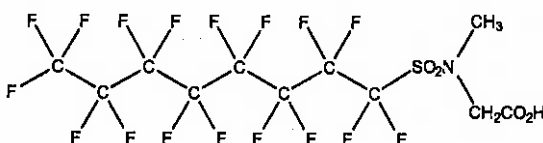


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** N-MeFOSAA **LOT NUMBER:** NMeFOSAA0116  
**COMPOUND:** N-methylperfluoro-1-octanesulfonamidoacetic acid

**STRUCTURE:** **CAS #:** 2355-31-9



**MOLECULAR FORMULA:**  $C_{11}H_8F_{17}NO_4S$  **MOLECULAR WEIGHT:** 571.21  
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$  **SOLVENT(S):** Methanol  
Water (<1%)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 01/20/2016  
**EXPIRY DATE:** (mm/dd/yyyy) 01/20/2021  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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

Certified By:

B.G. Chittim

Date: 01/21/2016  
(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.

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**LIMITED WARRANTY:**

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**QUALITY MANAGEMENT:**

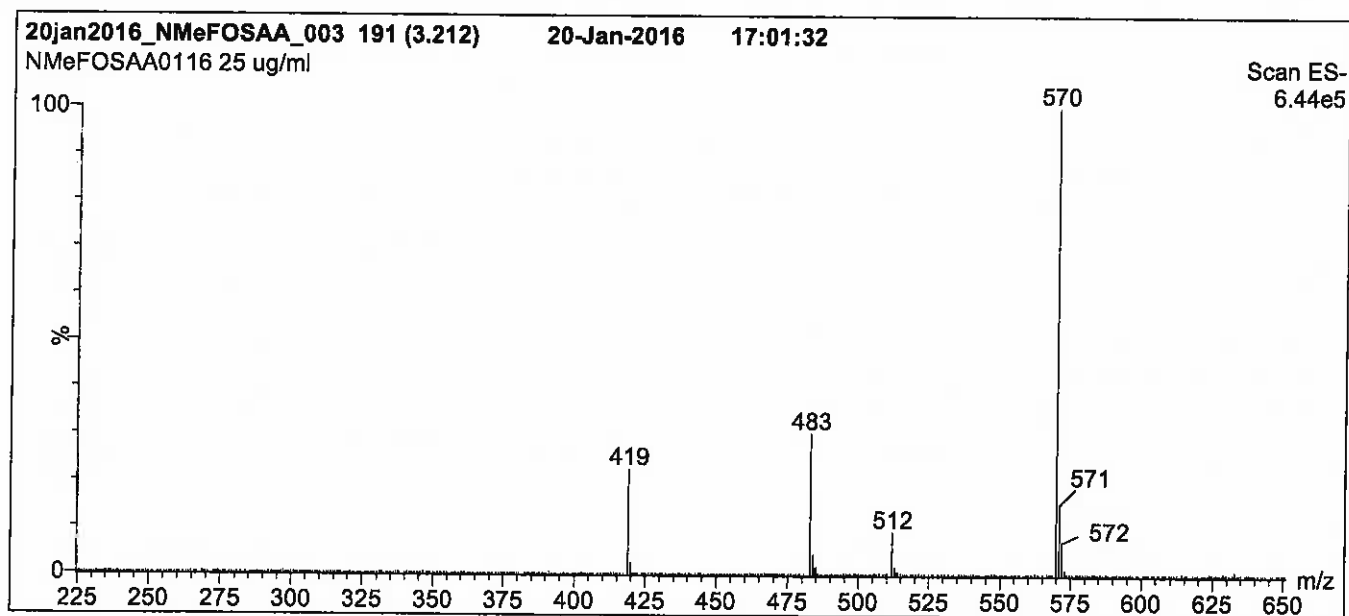
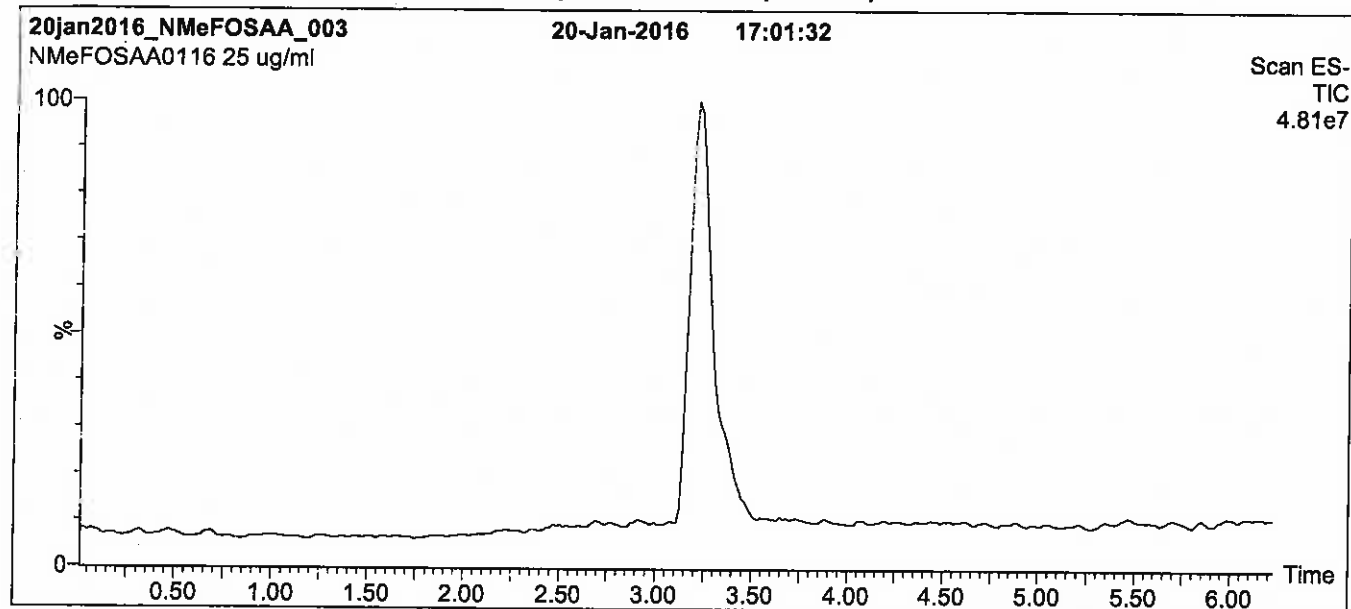
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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**Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

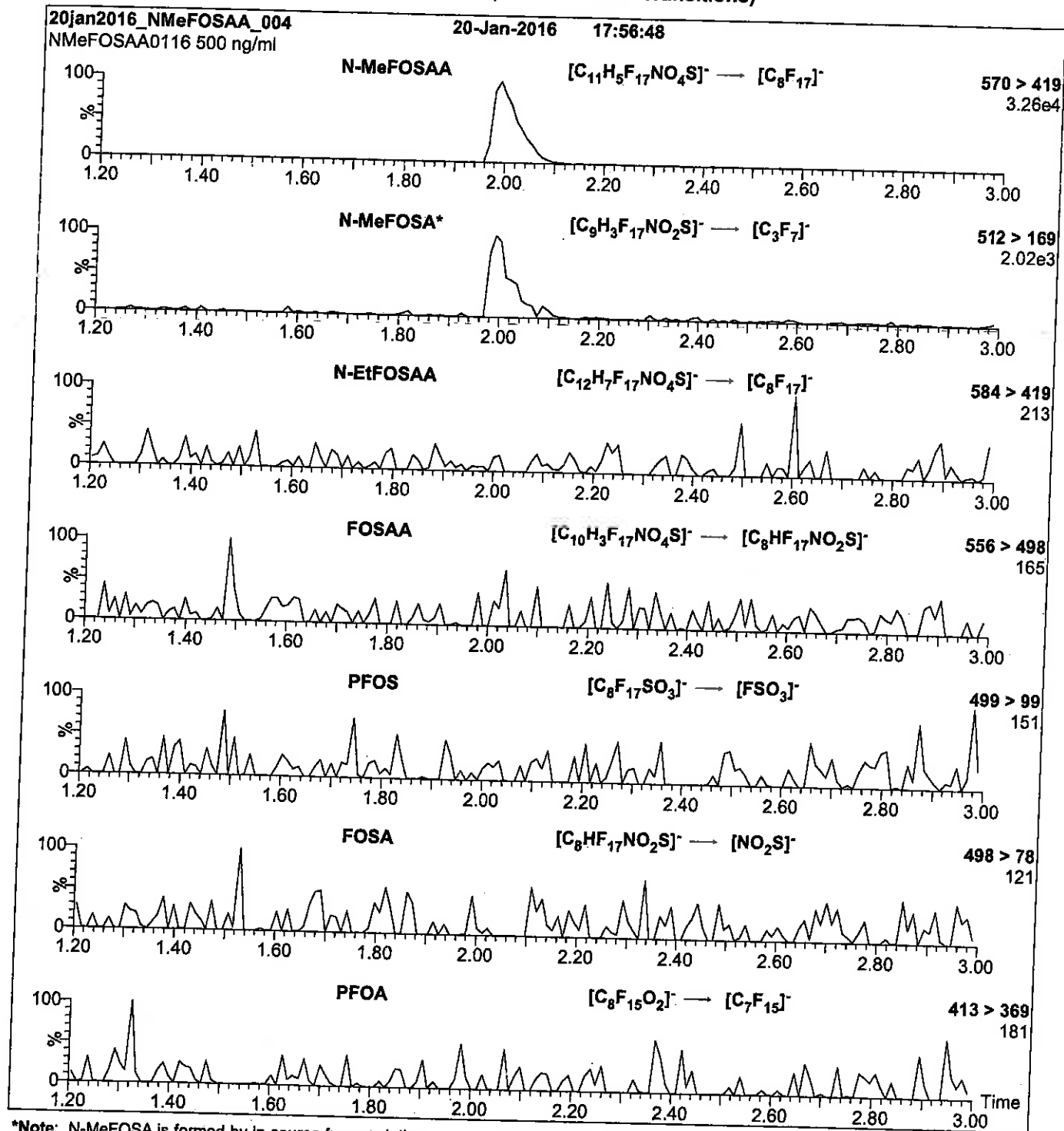
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 35.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



\*Note: N-MeFOSA is formed by in-source fragmentation.

**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml N-MeFOSAA)

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.66e-3  
Collision Energy (eV) = 25

Reagent

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**LCPFACMXB\_00007**



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXB

**Solution/Mixture of Native  
Perfluoroalkylcarboxylic Acids and  
Native Perfluoroalkylsulfonates**

**PRODUCT CODE:** PFAC-MXB  
**LOT NUMBER:** PFACMXB1115  
**SOLVENT(S):** Methanol / Water (<1%)  
**DATE PREPARED:** (mm/dd/yyyy) 11/04/2015  
**LAST TESTED:** (mm/dd/yyyy) 11/06/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 11/06/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

### DESCRIPTION:

PFAC-MXB is a solution/mixture of thirteen native perfluoroalkylcarboxylic acids (C<sub>4</sub>-C<sub>14</sub>, C<sub>16</sub>, and C<sub>18</sub>) and four native perfluoroalkylsulfonates (C<sub>4</sub>, C<sub>6</sub>, C<sub>8</sub> and C<sub>10</sub>). The full name, abbreviation and concentration for each of the components are given in Table A.

The individual perfluoroalkylcarboxylic acids and perfluoroalkylsulfonates all have chemical purities of >98%.

### DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture  
 Figure 1: LC/MS Data (SiR)  
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)  
 Figure 3: 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 acids to their respective methyl esters.

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

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

### **INTENDED USE:**

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

### **HAZARDS:**

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

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**Table A: PFAC-MXB; Components and Concentrations (ng/ml,  $\pm$  5% in Methanol / Water (<1%))**

| Name                                   | Abbreviation | Concentration (ng/ml) | Peak Assignment In Figure 1 |                             |
|----------------------------------------|--------------|-----------------------|-----------------------------|-----------------------------|
| Perfluoro-n-butanoic acid              | PFBA         | 2000                  | A                           |                             |
| Perfluoro-n-pentanoic acid             | PFPeA        | 2000                  | B                           |                             |
| Perfluoro-n-hexanoic acid              | PFHxA        | 2000                  | D                           |                             |
| Perfluoro-n-heptanoic acid             | PFHpA        | 2000                  | E                           |                             |
| Perfluoro-n-octanoic acid              | PFOA         | 2000                  | G                           |                             |
| Perfluoro-n-nonanoic acid              | PFNA         | 2000                  | H                           |                             |
| Perfluoro-n-decanoic acid              | PFDA         | 2000                  | J                           |                             |
| Perfluoro-n-undecanoic acid            | PFUdA        | 2000                  | K                           |                             |
| Perfluoro-n-dodecanoic acid            | PFDoA        | 2000                  | M                           |                             |
| Perfluoro-n-tridecanoic acid           | PFTrDA       | 2000                  | N                           |                             |
| Perfluoro-n-tetradecanoic acid         | PFTeDA       | 2000                  | O                           |                             |
| Perfluoro-n-hexadecanoic acid          | PFHxDA       | 2000                  | P                           |                             |
| Perfluoro-n-octadecanoic acid          | PFODA        | 2000                  | Q                           |                             |
| Name                                   | Abbreviation | Concentration (ng/ml) |                             | Peak Assignment In Figure 1 |
|                                        |              | as the salt           | as the anion                |                             |
| Potassium perfluoro-1-buthanesulfonate | L-PFBS       | 2000                  | 1770                        | C                           |
| Sodium perfluoro-1-hexanesulfonate     | L-PFHxS      | 2000                  | 1890                        | F                           |
| Sodium perfluoro-1-octanesulfonate     | L-PFOS       | 2000                  | 1910                        | I                           |
| Sodium perfluoro-1-decanesulfonate     | L-PFDS       | 2000                  | 1930                        | L                           |

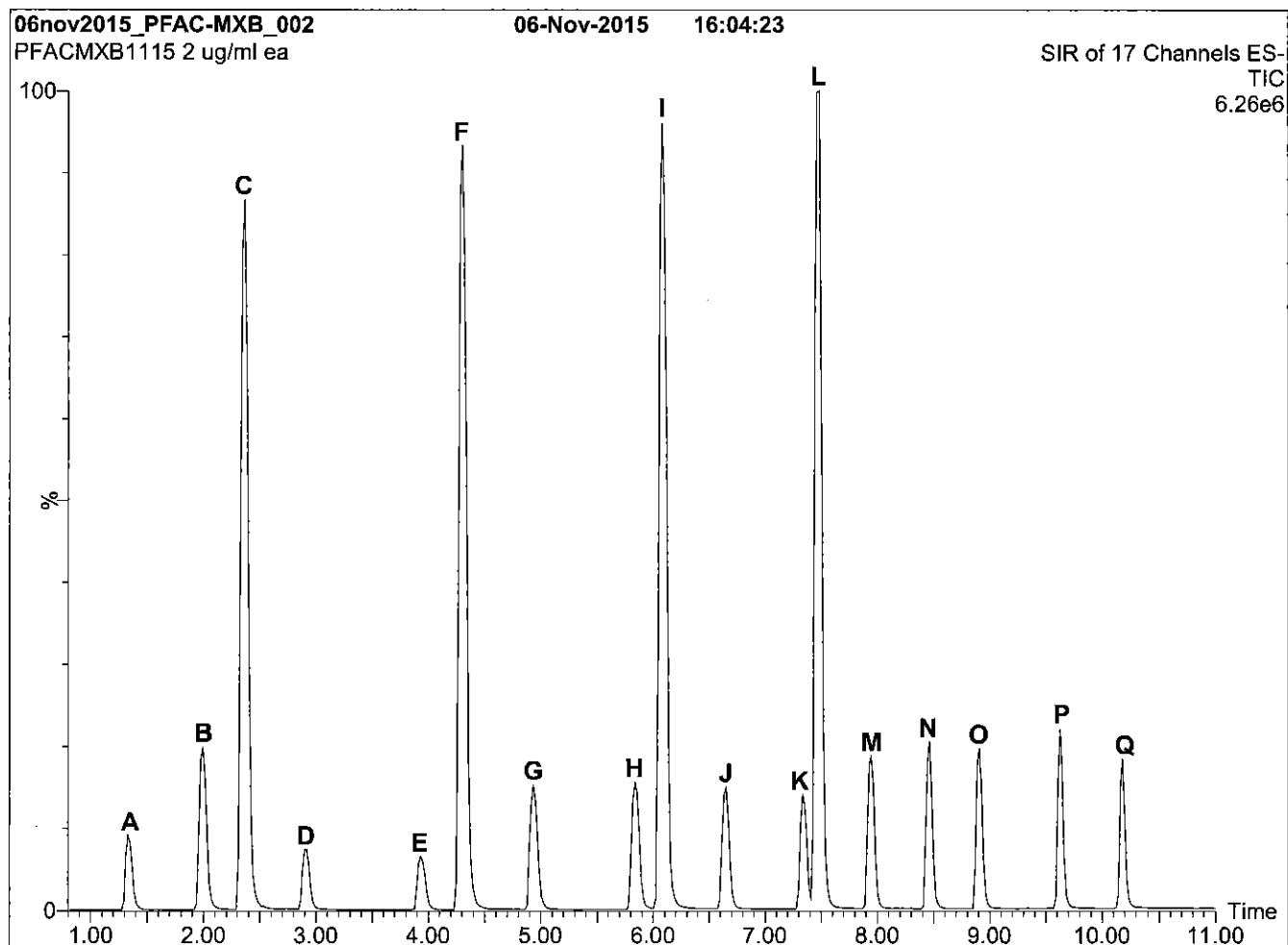
Certified By:

  
B.G. Chittim

Date: 11/11/2015

(mm/dd/yyyy)

**Figure 1:** PFAC-MXB; LC/MS Data (Total Ion Current Chromatogram; SIR)



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient

Start: 55% H<sub>2</sub>O / 45% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 95% organic over 10 min and hold for 1 min  
before returning to initial conditions in 0.5 min.

Time: 12 min

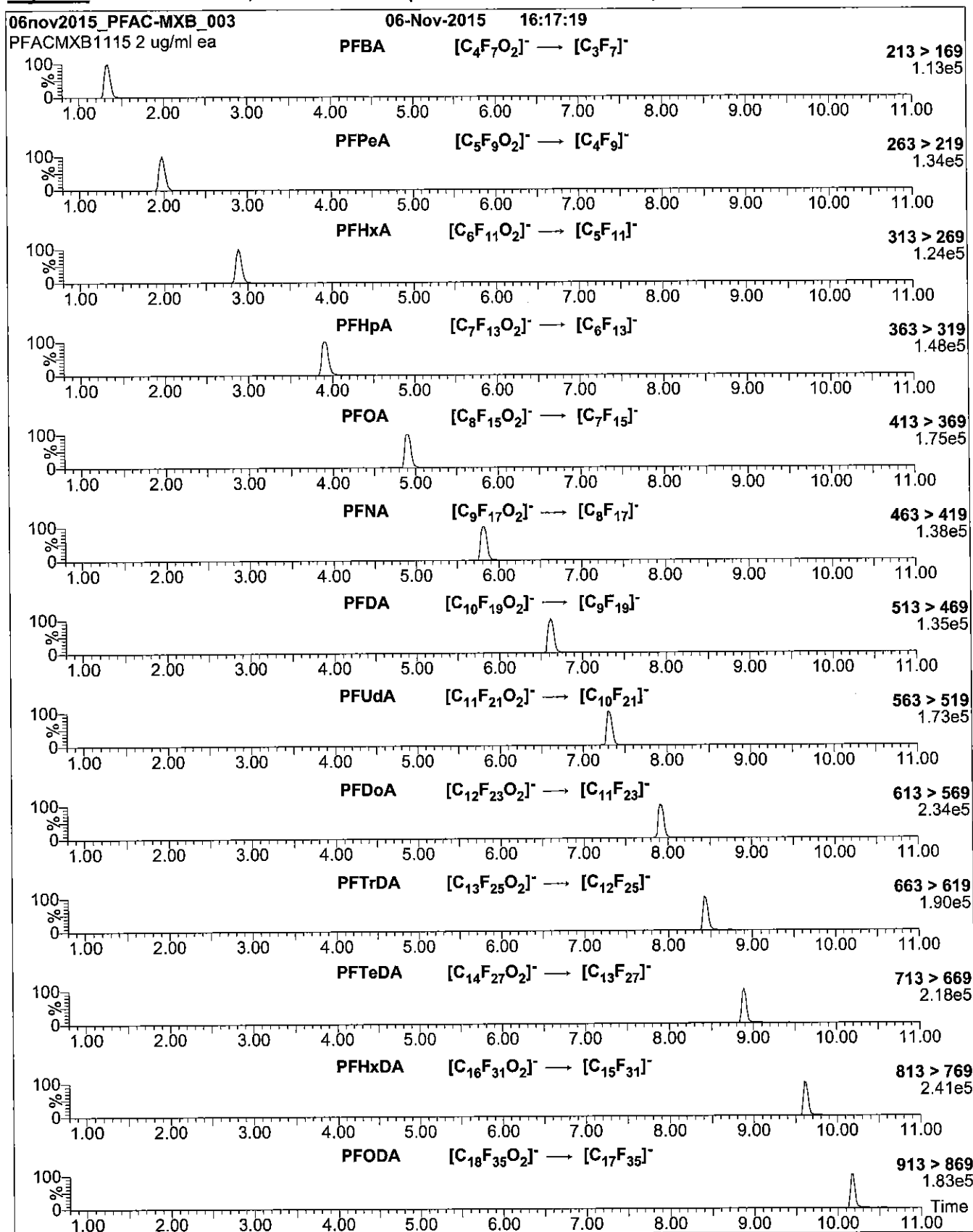
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: SIR of 17 Channels

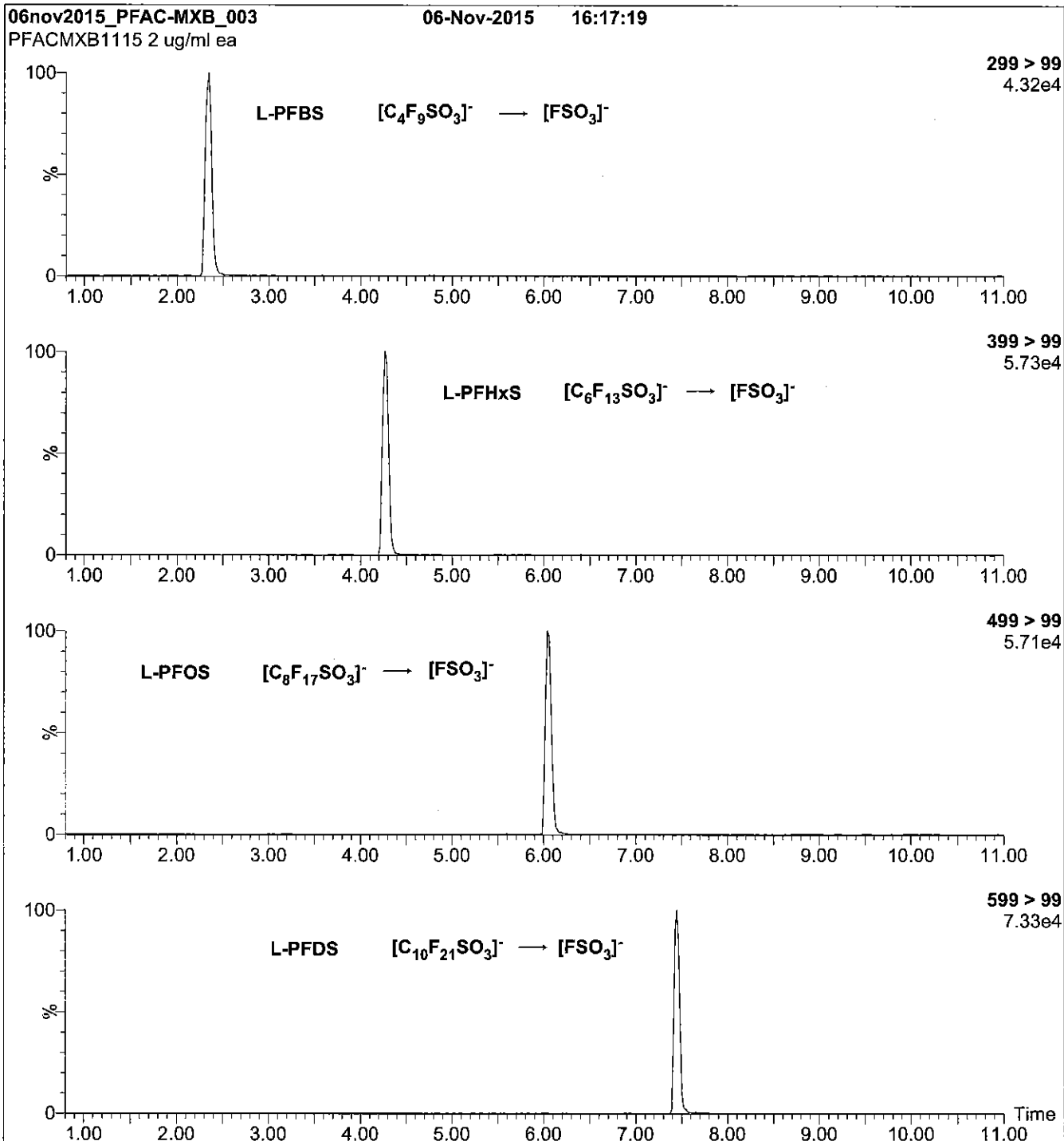
Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = variable (10-70)  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**





**Figure 3: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figures 2 and 3:**

Injection: on-column (PFAC-MXB)

Mobile phase: Same as Figure 1

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.24e-3

Collision Energy (eV) = 8-50 (variable)

Reagent

---

**LCPFBA\_00004**



587895

ID: LCPFBA\_00004

Exp: 01/30/20 Prod: CBW

PF-n-butanoic acid

R: 2/25/16 CBW



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

PFBA

**LOT NUMBER:**

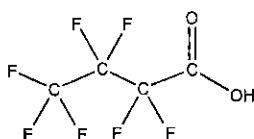
PFBA0115

**COMPOUND:**

Perfluoro-n-butanoic acid

**STRUCTURE:****CAS #:**

375-22-4

**MOLECULAR FORMULA:** $C_4HF_7O_2$ **MOLECULAR WEIGHT:**

214.04

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

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

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

01/30/2015

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

01/30/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

  
B.G. Chittim

Date: 03/25/2015

(mm/dd/yyyy)

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

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

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

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.

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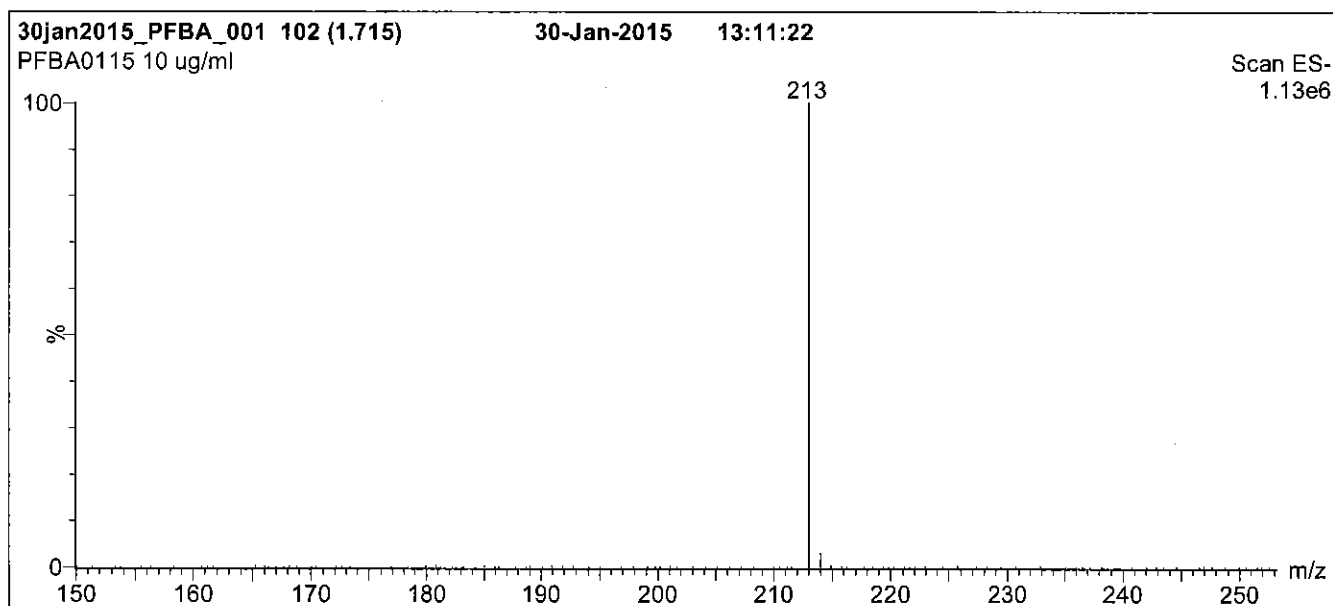
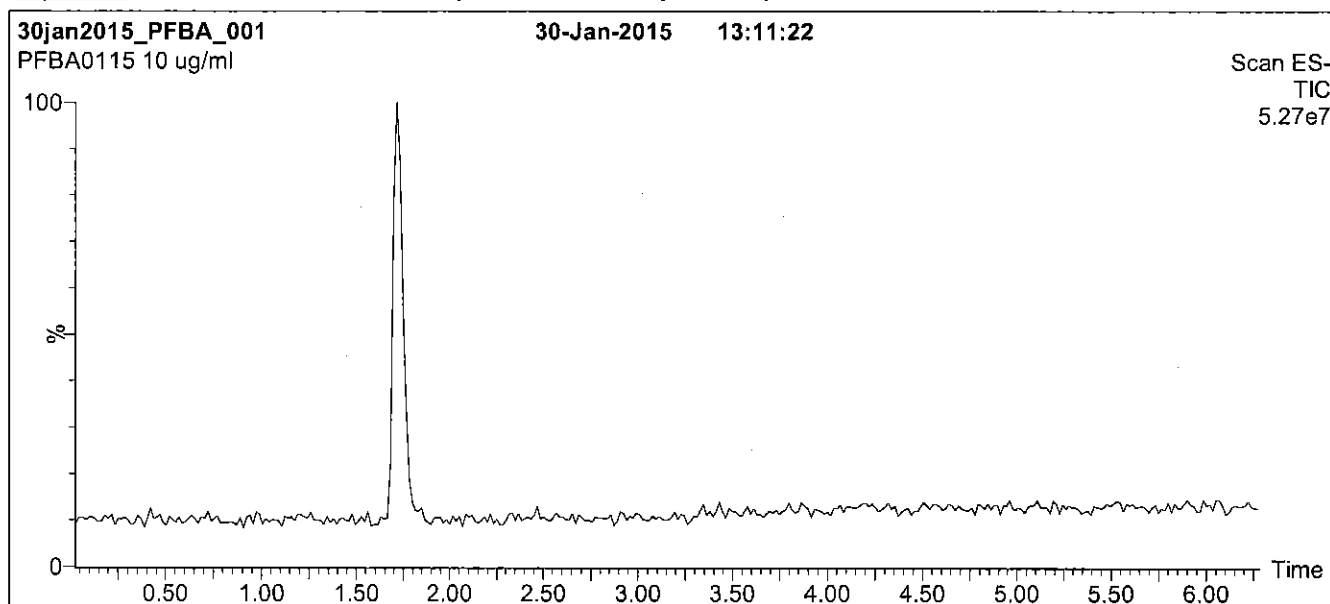
**QUALITY MANAGEMENT:**

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



**\*\*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: PFBA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 30% (80:20 MeOH:ACN) / 70% 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 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

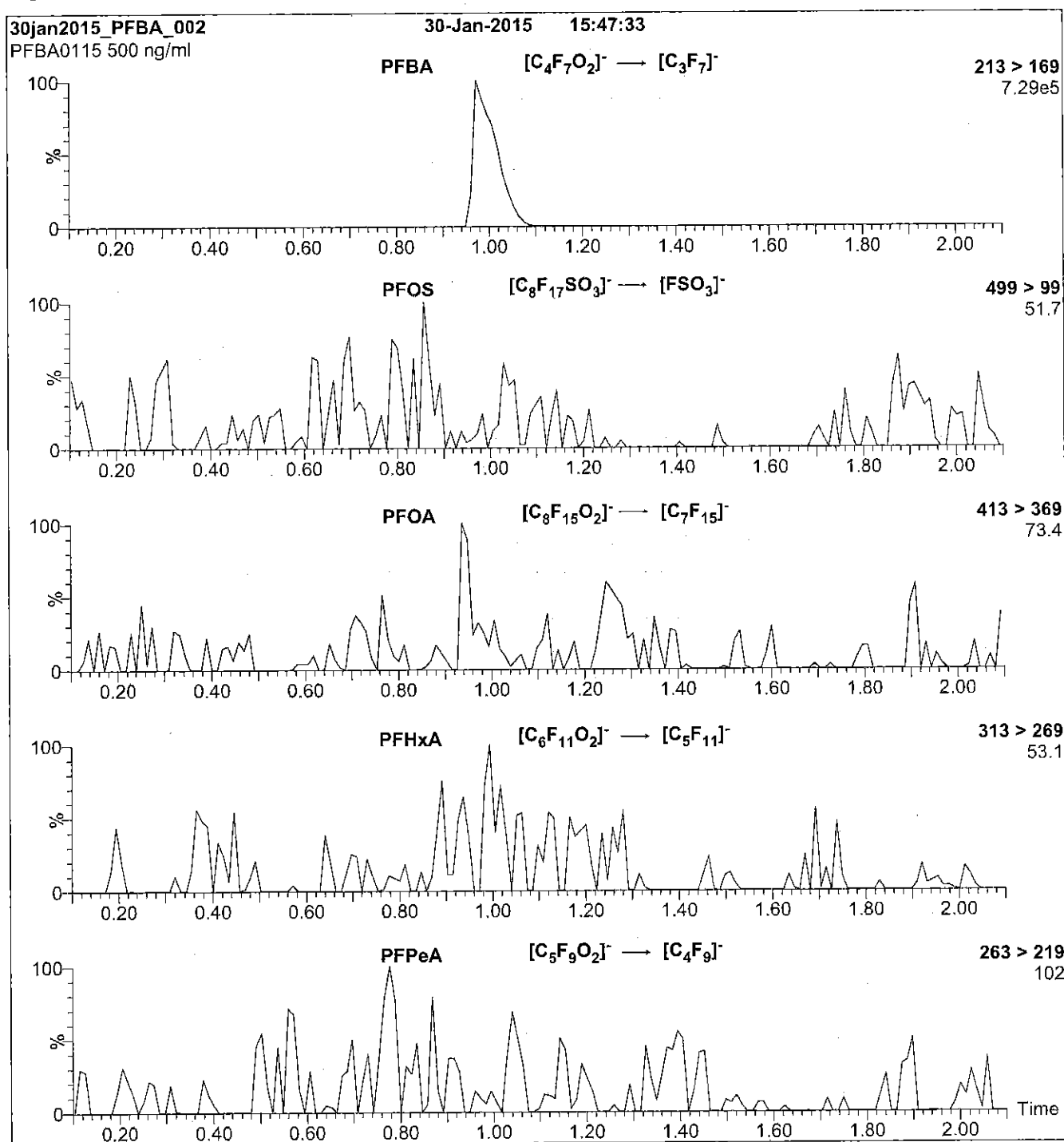
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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) =  $3.35e-3$   
Collision Energy (eV) = 10

Reagent

---

**LCPFBA\_00005**

Scanned  
10/16/14

R: SBC 9/13/16



**WELLINGTON**  
LABORATORIES

730531  
ID: LCPFBA\_00005  
Exp: 05/27/21 Ppd: SBC  
PF-n-butanoic acid

730532  
ID: LCPFBA\_00006  
Exp: 05/27/21 Ppd: SBC  
PF-n-butanoic acid

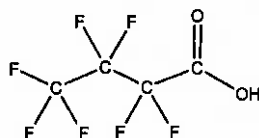
**CERTIFICATE OF ANALYSIS**  
**DOCUMENTATION**

**PRODUCT CODE:** PFBA  
**COMPOUND:** Perfluoro-n-butanoic acid

**LOT NUMBER:** PFBA0516

**STRUCTURE:**

**CAS #:** 375-22-4



**MOLECULAR FORMULA:**  $C_4HF_7O_2$   
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$

**MOLECULAR WEIGHT:** 214.04  
**SOLVENT(S):** Methanol  
Water (<1%)

**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 05/27/2016  
**EXPIRY DATE:** (mm/dd/yyyy) 05/27/2021  
**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:** 05/31/2016  
(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:**

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**HOMOGENEITY:**

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

**UNCERTAINTY:**

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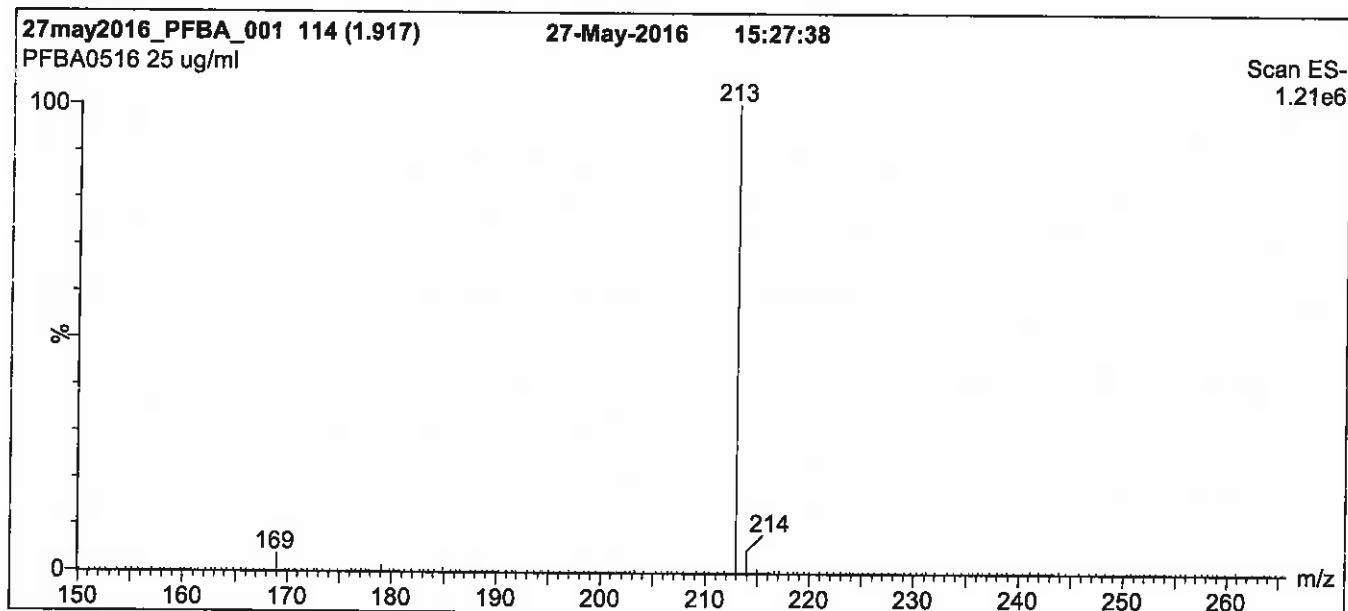
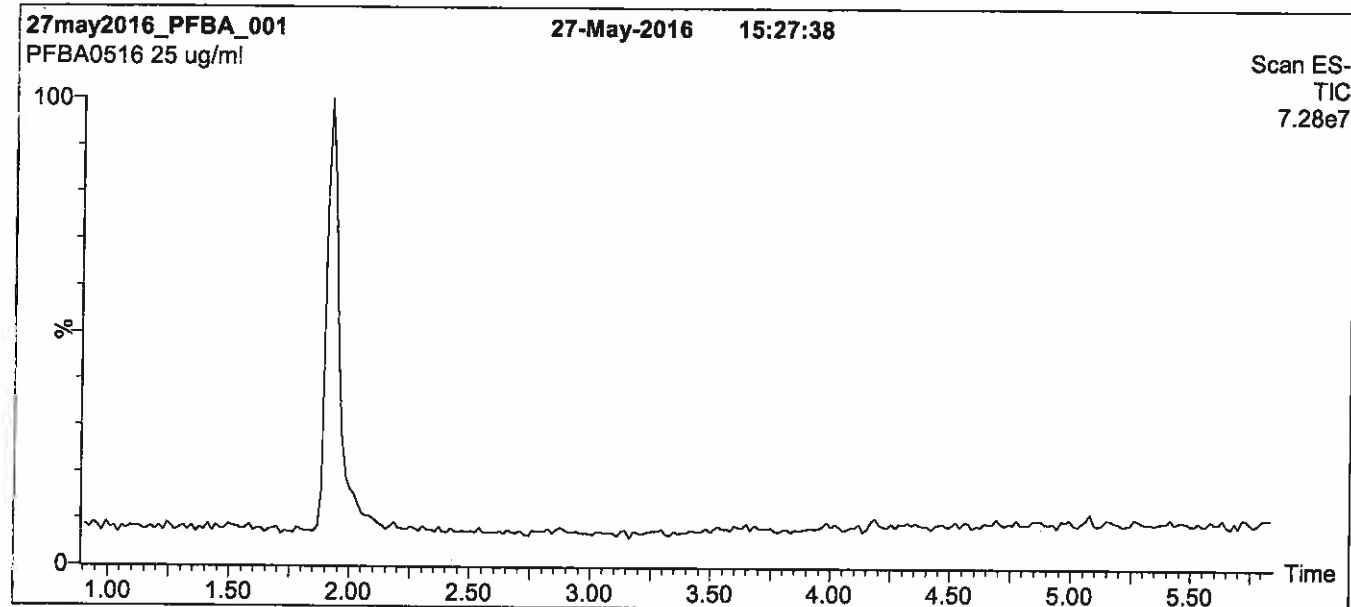
**QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 30% (80:20 MeOH:ACN) / 70% 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

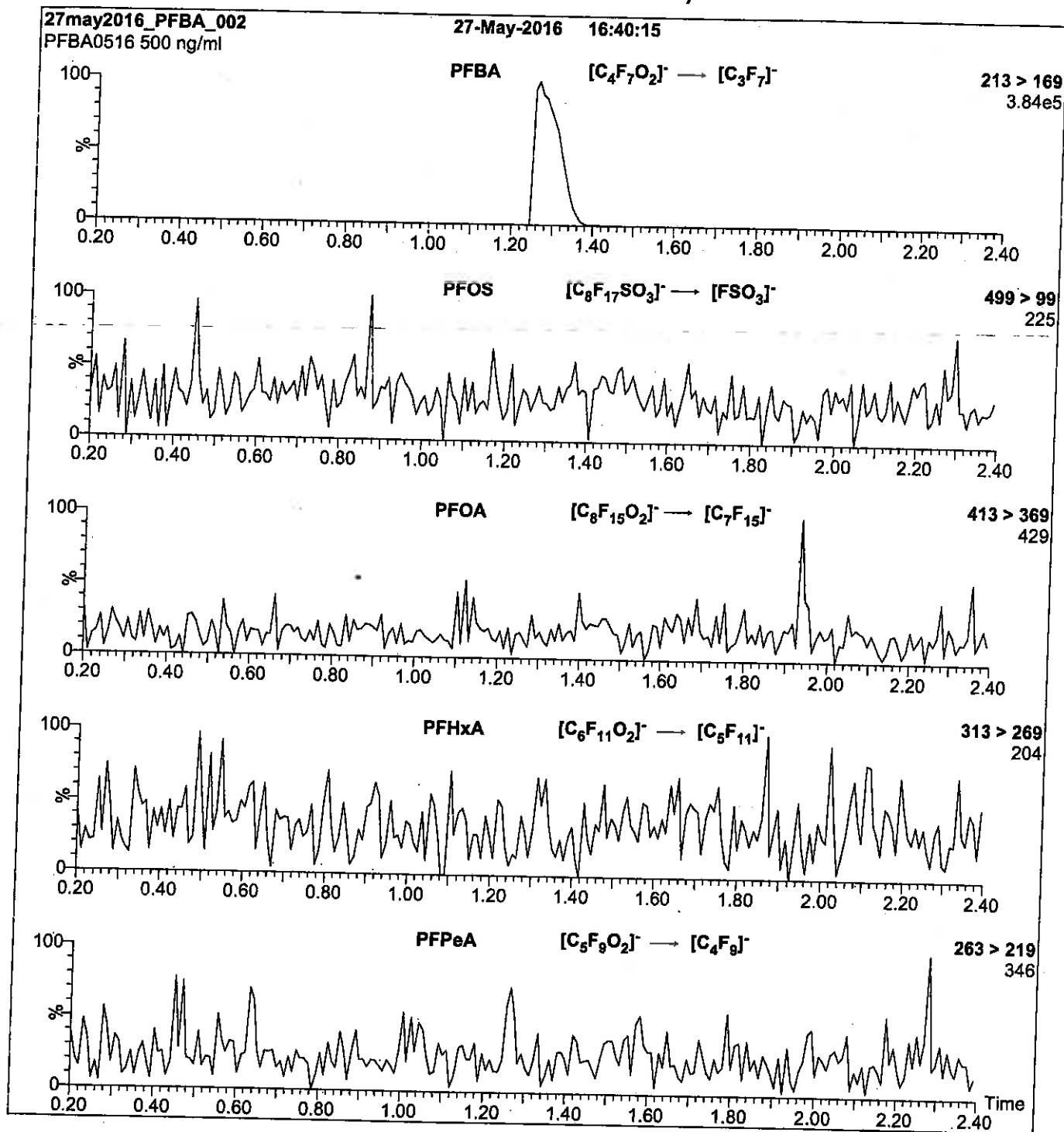
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 10.00  
Cone Gas Flow (l/hr) = 100  
Desolvation Gas Flow (l/hr) = 750

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



**Conditions for Figure 2:**

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

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.62e-3  
Collision Energy (eV) = 10

Reagent

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**LCPFBS\_00004**



605236

ID: LCPFBFS\_00004

Exp: 10/09/19 Prpd: CBW  
PF-1-butanefulfonate K sa

Rec. 3/29/16 JRB ✓



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

L-PFBS

**LOT NUMBER:**

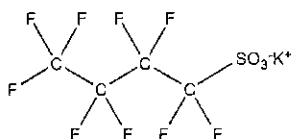
LPFBS1014

**COMPOUND:**

Potassium perfluoro-1-butanefulfonate

**STRUCTURE:****CAS #:**

29420-49-3

**MOLECULAR FORMULA:** $C_4F_9SO_3K$ **MOLECULAR WEIGHT:**

338.19

**CONCENTRATION:**

50.0 ± 2.5 µg/ml (K salt)

**SOLVENT(S):**

Methanol

44.2 ± 2.2 µg/ml (PFBS anion)

**CHEMICAL PURITY:**

&gt;98%

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

10/09/2014

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

10/09/2019

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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

Certified By:

  
B.G. Chittim

Date: 04/02/2015

(mm/dd/yyyy)

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

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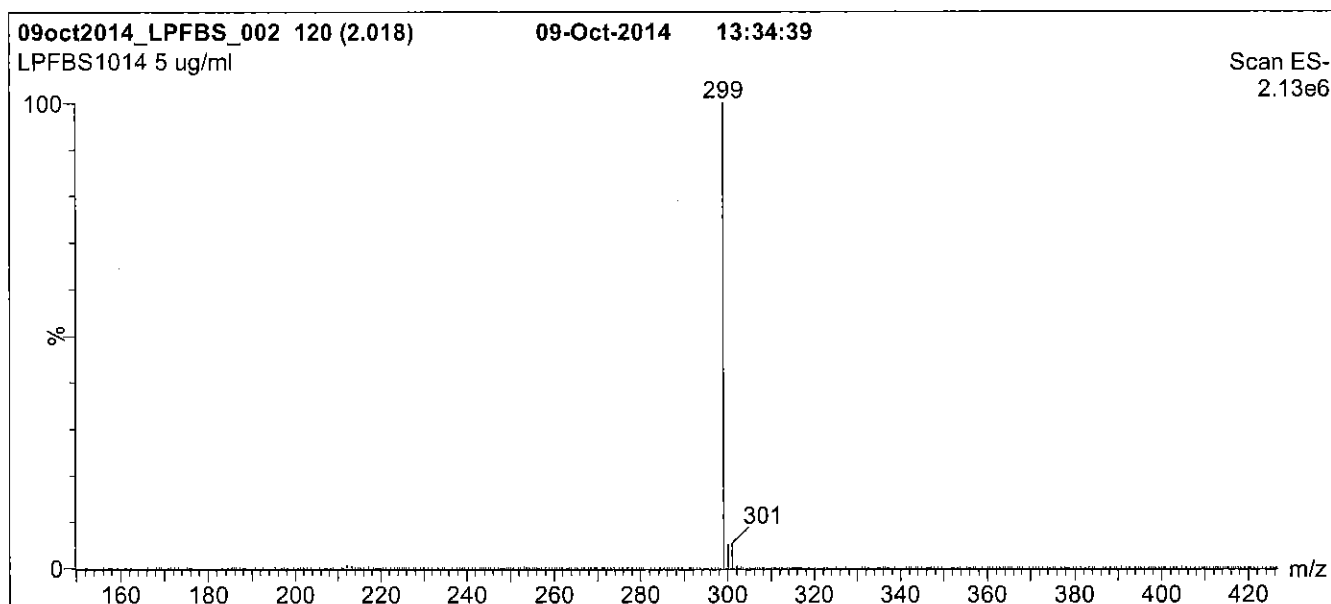
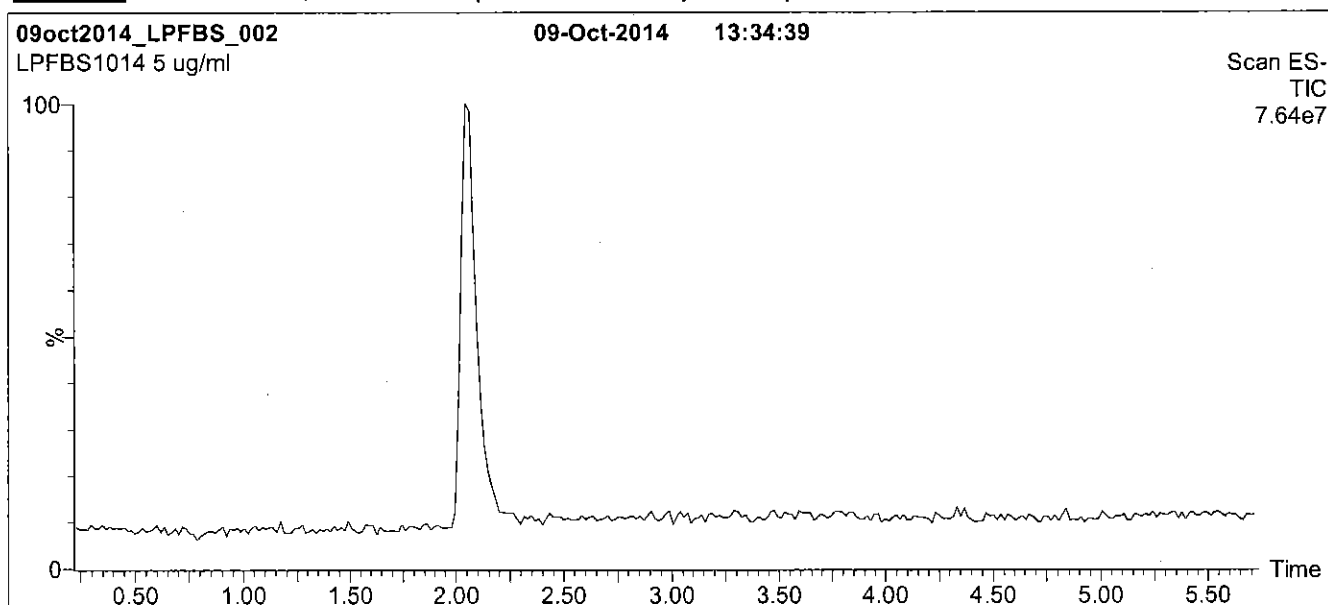
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**Figure 1:** L-PFBS; LC/MS Data (TIC and Mass Spectrum)



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 40% (80:20 MeOH:ACN) / 60% 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

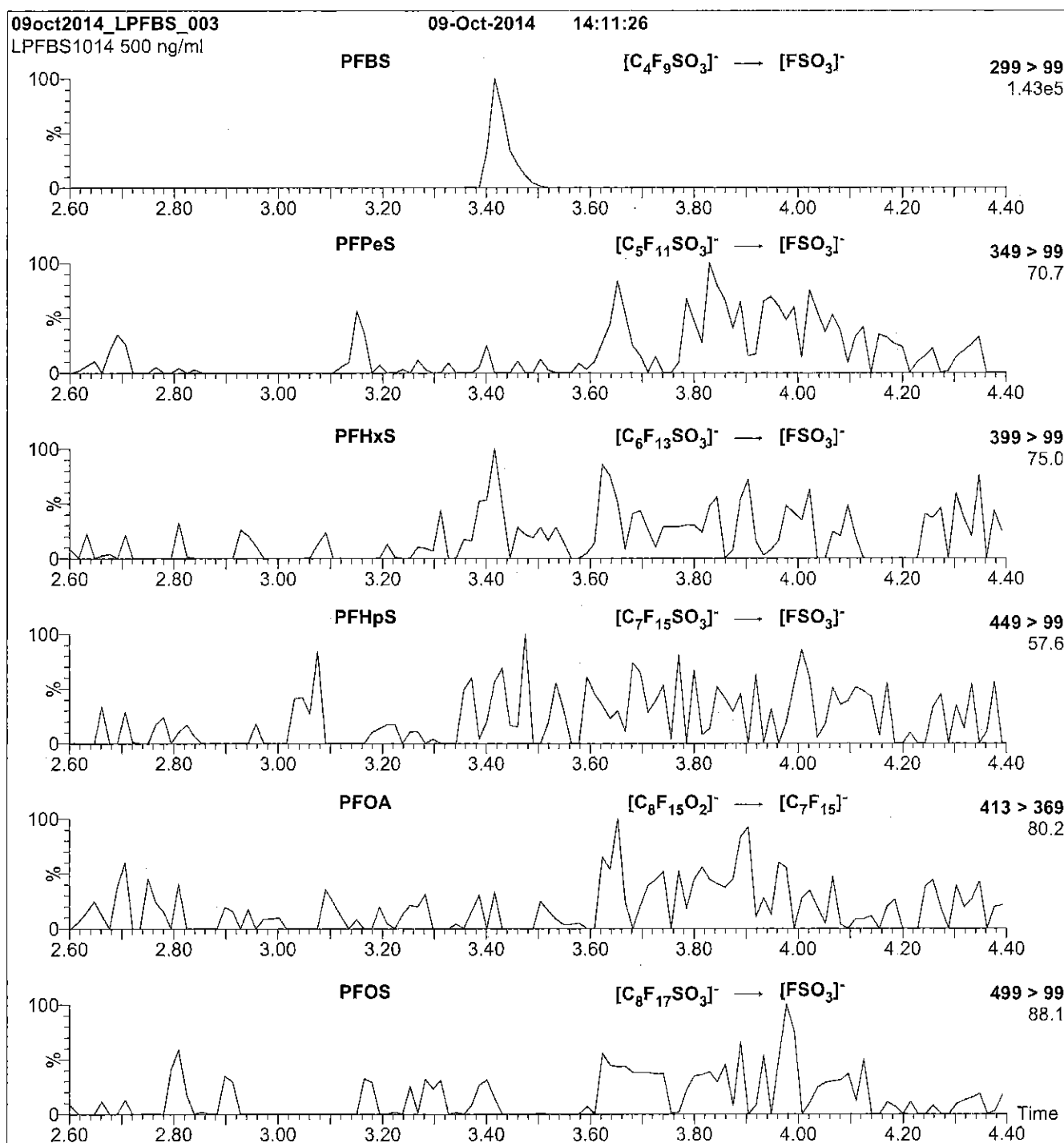
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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



Reagent

---

**LCPFBS\_00005**

R: 9/9/16 gbx



728306

ID: LCM2-8:2FTS\_00003

Exp: 01/08/21 Prod: SBC

M2-8:2FTS

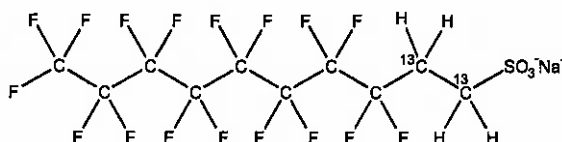


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2-8:2FTS **LOT NUMBER:** M282FTS0116  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluoro-[1,2-<sup>13</sup>C<sub>2</sub>]decane sulfonate

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



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>8</sub>H<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 552.15  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol  
 47.9 ± 2.4 µg/ml (M2-8:2FTS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 01/08/2016 (1,2-<sup>13</sup>C<sub>2</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 01/08/2021  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of <sup>34</sup>S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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

Certified By:

B.G. Chittim

Date: 01/18/2016  
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
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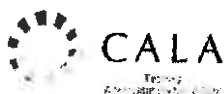
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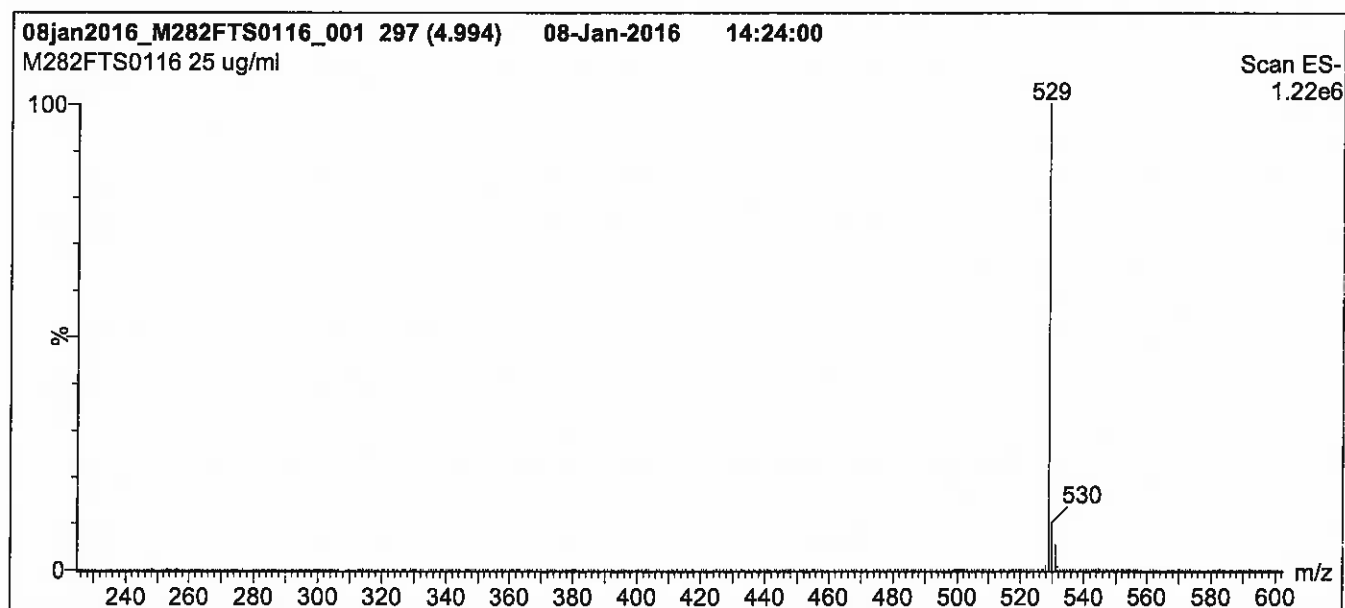
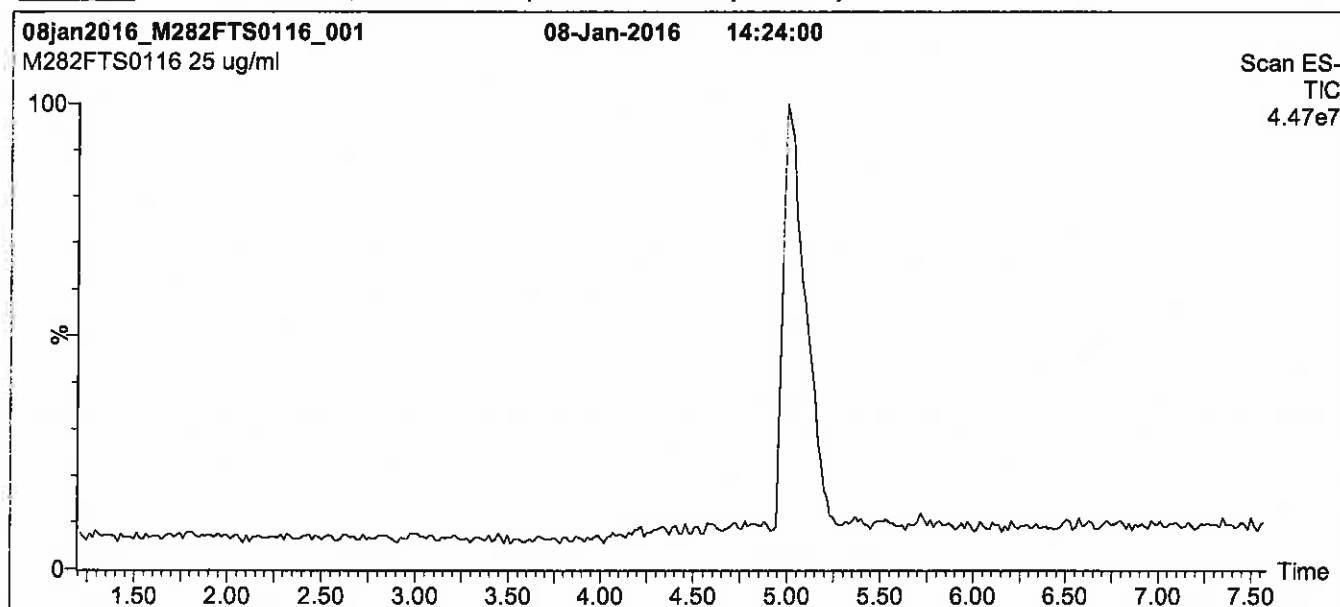
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**Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

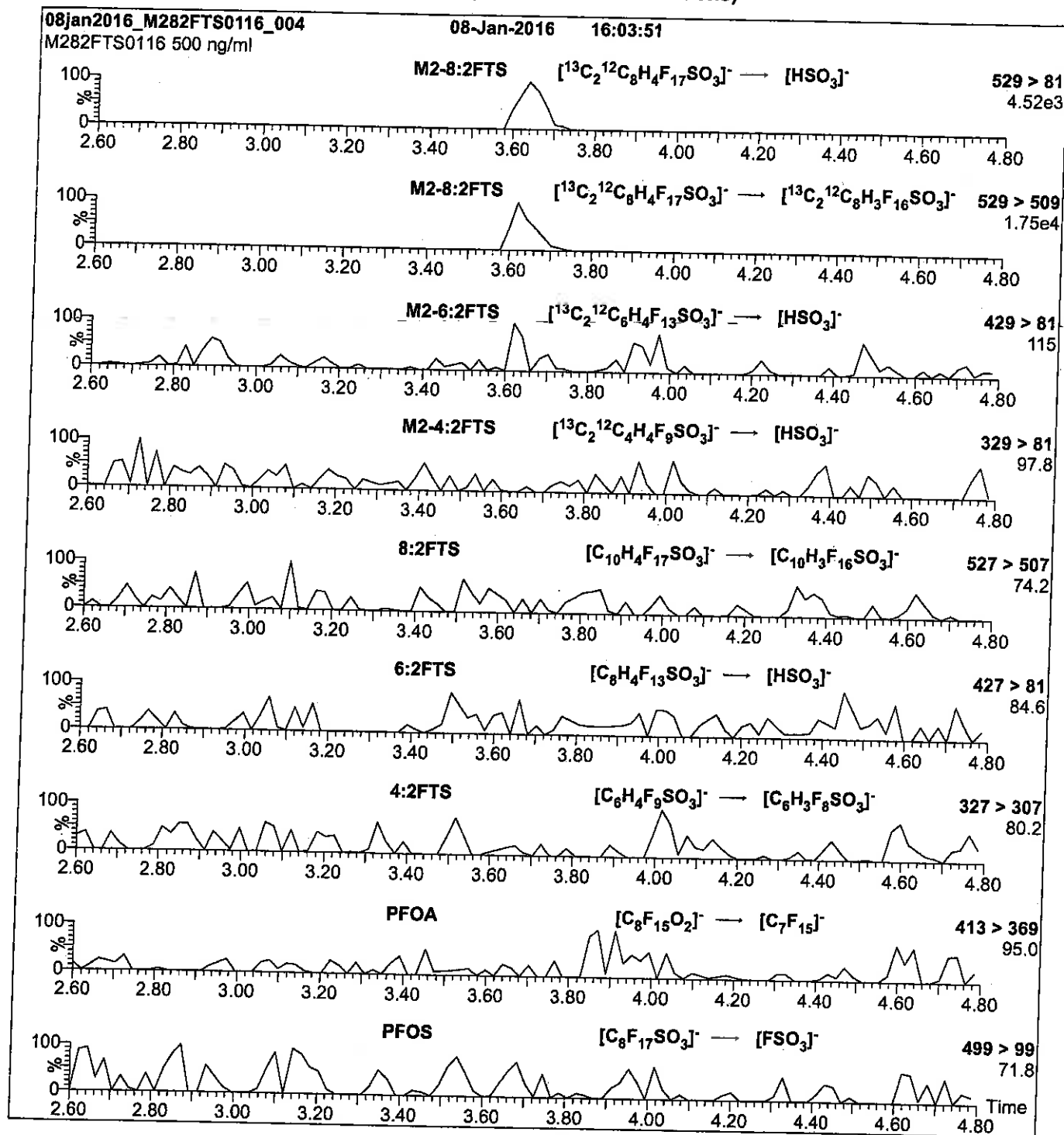
Time: 10 min  
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (225 - 850 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 30.00  
**Cone Gas Flow (l/hr)** = 100  
**Desolvation Gas Flow (l/hr)** = 750

**Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M2-8:2FTS)

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) = 3.20e-3  
Collision Energy (eV) = 30

R: SBC 9/13/16



730511

ID: LCPFBFS\_00005

Exp: 03/15/21 Pripd: SBC

PF-1-butanedisulfonate K sa



730512

ID: LCPFBFS\_00006

Exp: 03/15/21 Pripd: SBC

PF-1-butanedisulfonate K sa



**WELLINGTON**  
LABORATORIES

**CERTIFICATE OF ANALYSIS**  
**DOCUMENTATION**

**PRODUCT CODE:**

L-PFBS

**LOT NUMBER:**

LPFBFS0316

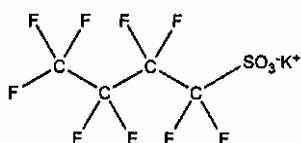
**COMPOUND:**

Potassium perfluoro-1-butanedisulfonate

**STRUCTURE:**

**CAS #:**

29420-49-3



**MOLECULAR FORMULA:**

C<sub>4</sub>F<sub>9</sub>SO<sub>3</sub>K

**MOLECULAR WEIGHT:**

338.19

**CONCENTRATION:**

50.0 ± 2.5 µg/ml (K salt)  
44.2 ± 2.2 µg/ml (PFBS anion)

**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

>98%

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

03/15/2016

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

03/15/2021

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

See page 2 for further details.

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

Certified By:

B.G. Chittim

Date: 03/21/2016

(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:**

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**HOMOGENEITY:**

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

**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.

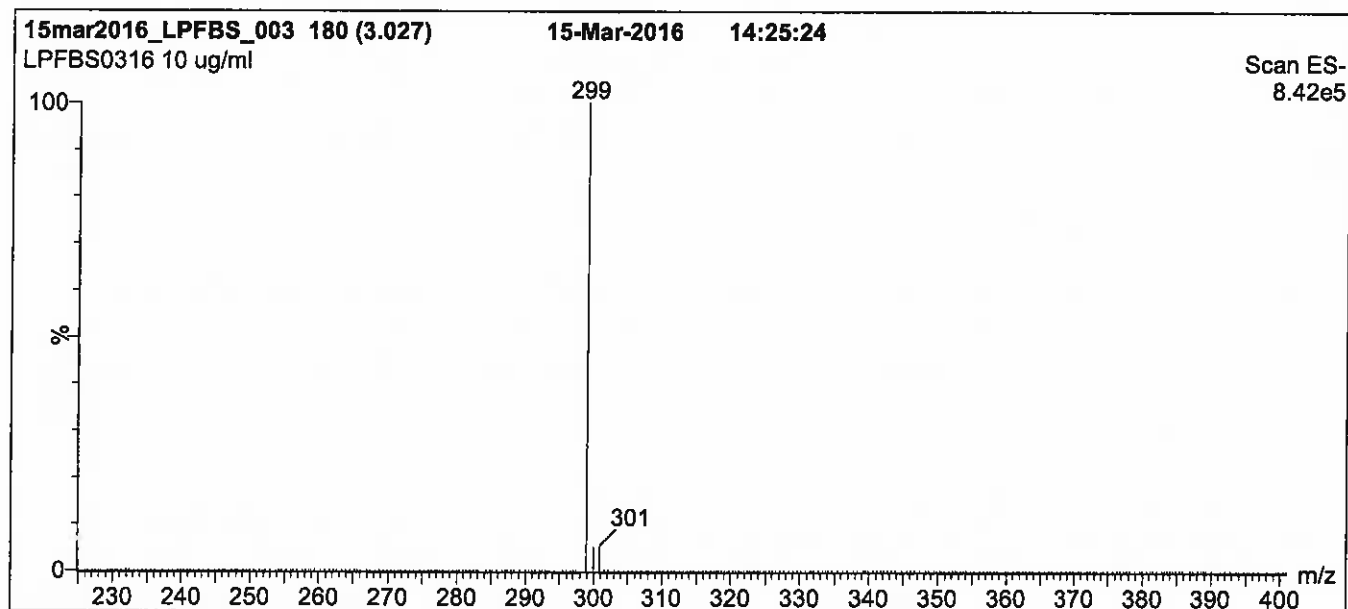
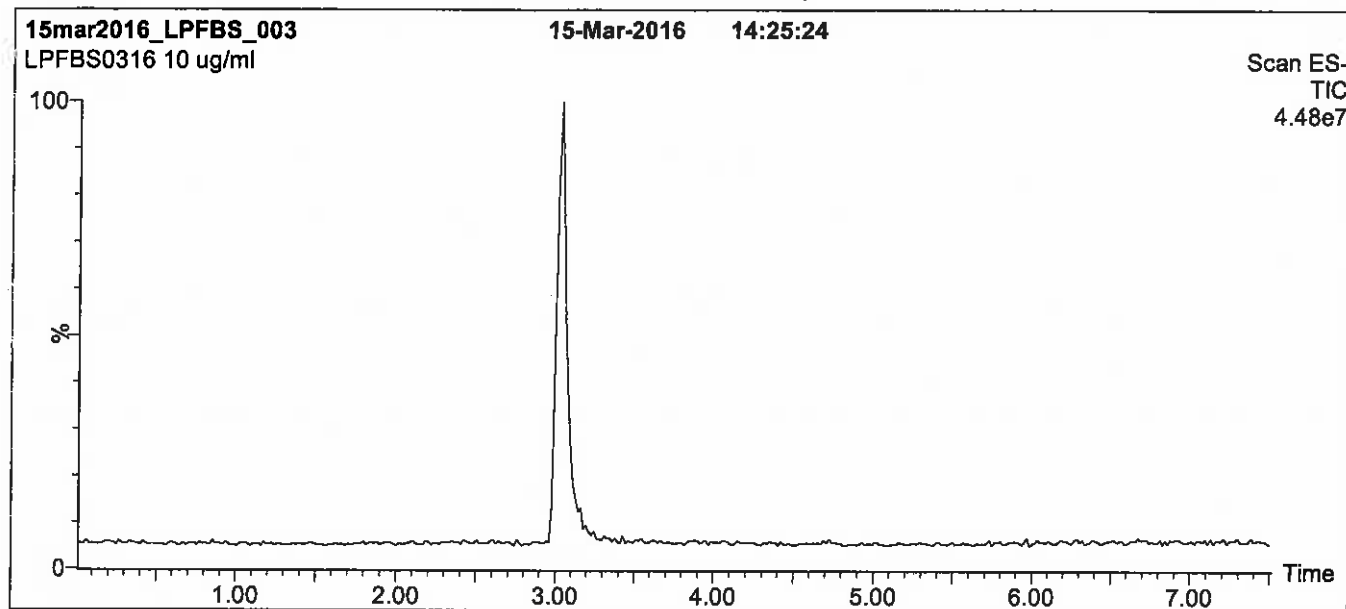
**QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 40% (80:20 MeOH:ACN) / 60% 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

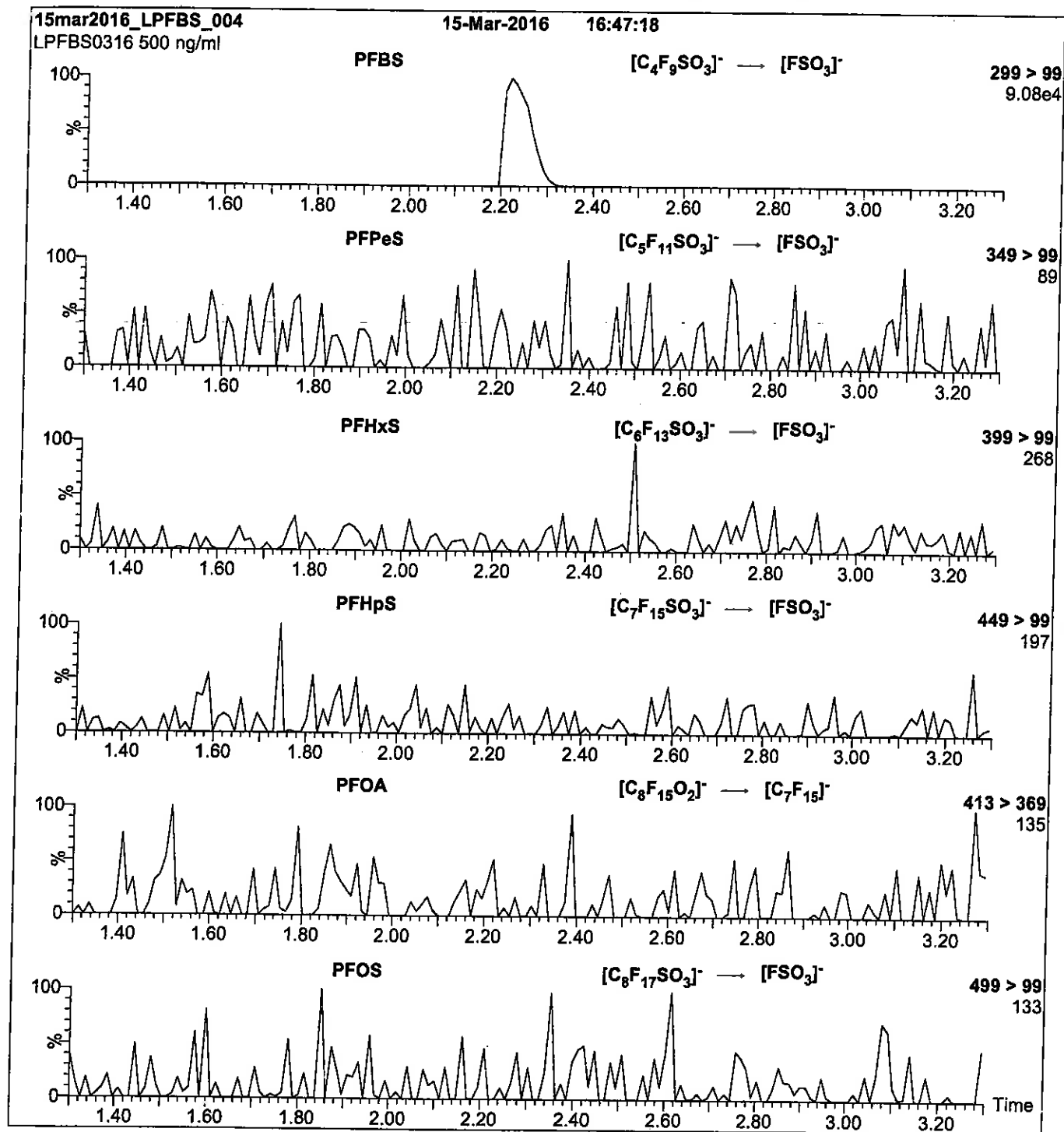
**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

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



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



**Conditions for Figure 2:**

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

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.20e-3  
Collision Energy (eV) = 25

Reagent

---

**LCPFDA\_00005**

R: 7/16/16 CBW



671576

ID: LCPFDA\_00305

Exp: 07/02/20 Ppdt: CBW

PF-n-decanoic acid

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

PFDA

**LOT NUMBER:**

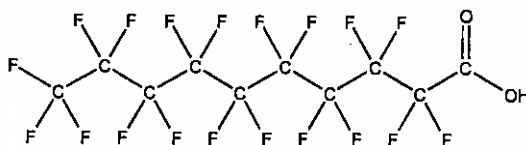
PFDA0615

**COMPOUND:**

Perfluoro-n-decanoic acid

**STRUCTURE:****CAS #:**

335-76-2

**MOLECULAR FORMULA:** $C_{10}H_{19}O_2$ **MOLECULAR WEIGHT:**

514.08

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

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

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

07/02/2015

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

07/02/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.6% PFNA and ~ 0.3% PFOA.

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

Certified By:

  
B.G. Chittim

Date: 07/24/2015

(mm/dd/yyyy)

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

**INTENDED USE:**

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**UNCERTAINTY:**

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

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

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

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

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**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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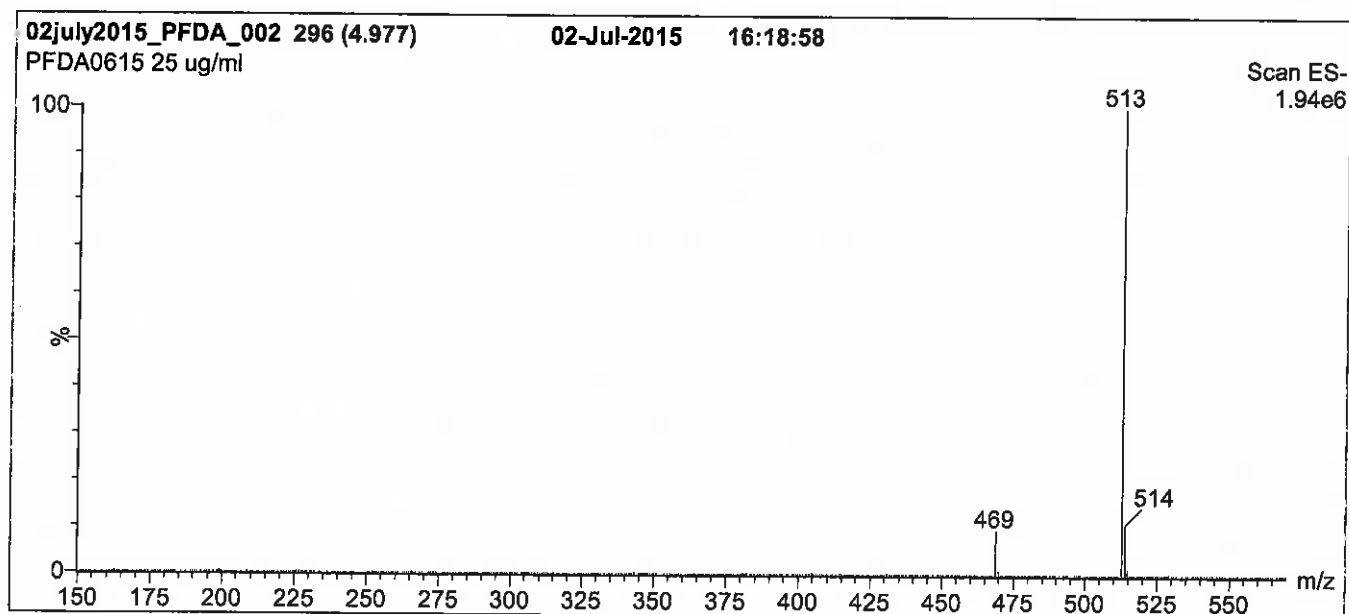
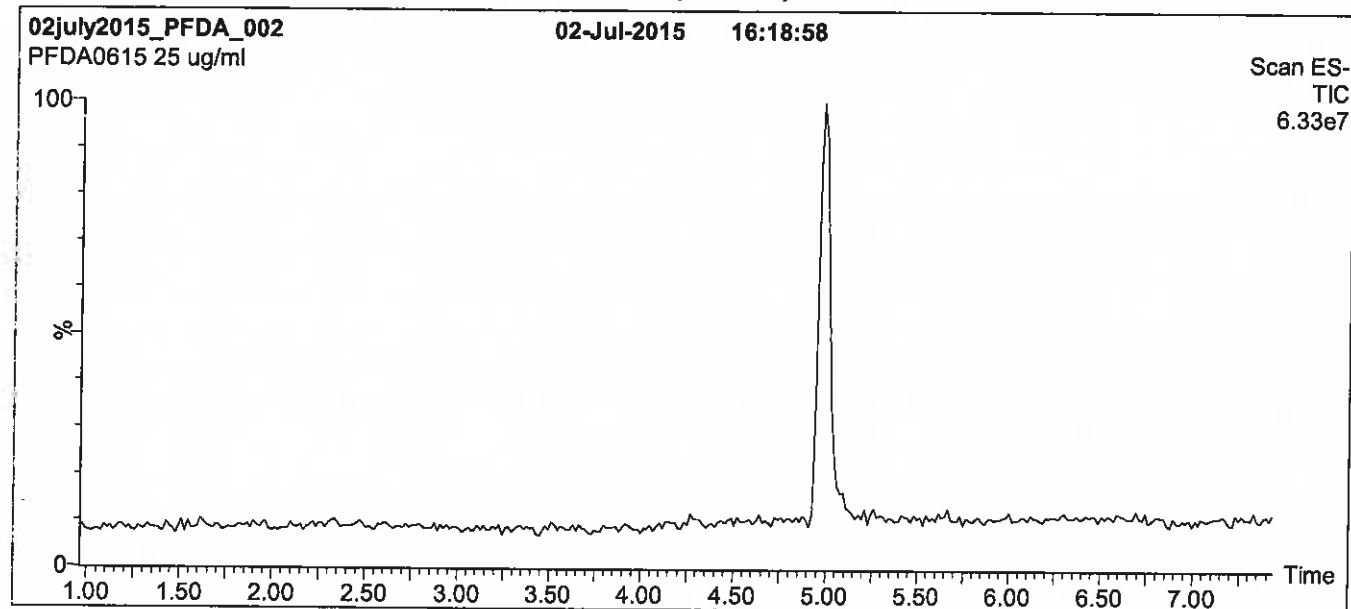
**QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

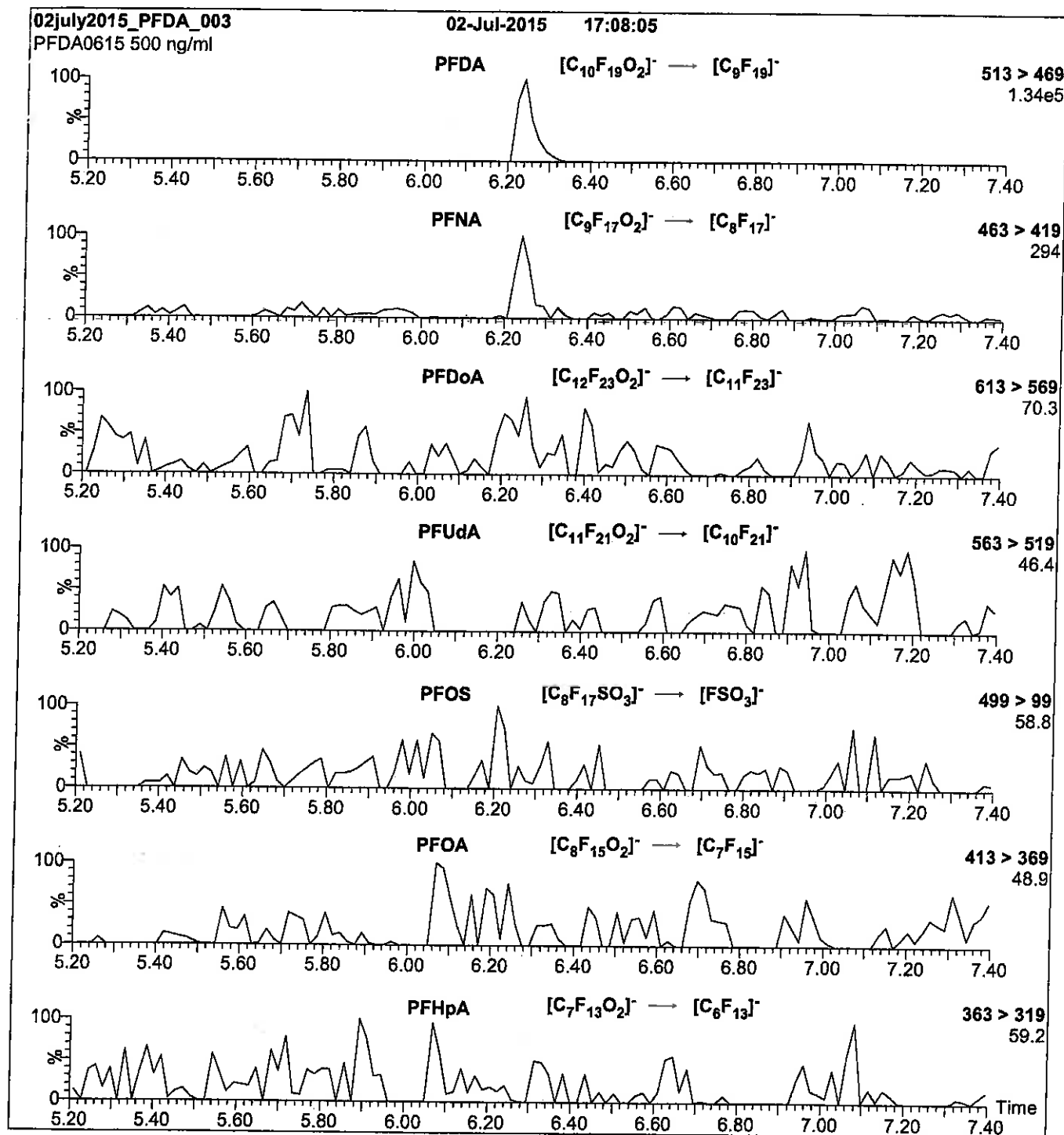
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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) = 3.62e-3  
Collision Energy (eV) = 13

Reagent

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**LCPFDoA\_00005**

R: 7/6/16 car

671601  
ID: LCPFDaA\_00005  
Exp: 01/30/20 Pripd: CSW  
PF-n-dodecanoic acid

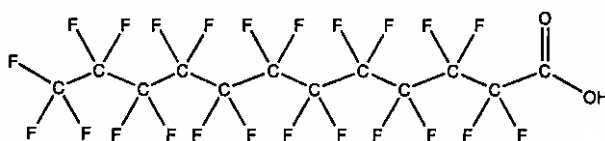


**WELLINGTON**  
LABORATORIES

**CERTIFICATE OF ANALYSIS**  
**DOCUMENTATION**

**PRODUCT CODE:** PFDaA **LOT NUMBER:** PFDaA0115  
**COMPOUND:** Perfluoro-n-dodecanoic acid

**STRUCTURE:** **CAS #:** 307-55-1



**MOLECULAR FORMULA:**  $C_{12}H_{23}O_2$  **MOLECULAR WEIGHT:** 614.10  
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$  **SOLVENT(S):** Methanol  
Water (<1%)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 01/30/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 01/30/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

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

**Certified By:**

B.G. Chittim

**Date:** 03/25/2015  
(mm/dd/yyyy)

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



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

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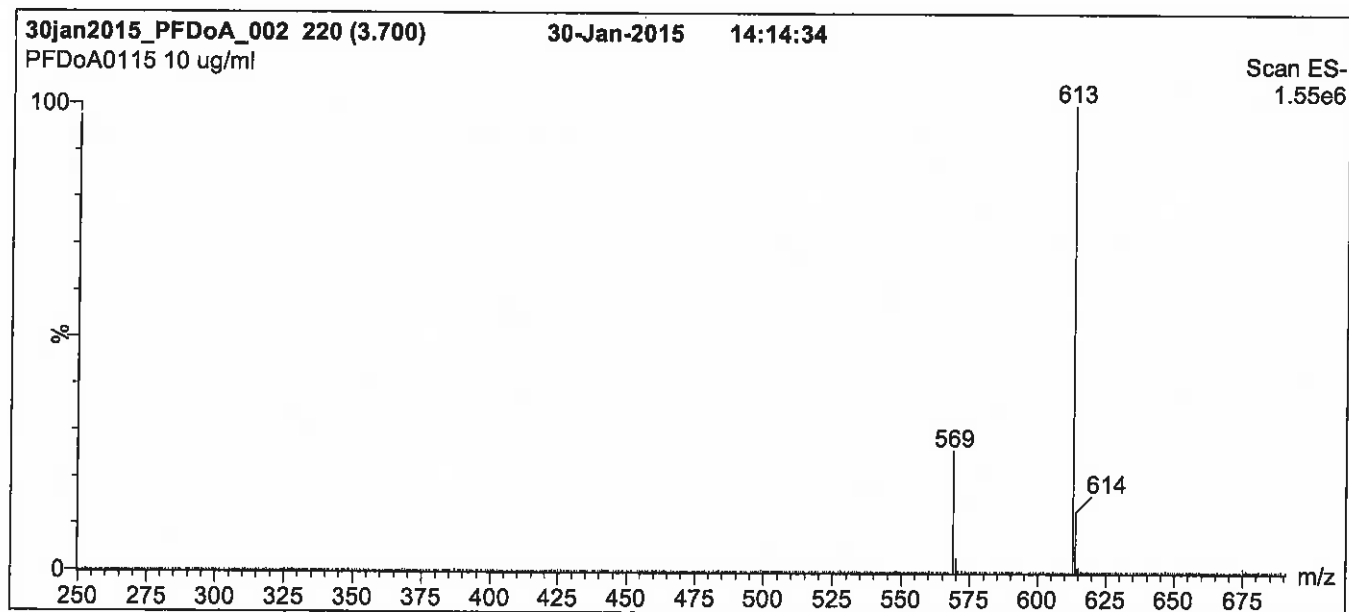
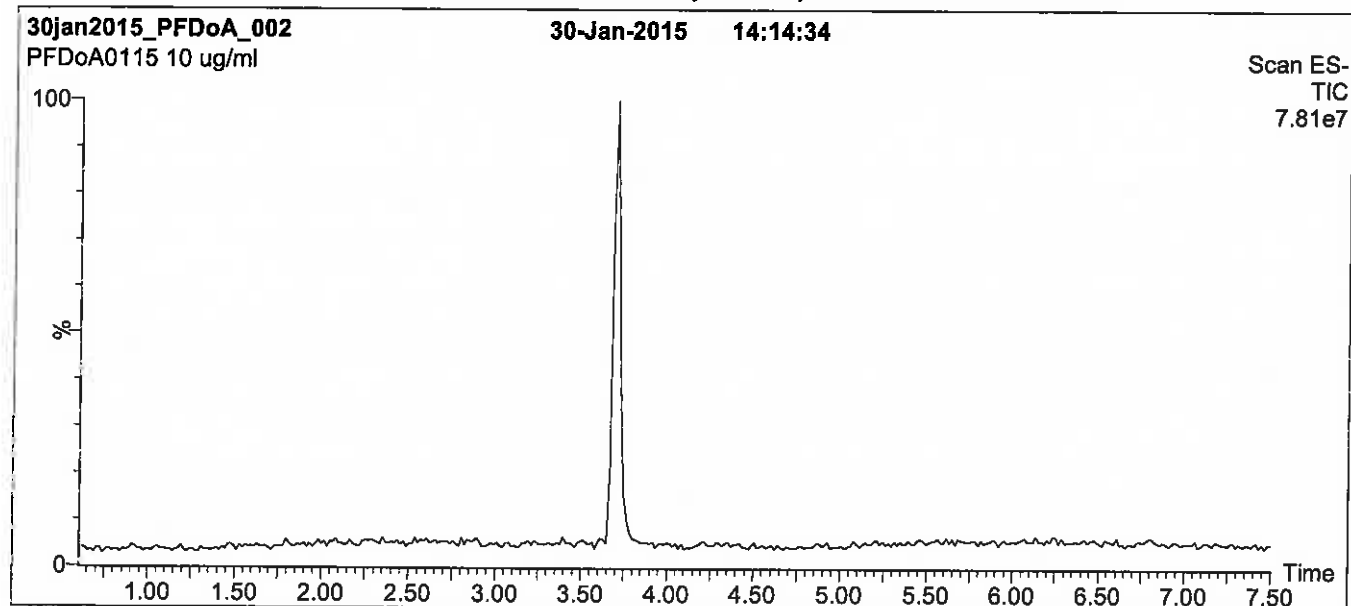
**QUALITY MANAGEMENT:**

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**Figure 1: PFD<sub>o</sub>A; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient

Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

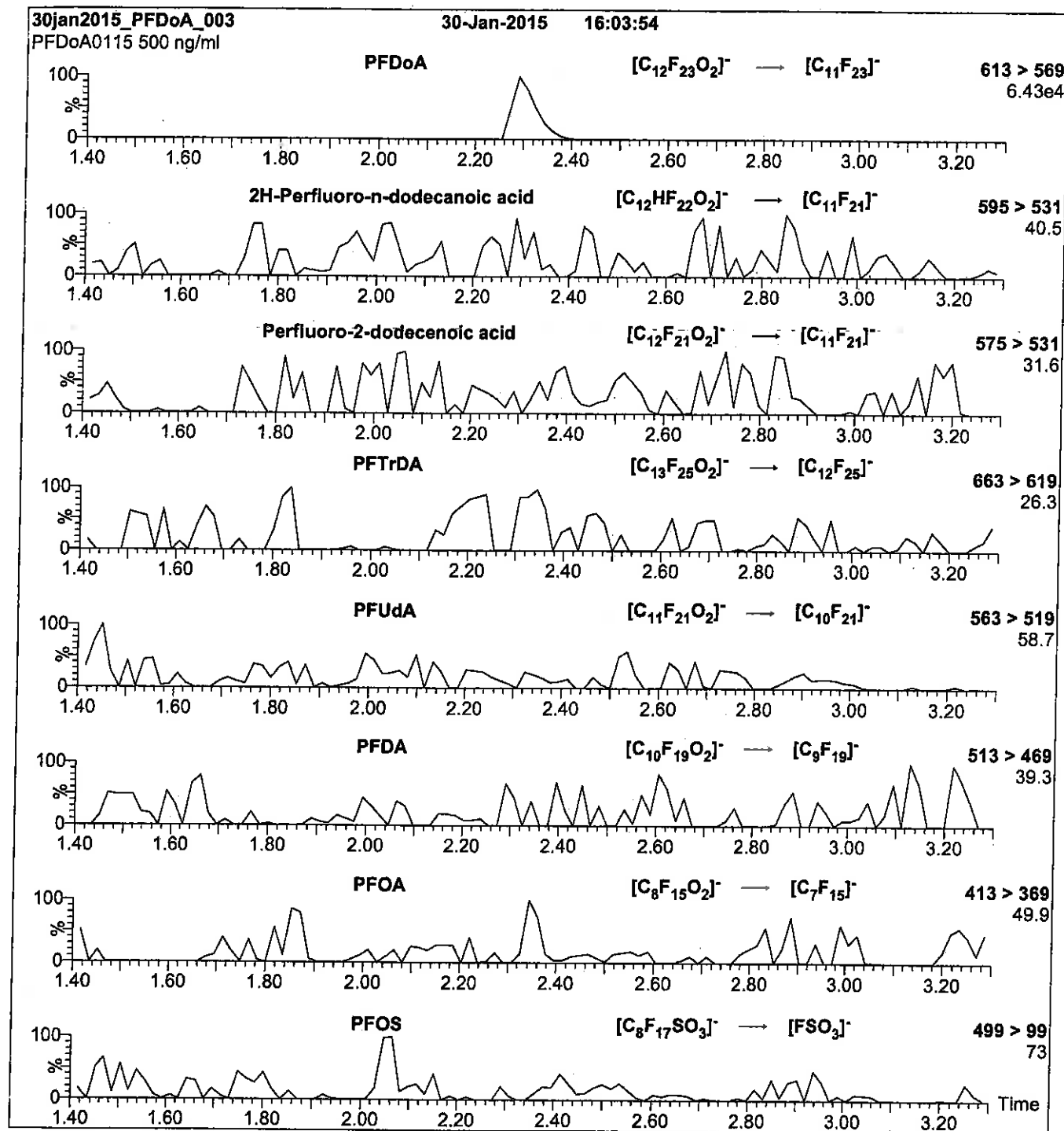
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (250 - 1000 amu)

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

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



**Conditions for Figure 2:**

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

**MS Parameters**

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

Collision Gas (mbar) = 3.28e-3  
Collision Energy (eV) = 13

Flow: 300  $\mu$ l/min

Reagent

---

**LCPFDS\_00005**



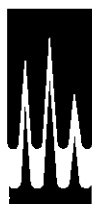
605240

ID: LCPFDS\_00005

Exp: 07/02/20 Prod: CBW

PF-1-decanesulfonate sodi

Rec. 3/29/16 JRB

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

L-PFDS

**LOT NUMBER:**

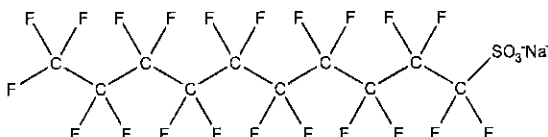
LPFDS0615

**COMPOUND:**

Sodium perfluoro-1-decanesulfonate

**STRUCTURE:****CAS #:**

2806-15-7

**MOLECULAR FORMULA:** $C_{10}F_{21}SO_3Na$ **MOLECULAR WEIGHT:**

622.13

**CONCENTRATION:**

50.0 ± 2.5 µg/ml (Na salt)

**SOLVENT(S):**

Methanol

48.2 ± 2.4 µg/ml (PFDS anion)

**CHEMICAL PURITY:**

&gt;98%

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

07/02/2015

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

07/02/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

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

Certified By:

  
B.G. Chittim

Date: 12/07/2015

(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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

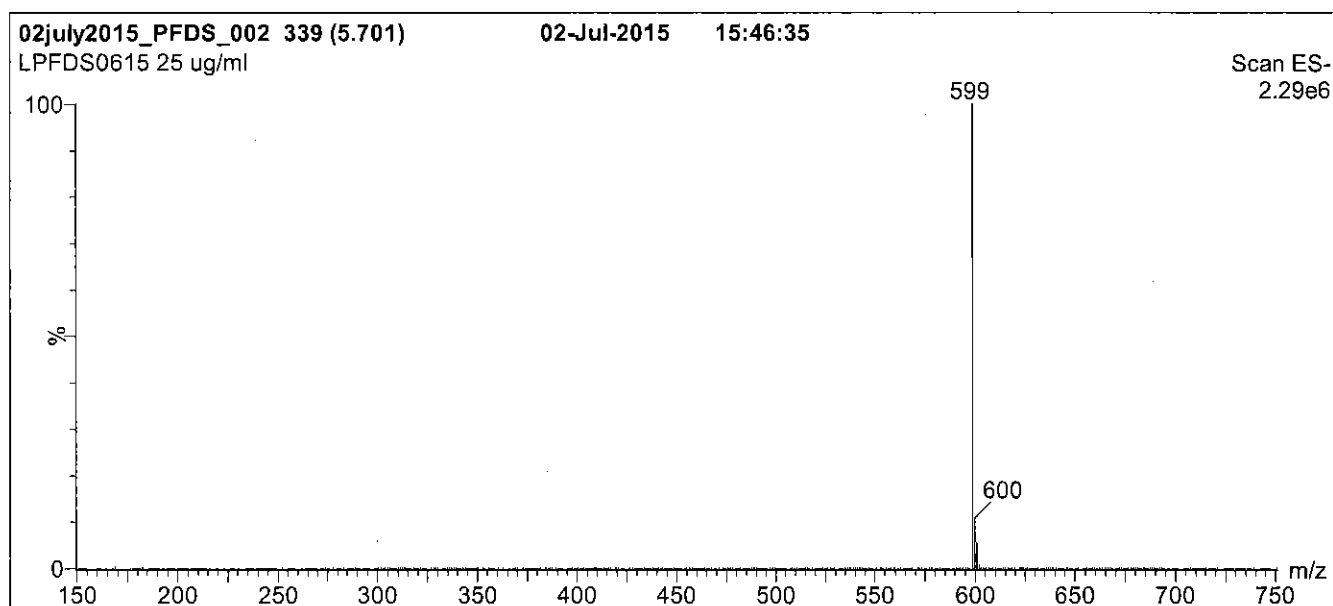
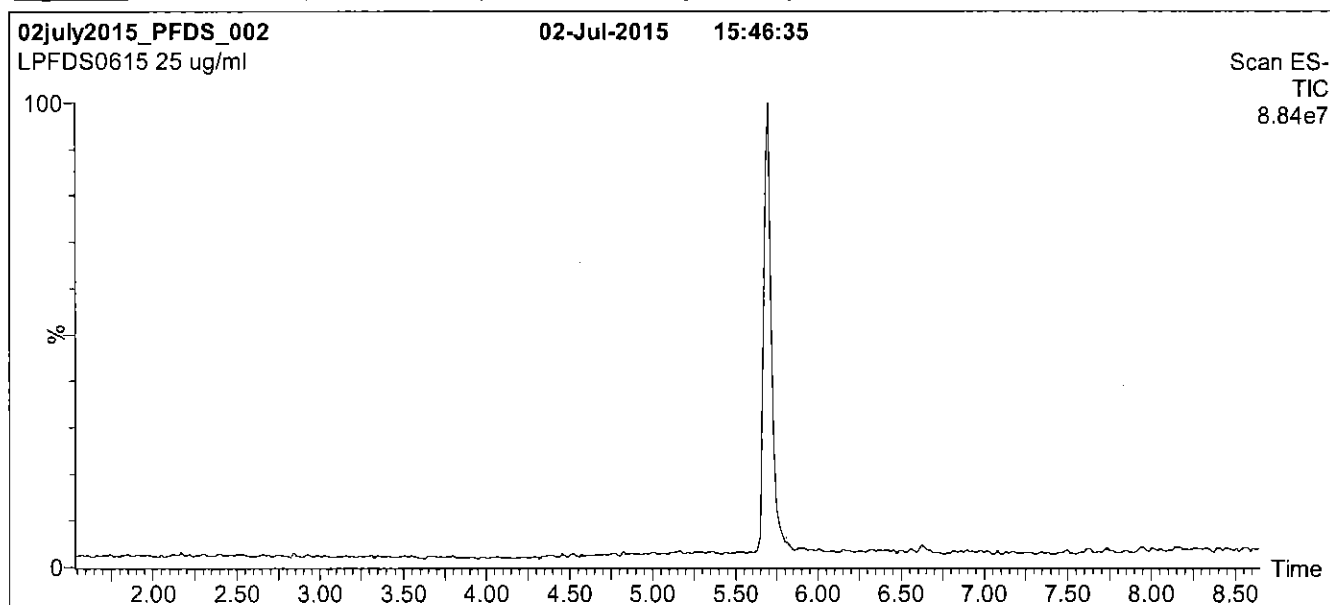
**QUALITY MANAGEMENT:**

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



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

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

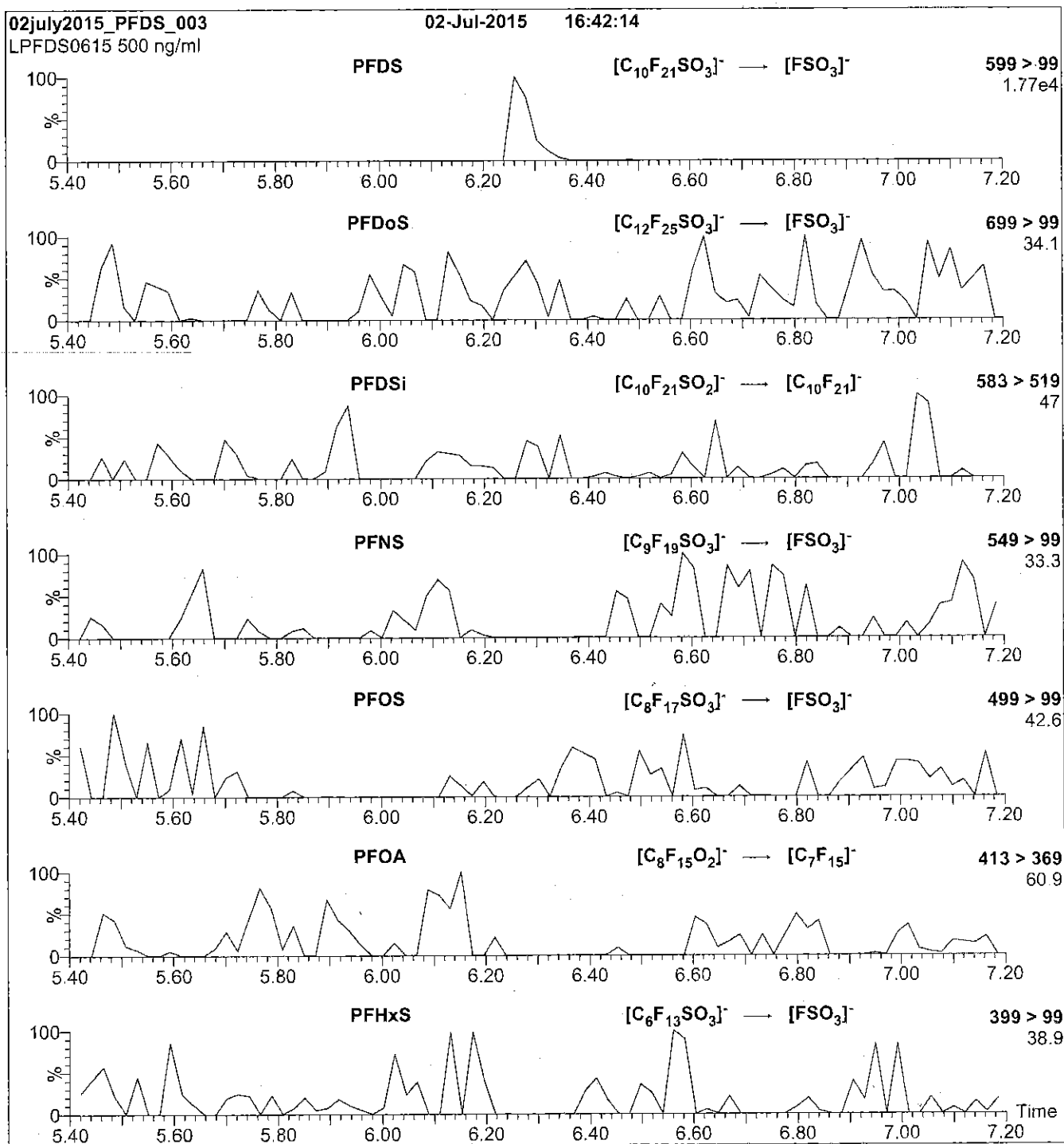
**Flow:** 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 70.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml L-PFDS)

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

Flow: 300  $\mu$ l/min

**MS Parameters**

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



Reagent

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**LCPFHpA\_00005**



609639

ID: LCPFHpA\_00005

Exp: 01/22/21 Prpd: CBW

PF-n-heptanoic acid

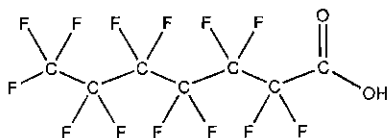
R: 4/7/16 CBW

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

PFHpA

**LOT NUMBER:** PFHpA0116**COMPOUND:**

Perfluoro-n-heptanoic acid

**STRUCTURE:****CAS #:** 375-85-9**MOLECULAR FORMULA:** $C_7H_{13}O_2$ **MOLECULAR WEIGHT:** 364.06**CONCENTRATION:** $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**Methanol  
Water (<1%)**CHEMICAL PURITY:**

&gt;98%

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

01/22/2016

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

01/22/2021

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**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: 02/02/2016

(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:**

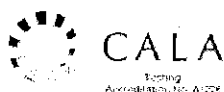
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**LIMITED WARRANTY:**

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

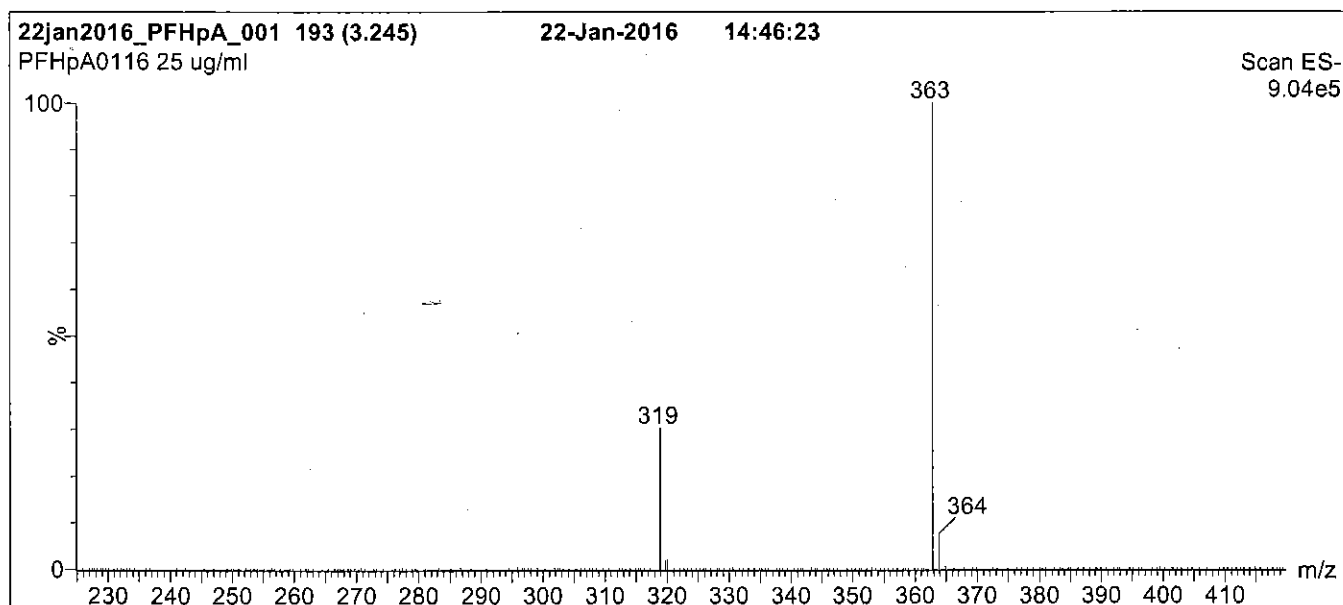
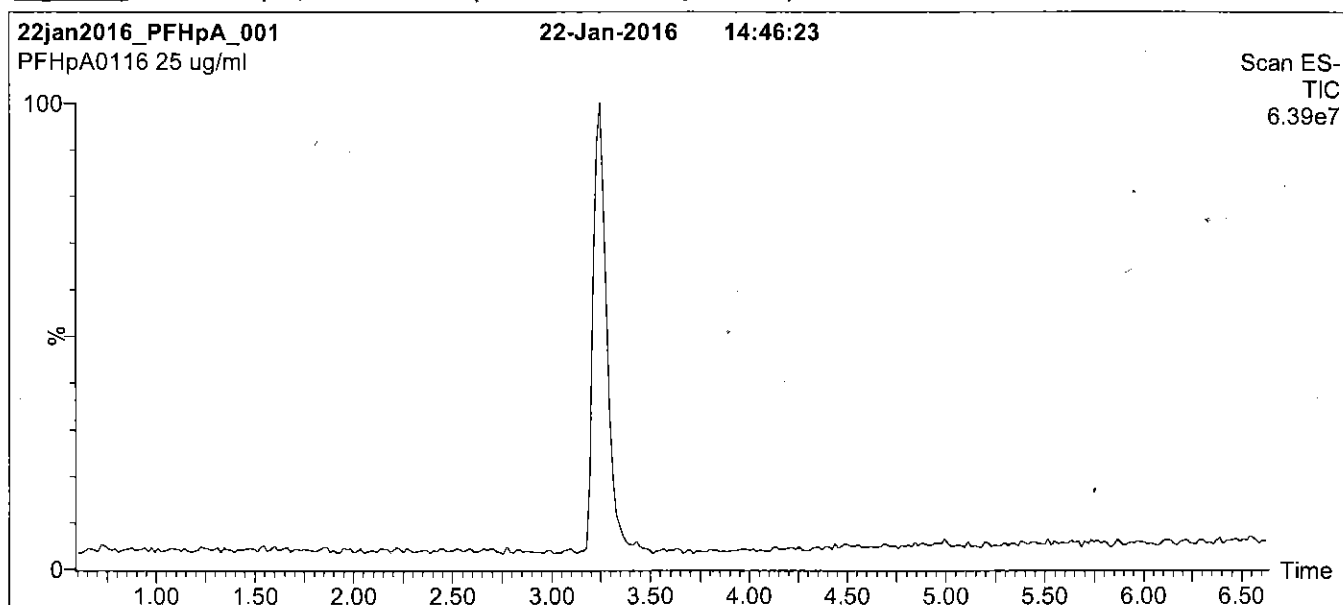
**QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

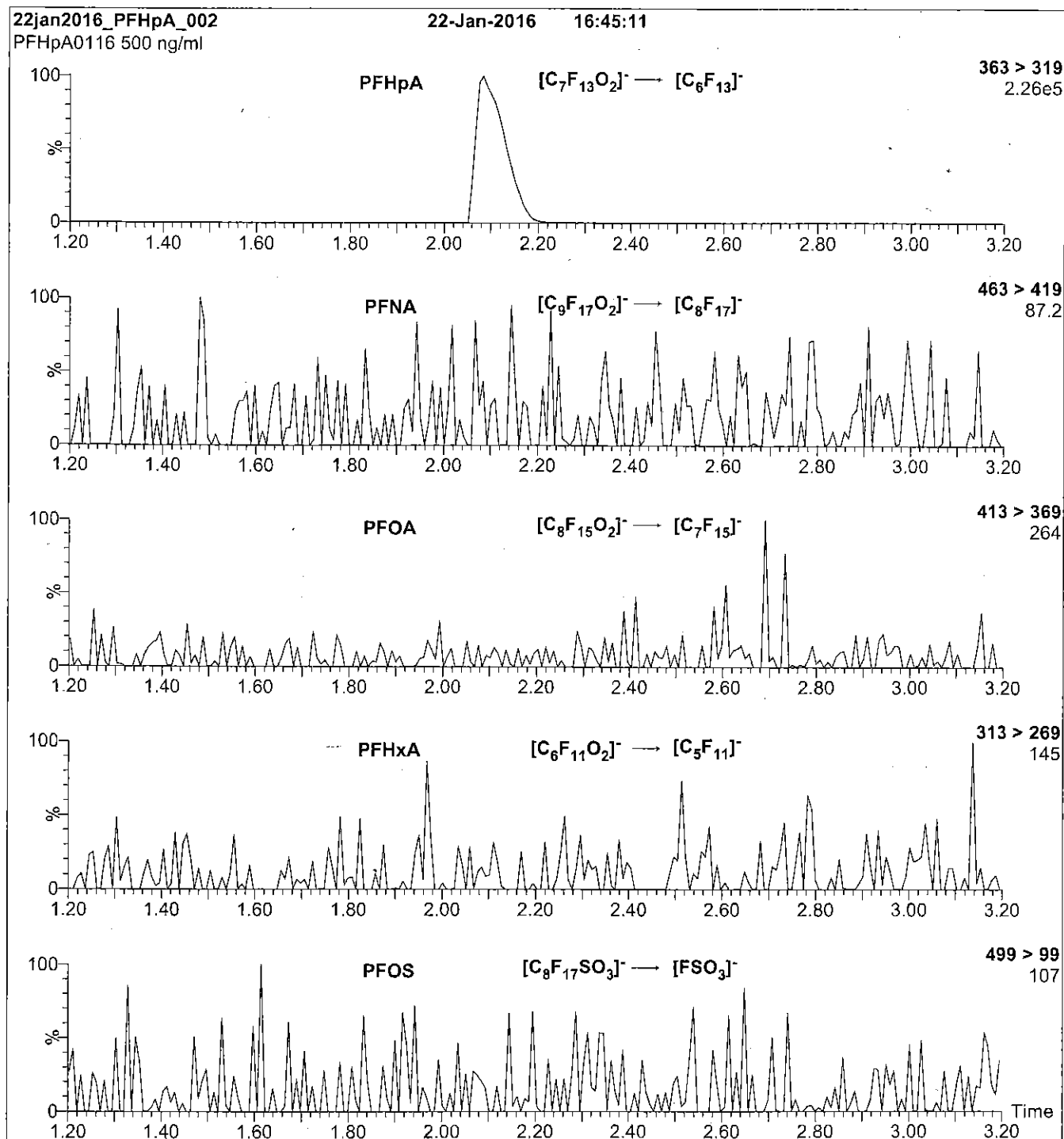
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.50e-3  
Collision Energy (eV) = 11

Reagent

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**LCPFHpS\_00008**



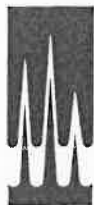
627751

ID: LCPFHPS\_00008

Exp: 11/06/20 Ppt: CBW

PFHpS at 47.6ug/mL

R: 5/10/16 CBW

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

L-PFHPS

**LOT NUMBER:**

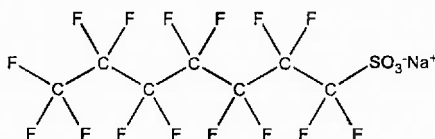
LPFHPS1115

**COMPOUND:**

Sodium perfluoro-1-heptanesulfonate

**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $C_7F_{15}SO_3Na$ **MOLECULAR WEIGHT:**

472.10

**CONCENTRATION:** $50.0 \pm 2.5 \mu\text{g/ml}$  (Na salt)**SOLVENT(S):**

Methanol

 $47.6 \pm 2.4 \mu\text{g/ml}$  (PFHpS anion)**CHEMICAL PURITY:**

&gt;98%

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

11/06/2015

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

11/06/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains ~ 0.1% of L-PFHxS ( $C_8F_{13}SO_3Na$ ) and ~ 0.2% of L-PFOS ( $C_8F_{17}SO_3Na$ ).

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

Certified By:

  
B.G. Chittim

Date: 11/09/2015

(mm/dd/yyyy)

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

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**HOMOGENEITY:**

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**QUALITY MANAGEMENT:**

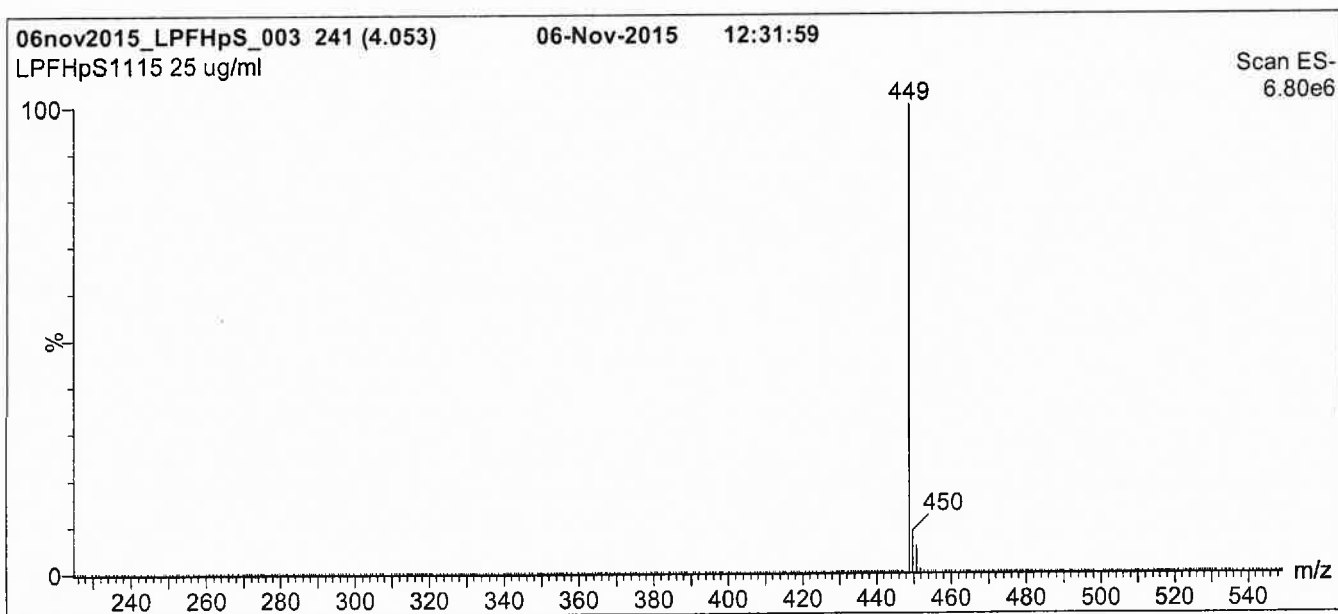
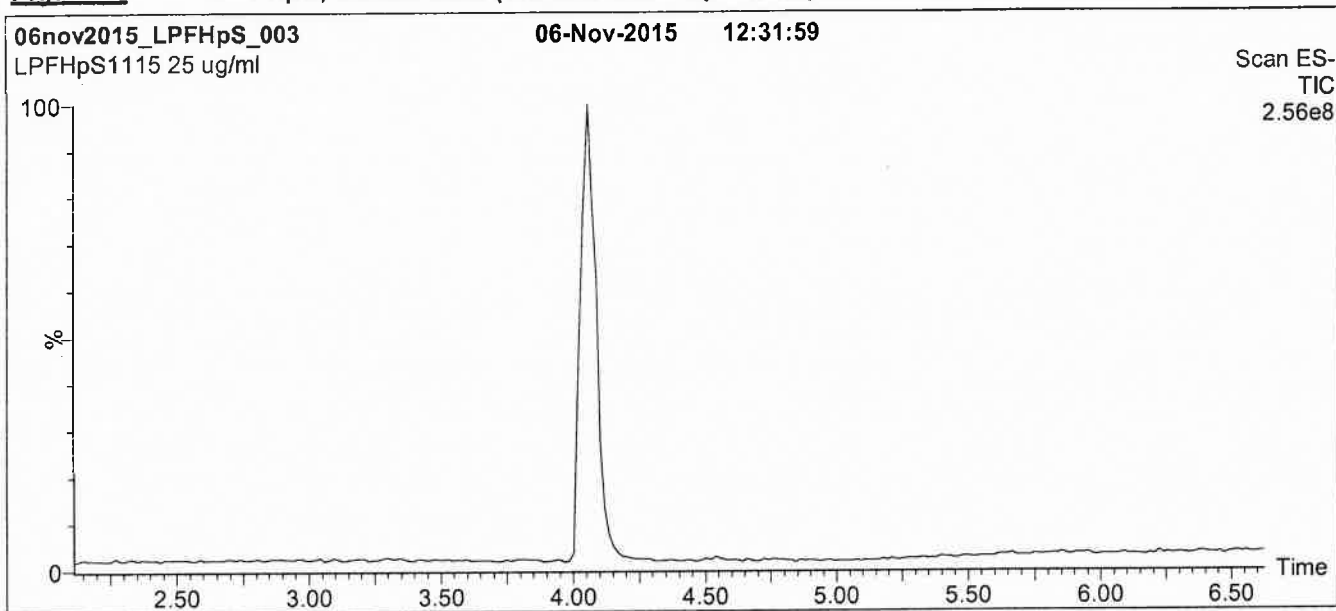
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

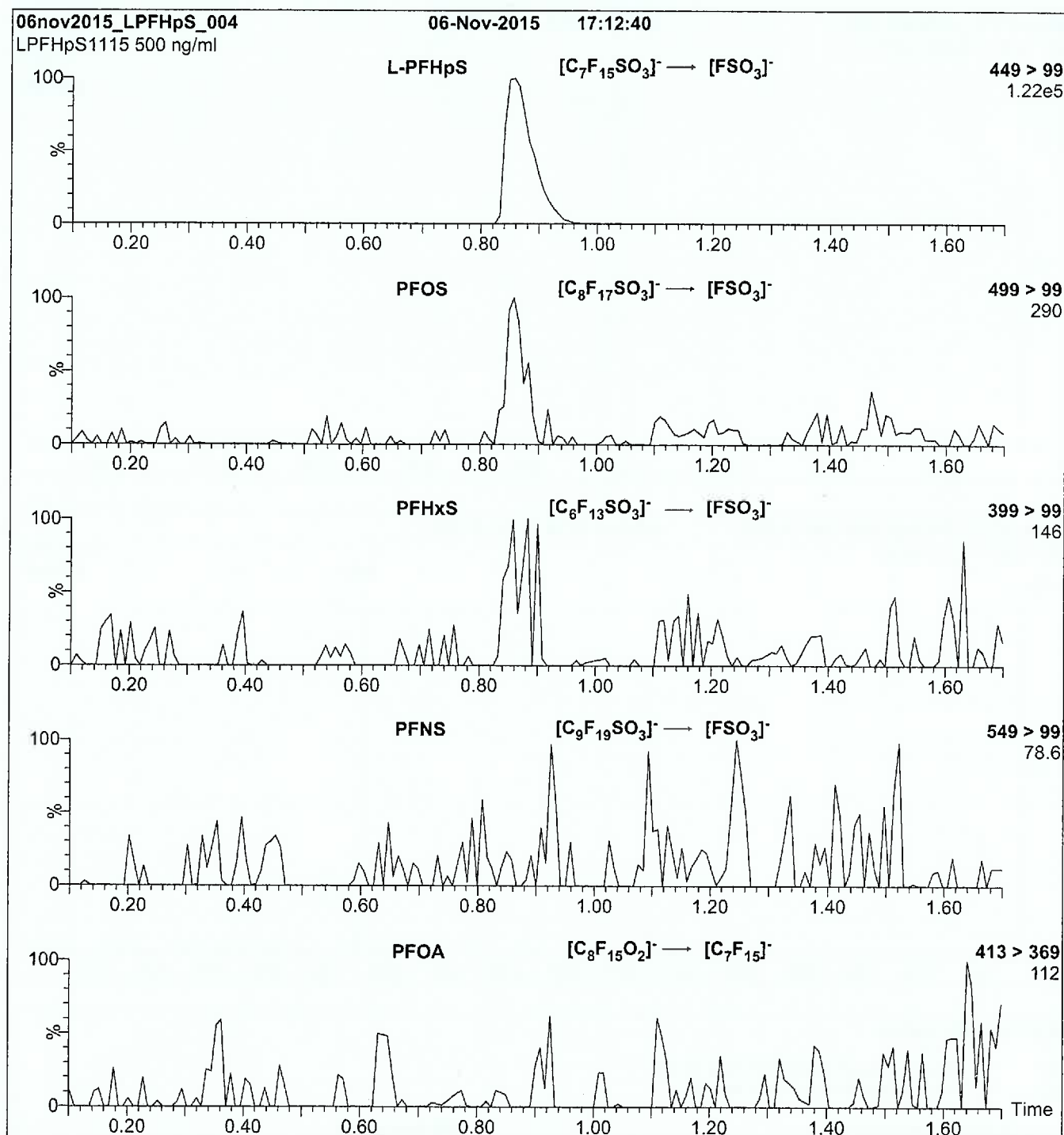
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 2.00  
Cone Voltage (V) = 60.00  
Cone Gas Flow (l/hr) = 60  
Desolvation Gas Flow (l/hr) = 750

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



**Conditions for Figure 2:**

**Injection:** Direct loop injection  
10  $\mu$ l (500 ng/ml L-PFHpS)

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

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

**MS Parameters**

Collision Gas (mbar) = 3.31e-3  
Collision Energy (eV) = 35

Reagent

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**LCPFHpS\_00009**

Scanned  
10/14/16 SP  
R: 8BC 9/13/16



730635  
ID: LCPFHPS\_00009  
Exp: 11/06/20 Prod: SBC  
PFHpS at 47.6ug/mL



730639  
ID: LCPFHPS\_00010  
Exp: 11/06/20 Prod: SBC  
PFHpS at 47.6ug/mL



**WELLINGTON**  
LABORATORIES

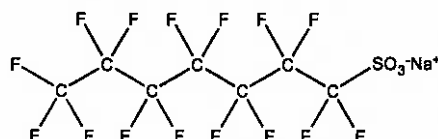
**CERTIFICATE OF ANALYSIS**  
**DOCUMENTATION**

**PRODUCT CODE:** L-PFHPS  
**COMPOUND:** Sodium perfluoro-1-heptanesulfonate

**LOT NUMBER:** LPFHPS1115

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** C<sub>7</sub>F<sub>15</sub>SO<sub>3</sub>Na  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (Na salt)  
47.6 ± 2.4 µg/ml (PFHpS anion)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 11/06/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 11/06/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 472.10  
**SOLVENT(S):** Methanol

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains ~ 0.1% of L-PFHxS (C<sub>6</sub>F<sub>13</sub>SO<sub>3</sub>Na) and ~ 0.2% of L-PFOS (C<sub>8</sub>F<sub>17</sub>SO<sub>3</sub>Na).

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

**Certified By:**

B.G. Chittim

**Date:** 11/09/2015  
(mm/dd/yyyy)

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

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

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.

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

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

### **LIMITED WARRANTY:**

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

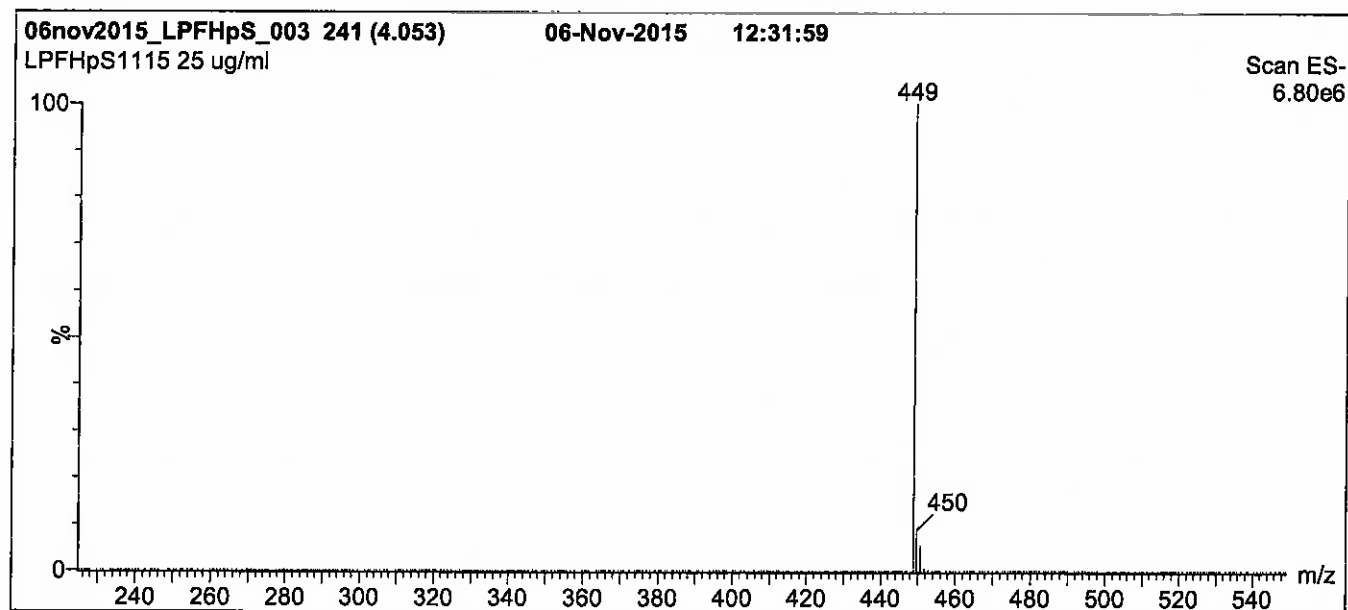
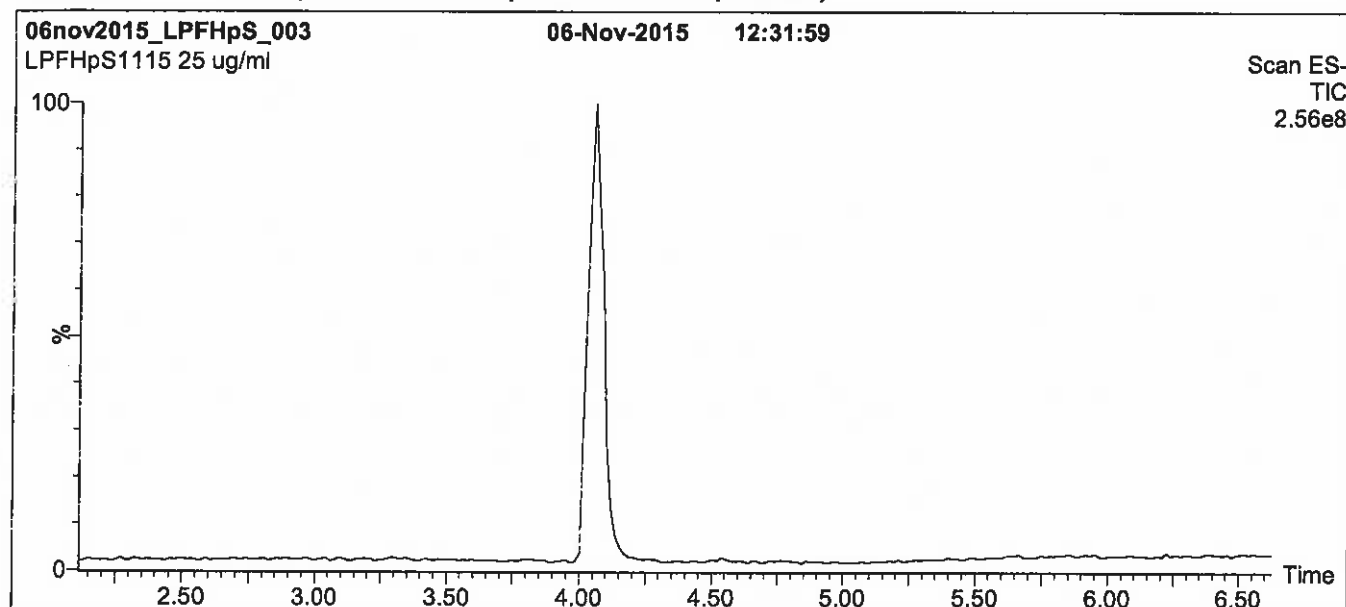
### **QUALITY MANAGEMENT:**

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



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

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

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

Time: 10 min

Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)

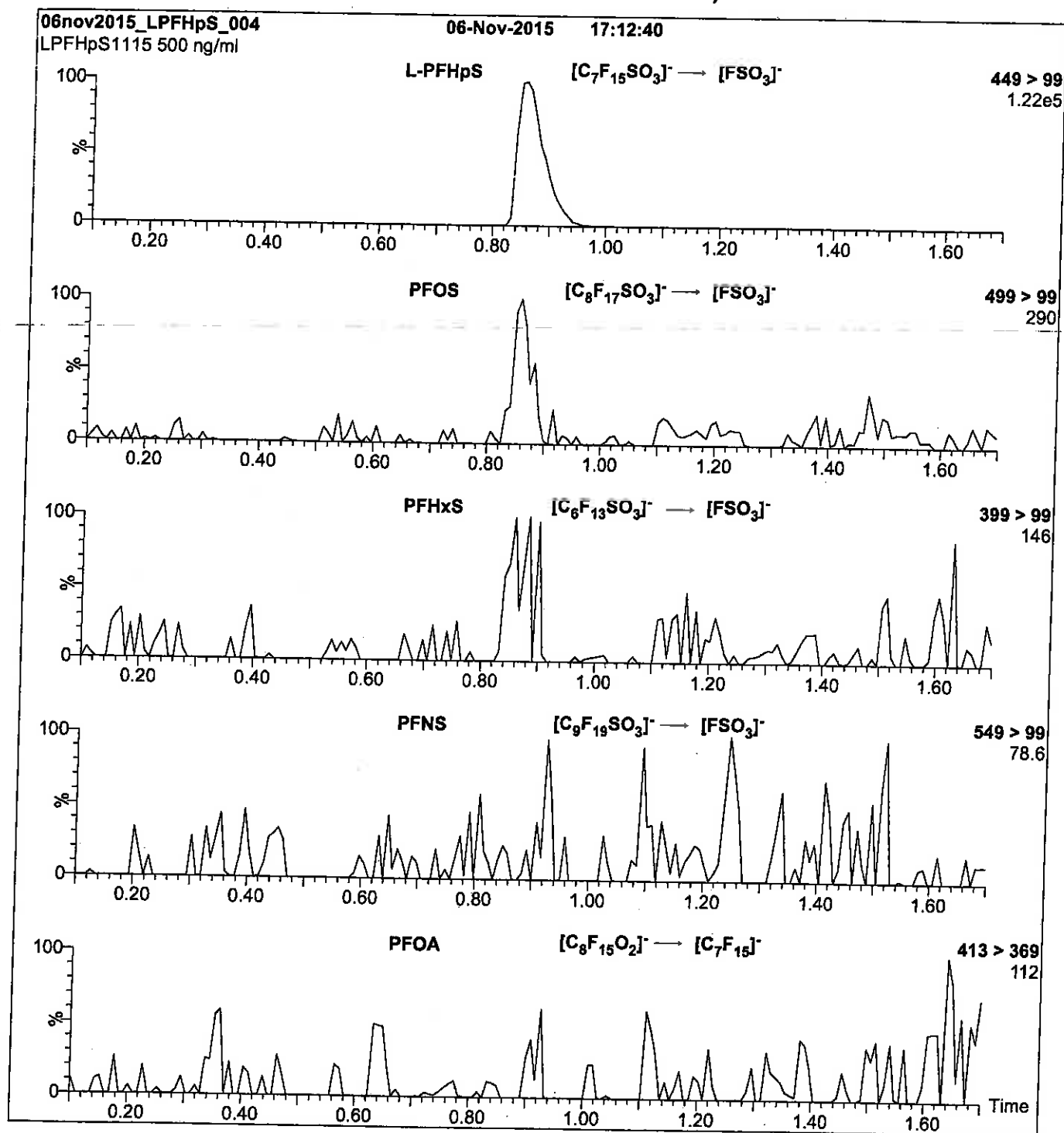
Capillary Voltage (kV) = 2.00

Cone Voltage (V) = 60.00

Cone Gas Flow (l/hr) = 60

Desolvation Gas Flow (l/hr) = 750

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml L-PFHpS)

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.31e-3  
Collision Energy (eV) = 35

Reagent

---

**LCPFHxA\_00004**





609702

ID: LCPFHxA\_00004

Exp: 12/22/20 Prod: CBW

PF-n-hexanoic acid

R: 4/7/16 CBW

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

PFHxA

**LOT NUMBER:**

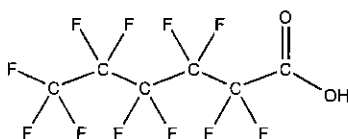
PFHxA1215

**COMPOUND:**

Perfluoro-n-hexanoic acid

**STRUCTURE:****CAS #:**

307-24-4

**MOLECULAR FORMULA:** $C_6H_{11}O_2$ **MOLECULAR WEIGHT:**

314.05

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

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

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

12/22/2015

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

12/22/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

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

Certified By:

  
B.G. Chittim

Date: 12/23/2015

(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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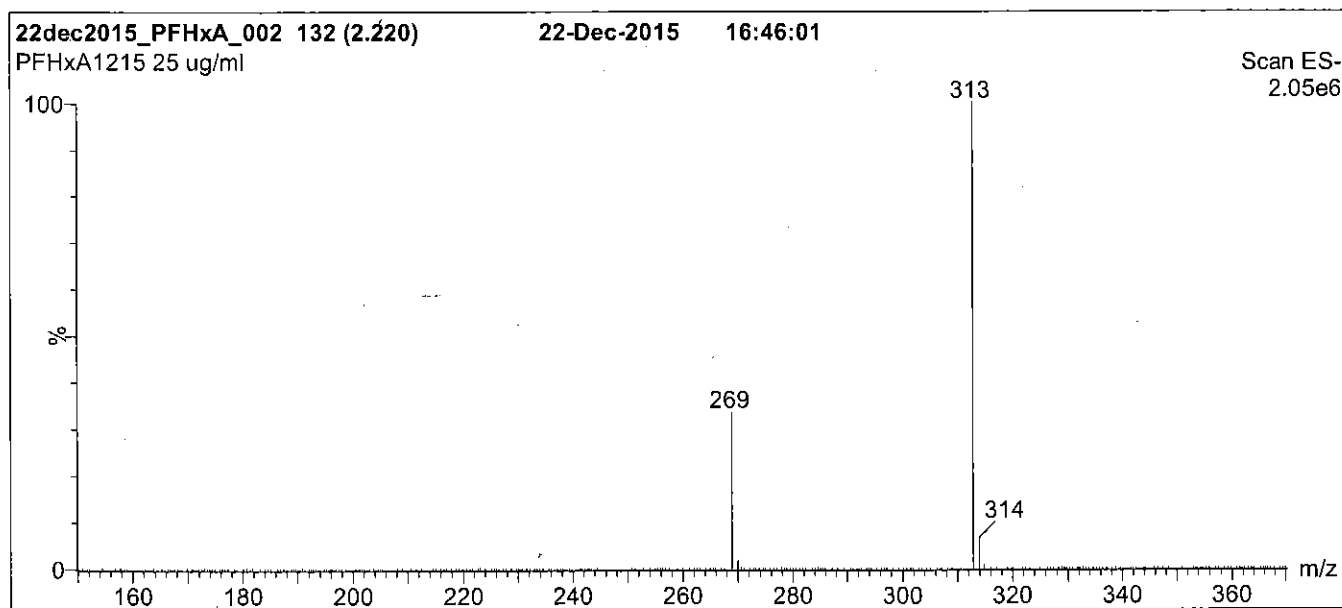
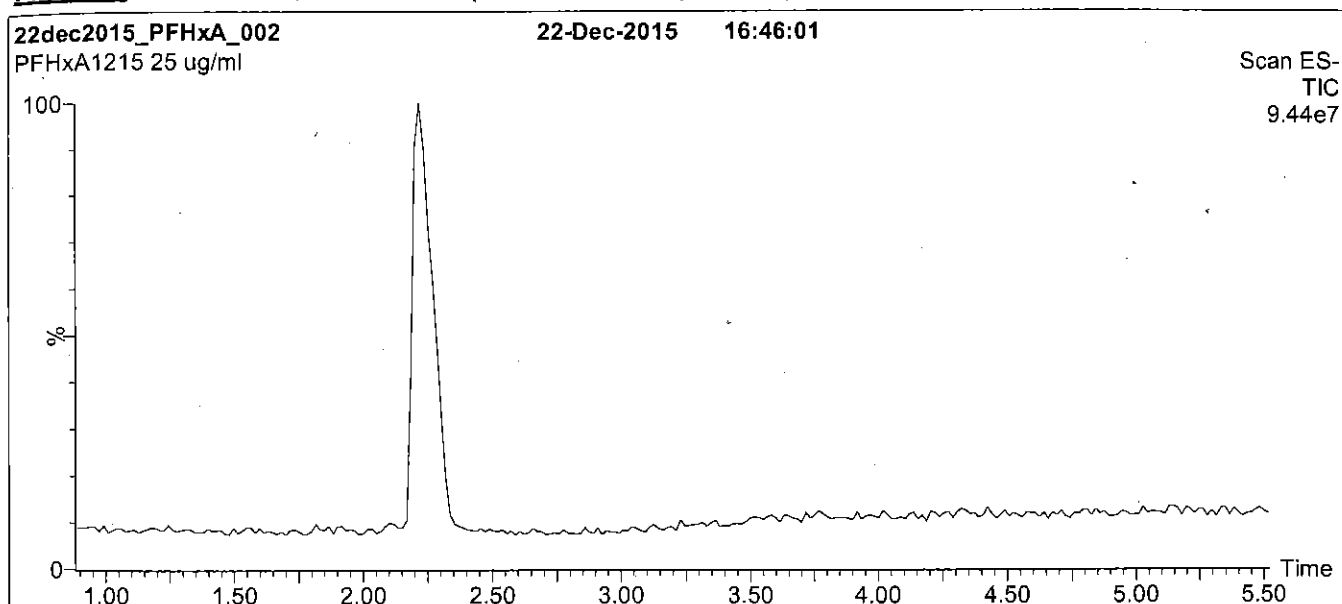
**QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

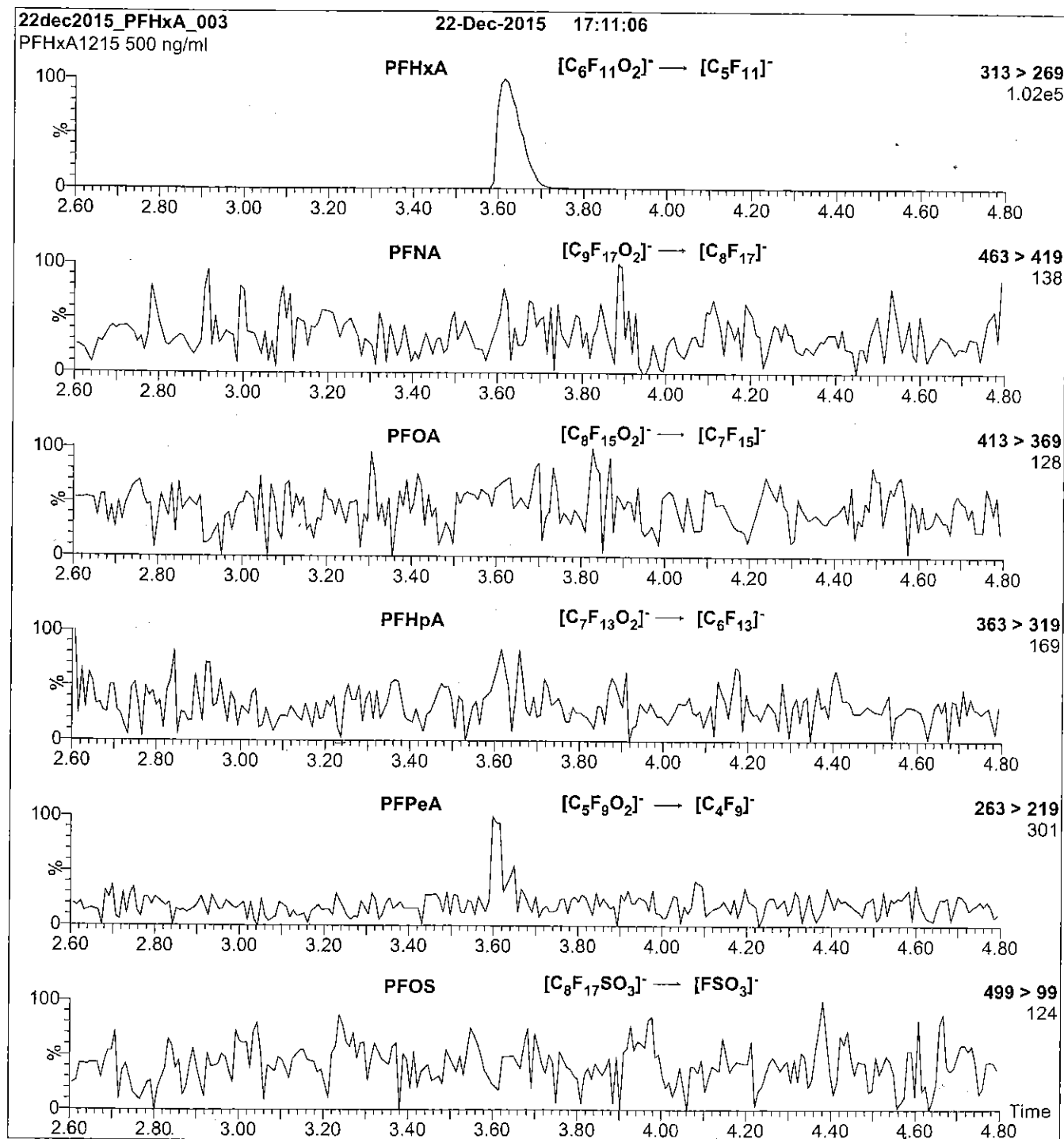
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFHxDA\_00006**



WELLINGTON  
LABORATORIES



730630  
ID: LCPFHxDA\_00006  
Exp: 05/25/21 Prpd: SBC  
PFHxDA stock 50ug/mL



730631  
ID: LCPFHxDA\_00007  
Exp: 05/25/21 Prpd: SBC  
PFHxDA stock 50ug/mL

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

PFHxDA

**LOT NUMBER:**

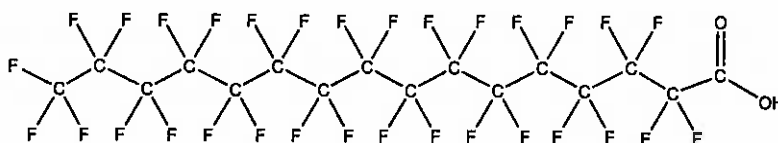
PFHxDA0516

**COMPOUND:**

Perfluoro-n-hexadecanoic acid

**STRUCTURE:****CAS #:**

67905-19-5

**MOLECULAR FORMULA:** $C_{16}H_{31}O_2$ **MOLECULAR WEIGHT:**

814.13

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

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

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

05/25/2016

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

05/25/2021

**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 ~ 0.4% of PFODA.

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

Certified By:

  
B.G. Chittim

Date: 05/27/2016

(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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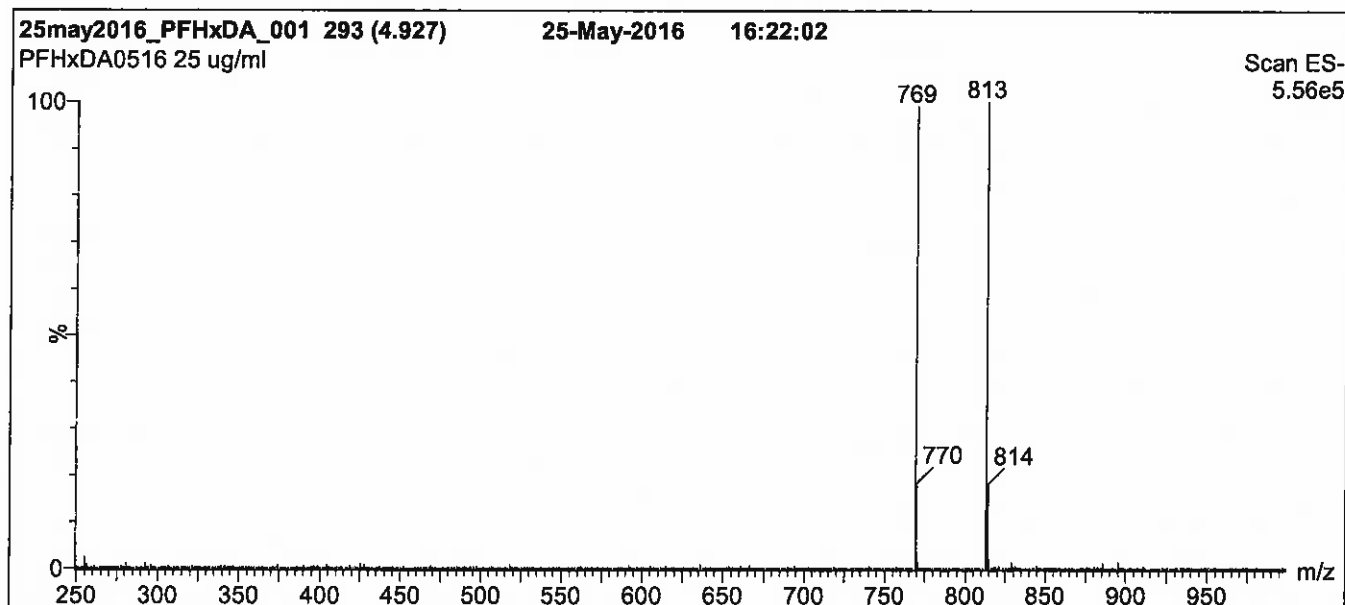
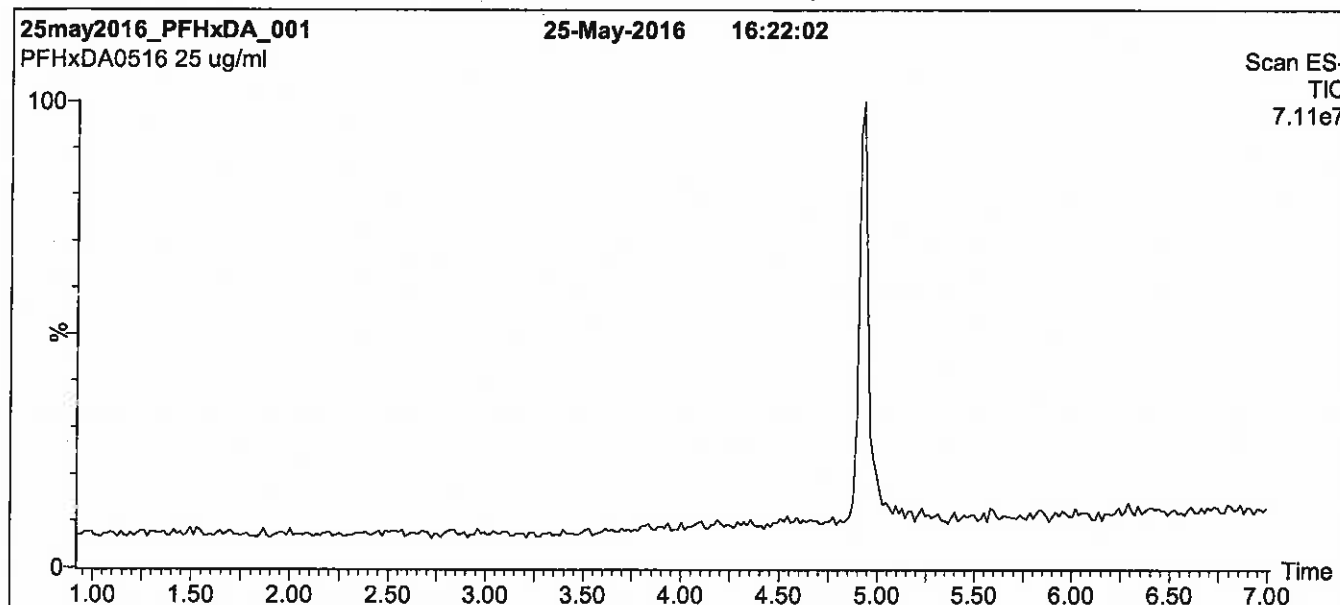
### **QUALITY MANAGEMENT:**

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**Figure 1: PFHxDA; 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: 70% (80:20 MeOH:ACN) / 30% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 95% organic over 6 min and hold for 2.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

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

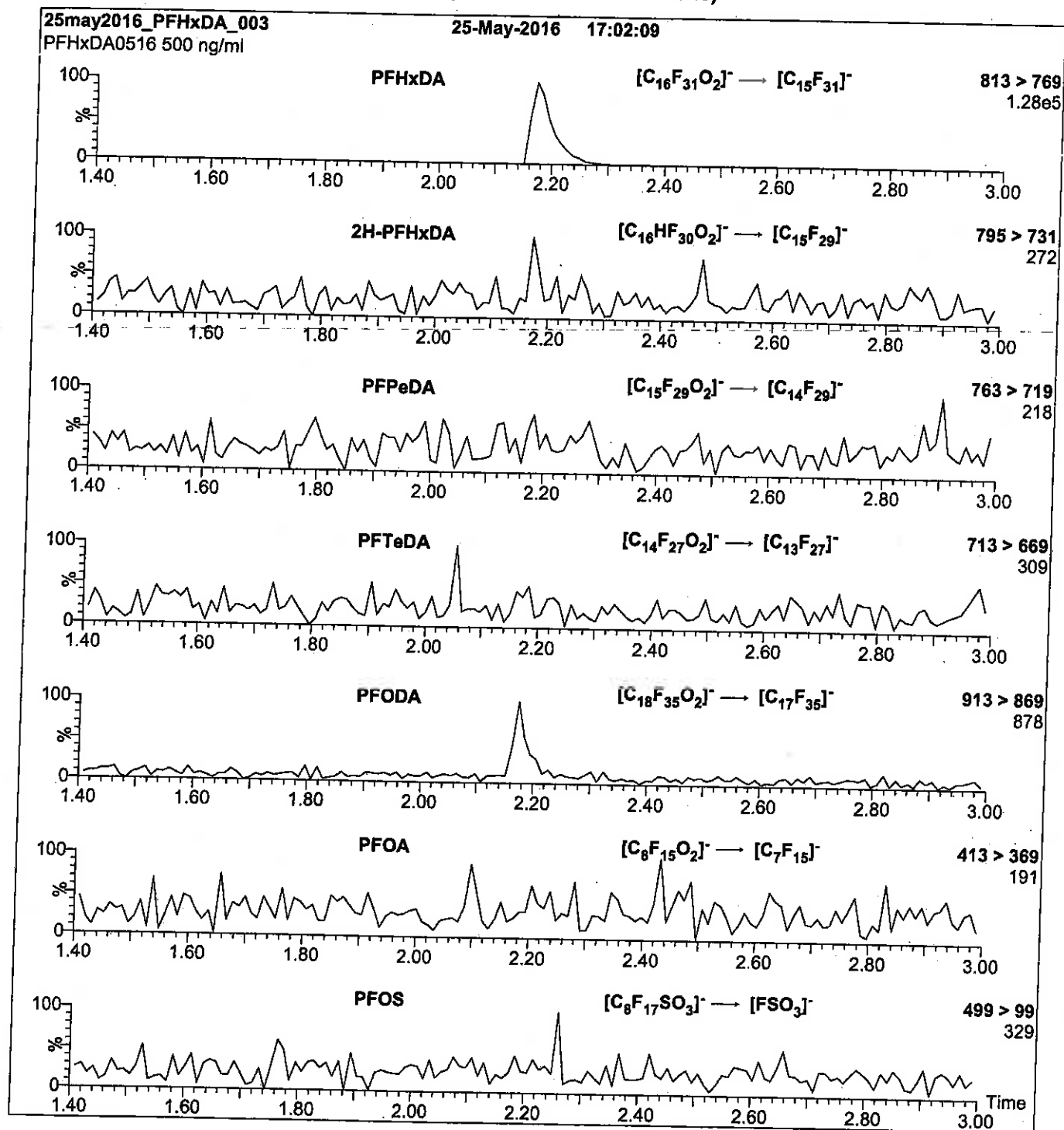
**MS Parameters**

**Experiment:** Full Scan (250 - 1250 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 25.00  
**Cone Gas Flow (l/hr)** = 60  
**Desolvation Gas Flow (l/hr)** = 750



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



**Conditions for Figure 2:**

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

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) = 3.66e-3  
Collision Energy (eV) = 15

Reagent

---

**LCPFHxS-br\_00001**



566007

ID: LCPFHxS-br\_00001

Exp: 07/03/20 Ppdt: CBW

Potassium Perfluorohexane

P: 12/9/15 SW

**WELLINGTON**  
LABORATORIES**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION**br-PFHxSK****Potassium Perfluorohexanesulfonate  
Solution/Mixture of Linear and  
Branched Isomers**

**PRODUCT CODE:** br-PFHxSK  
**LOT NUMBER:** brPFHxSK0615  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (total potassium salt)  
45.5 ± 2.3 µg/ml (total PFHxS anion)  
**SOLVENT(S):** Methanol  
**DATE PREPARED:** (mm/dd/yyyy) 06/29/2015  
**LAST TESTED:** (mm/dd/yyyy) 07/03/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 07/03/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**DESCRIPTION:**

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

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

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

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**Table A:** br-PFHxSK; Isomeric Components and Percent Composition (by  $^{19}\text{F}$ -NMR)\*

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

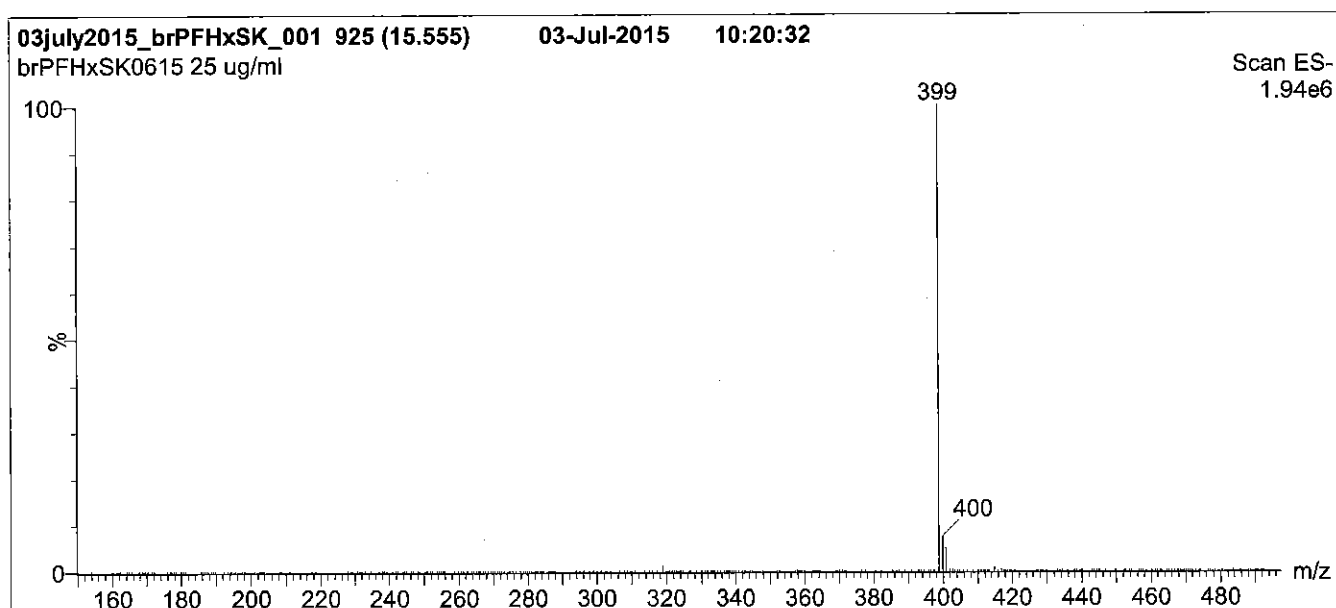
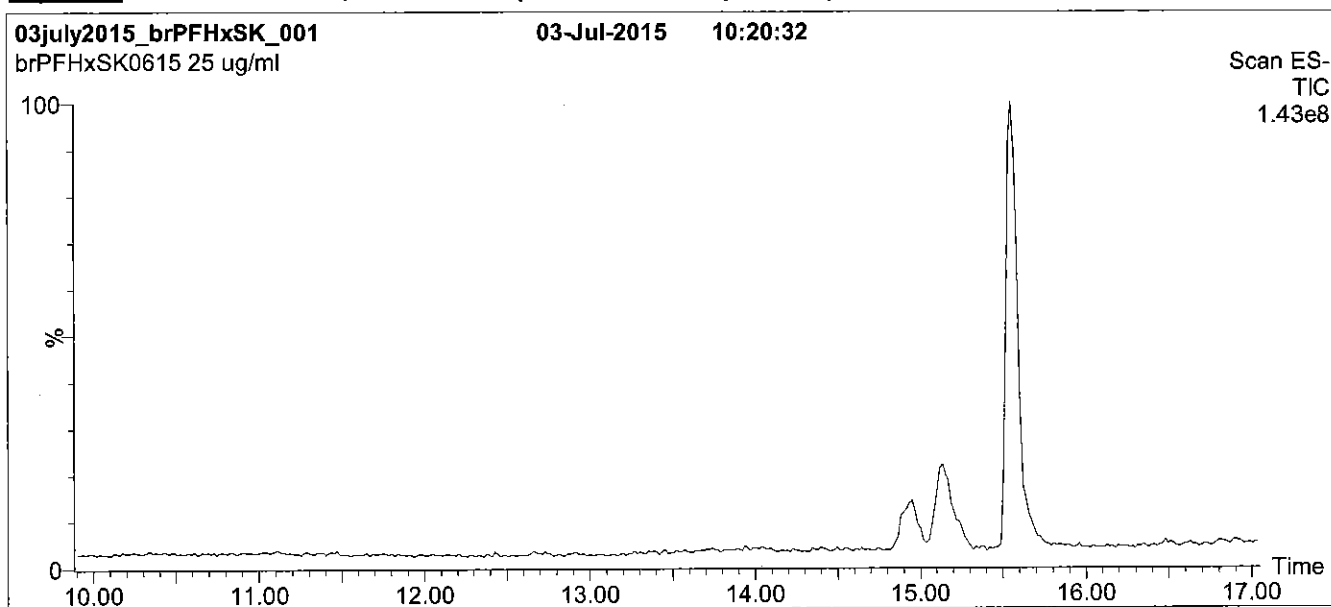
\* Percent of total perfluorohexanesulfonate isomers only.  
 \*\* Systematic Name: Potassium perfluorohexane-2-sulfonate.

**Certified By:**

  
B.G. Chittim

**Date:** 07/15/2015  
(mm/dd/yyyy)

**Figure 1:** br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient

Start: 20% (80:20 MeOH:ACN) / 80% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 50% organic over 14 min. Ramp to  
90% organic over 3 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 20 min

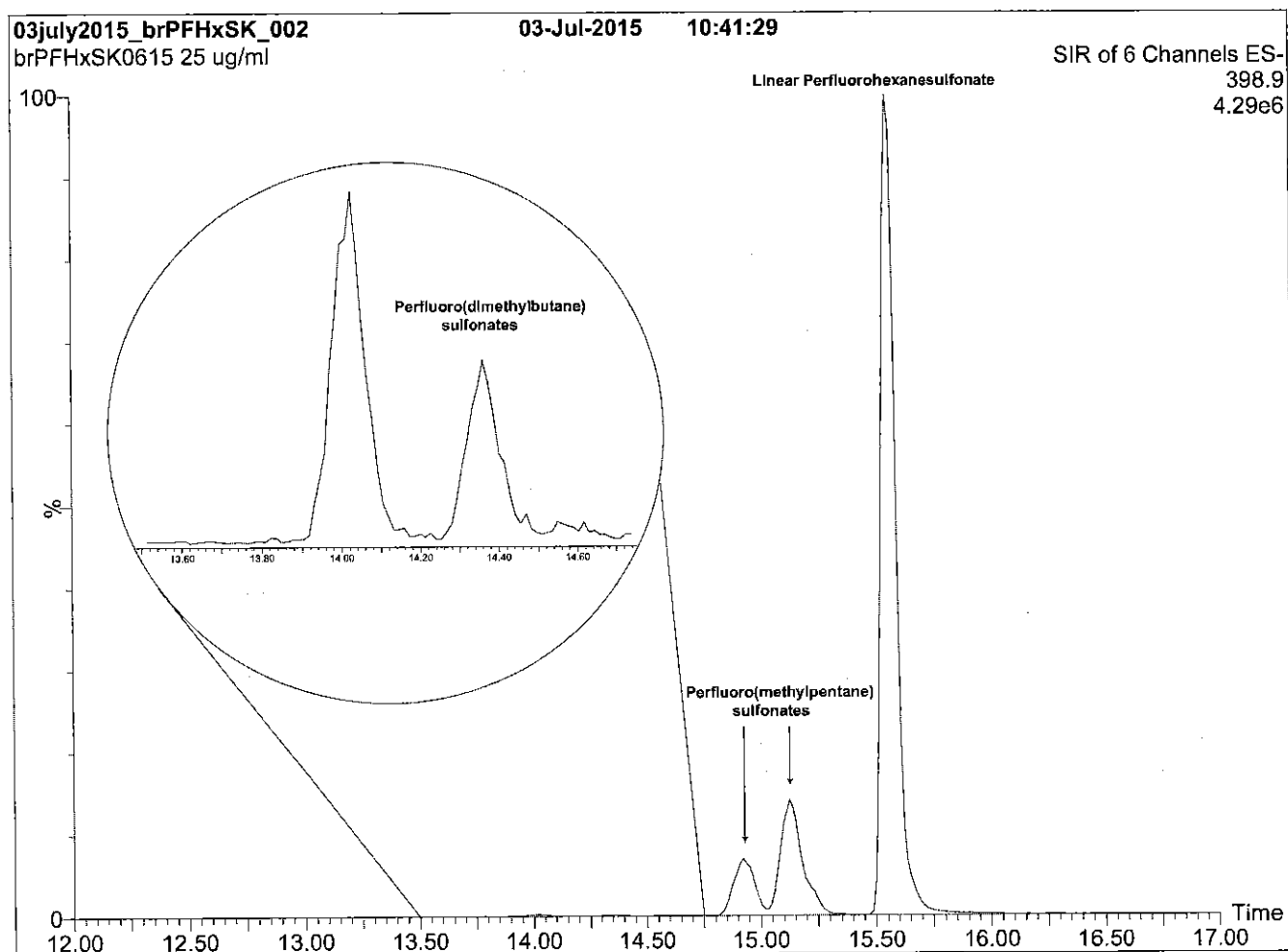
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (150 - 850 amu)

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

**Figure 2: br-PFHxSK; LC/MS Data**



**Conditions for Figure 2:**

**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: 20% (80:20 MeOH:ACN) / 80% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 50% organic over 14 min. Ramp to  
90% organic over 3 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 20 min

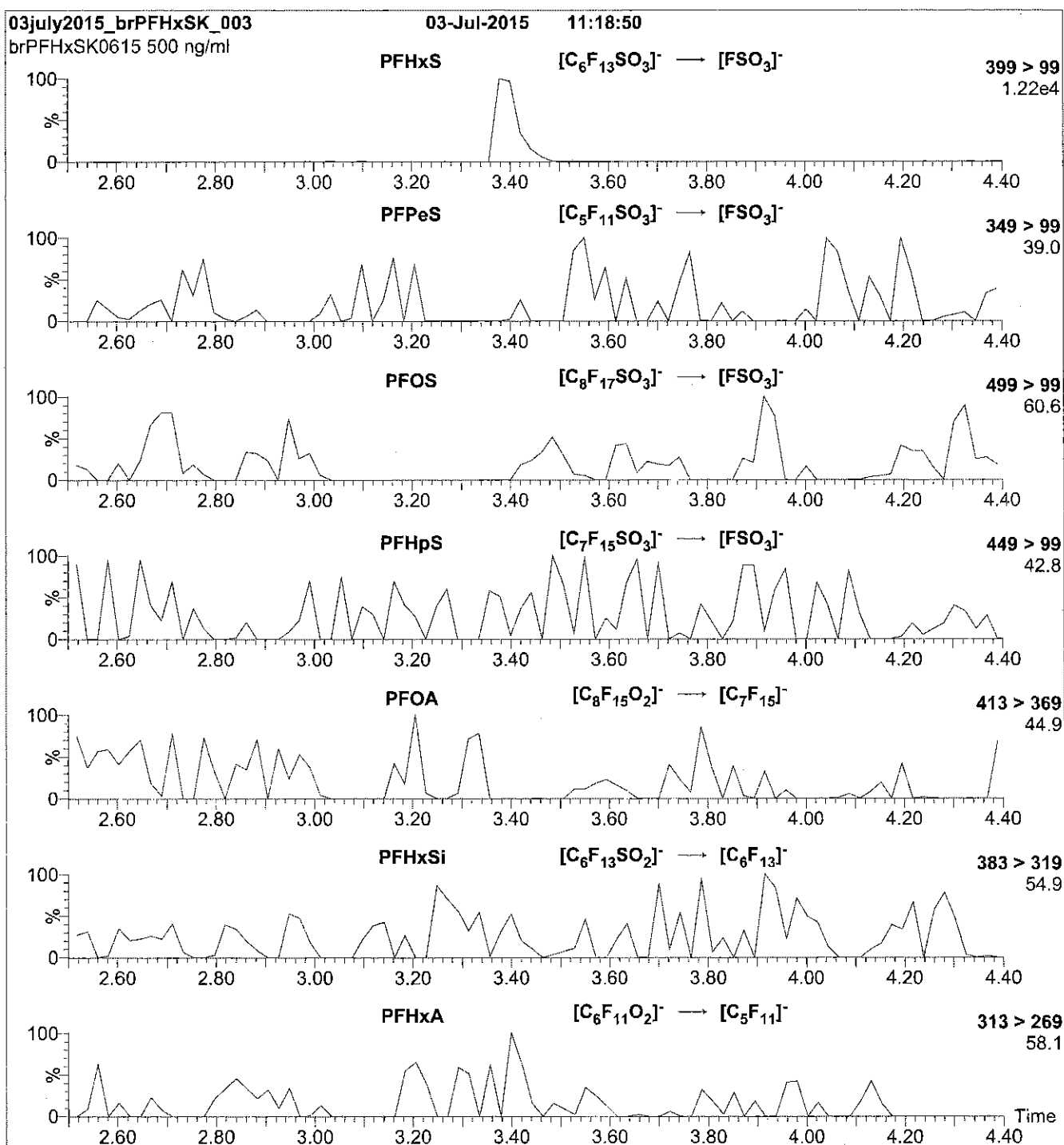
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** SIR (6 channels)

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

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



**Conditions for Figure 3:**

**Injection:** Direct loop injection  
10  $\mu$ l (500 ng/ml br-PFHxSK)

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

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

**MS Parameters**

Collision Gas (mbar) = 3.54e-3  
Collision Energy (eV) = 30



Reagent

---

**LCPFHxS-br\_00002**

SBC  
R: 9/13/16



730513  
ID: LCPFHxS-br\_00002  
Exp: 07/03/20 Pripd: SBC  
Potassium Perfluorohexane



730514  
ID: LCPFHxS-br\_00003  
Exp: 07/03/20 Pripd: SBC  
Potassium Perfluorohexane



**WELLINGTON**  
LABORATORIES

**CERTIFICATE OF ANALYSIS**  
**DOCUMENTATION**

**br-PFHxSK**

**Potassium Perfluorohexanesulfonate**  
**Solution/Mixture of Linear and**  
**Branched Isomers**

**PRODUCT CODE:** br-PFHxSK  
**LOT NUMBER:** brPFHxSK0615  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (total potassium salt)  
45.5 ± 2.3 µg/ml (total PFHxS anion)  
**SOLVENT(S):** Methanol  
**DATE PREPARED:** (mm/dd/yyyy) 06/29/2015  
**LAST TESTED:** (mm/dd/yyyy) 07/03/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 07/03/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**DESCRIPTION:**

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

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

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

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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

**QUALITY MANAGEMENT:**

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



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

**Table A: br-PFHxSK; Isomeric Components and Percent Composition (by <sup>19</sup>F-NMR)\***

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

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

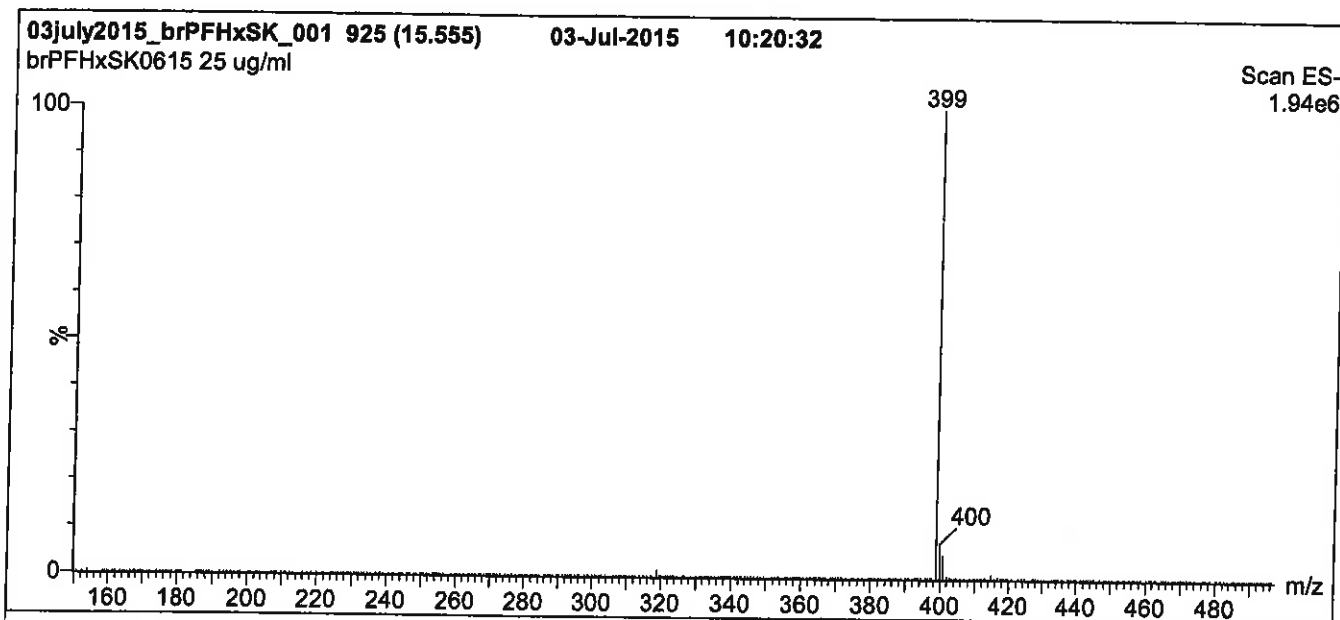
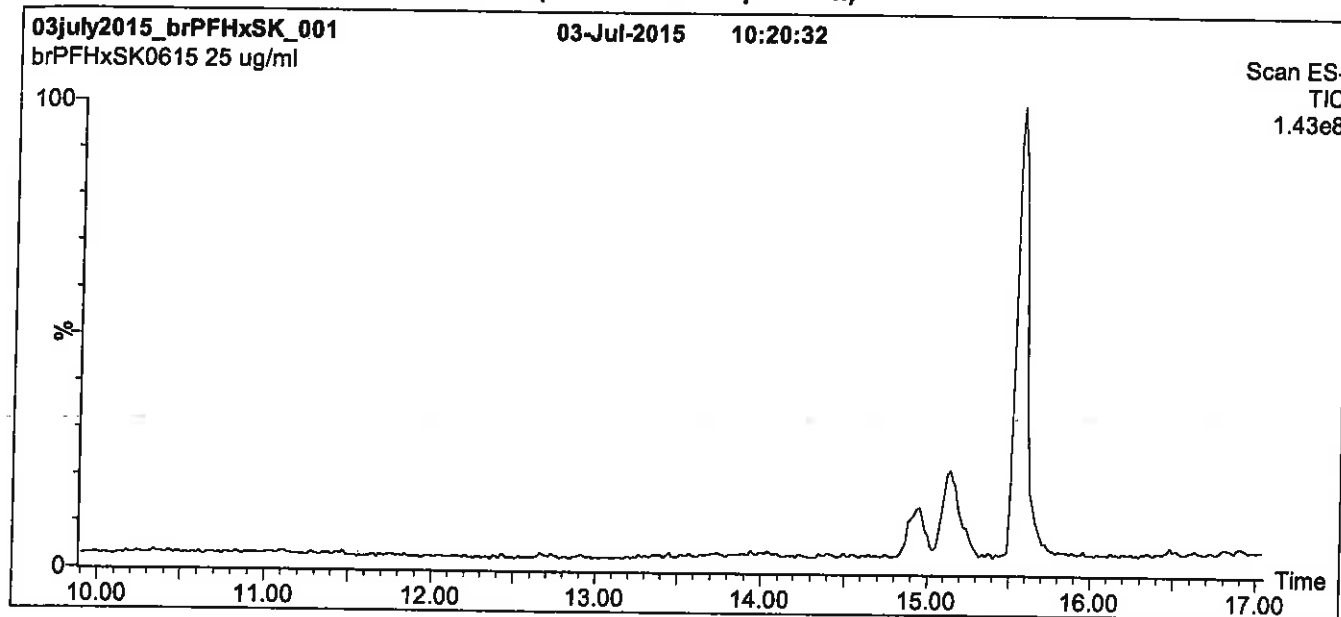
Certified By:

  
B.G. Chittim

Date: 07/15/2015

(mm/dd/yyyy)

**Figure 1: br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient  
Start: 20% (80:20 MeOH:ACN) / 80% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 50% organic over 14 min. Ramp to  
90% organic over 3 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 20 min

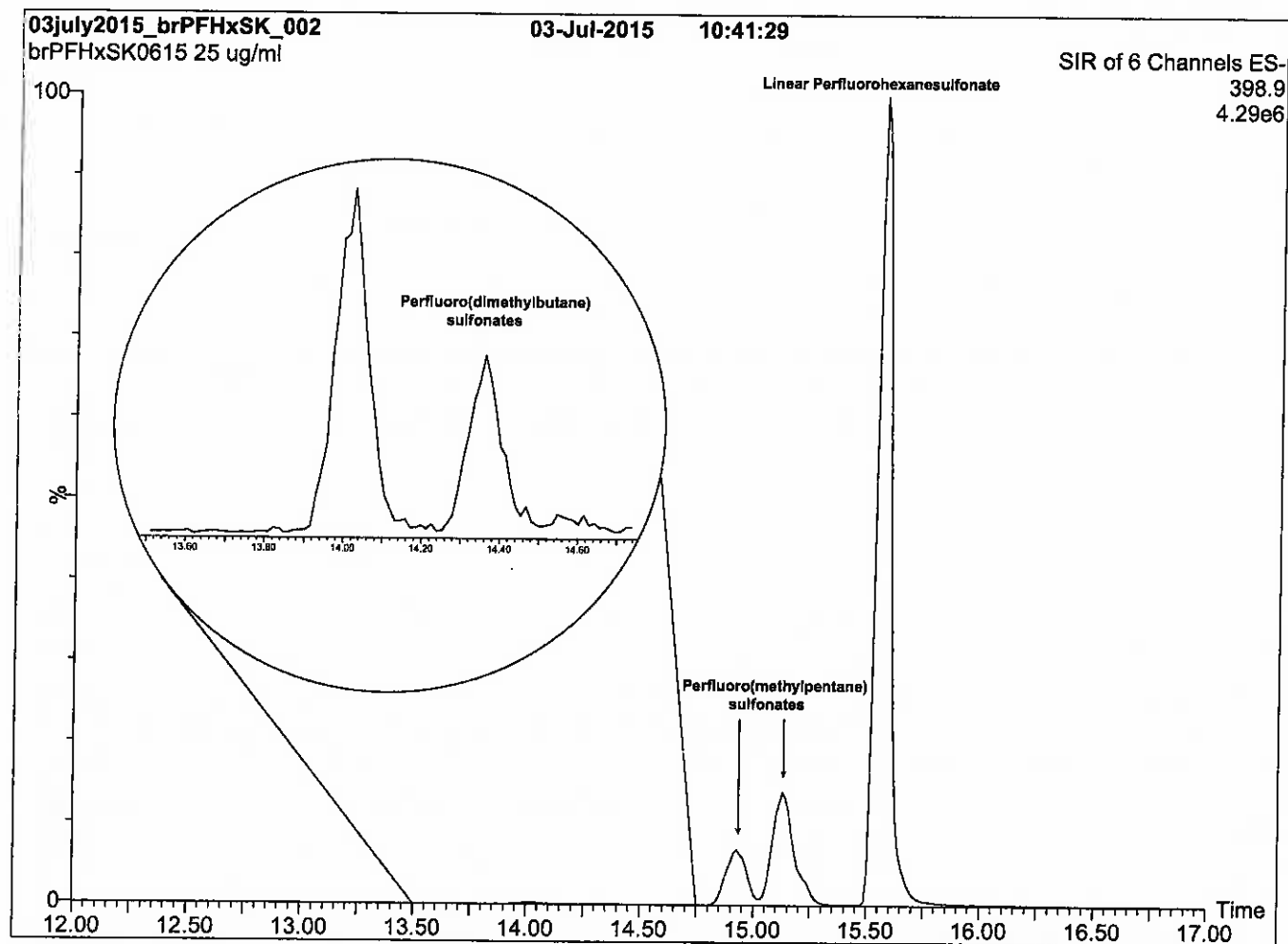
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (150 - 850 amu)

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

**Figure 2: br-PFHxSK; LC/MS Data**



**Conditions for Figure 2:**

**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: 20% (80:20 MeOH:ACN) / 80% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 50% organic over 14 min. Ramp to  
90% organic over 3 min and hold for 1.5 min.  
before returning to initial conditions in 0.5 min.  
Time: 20 min

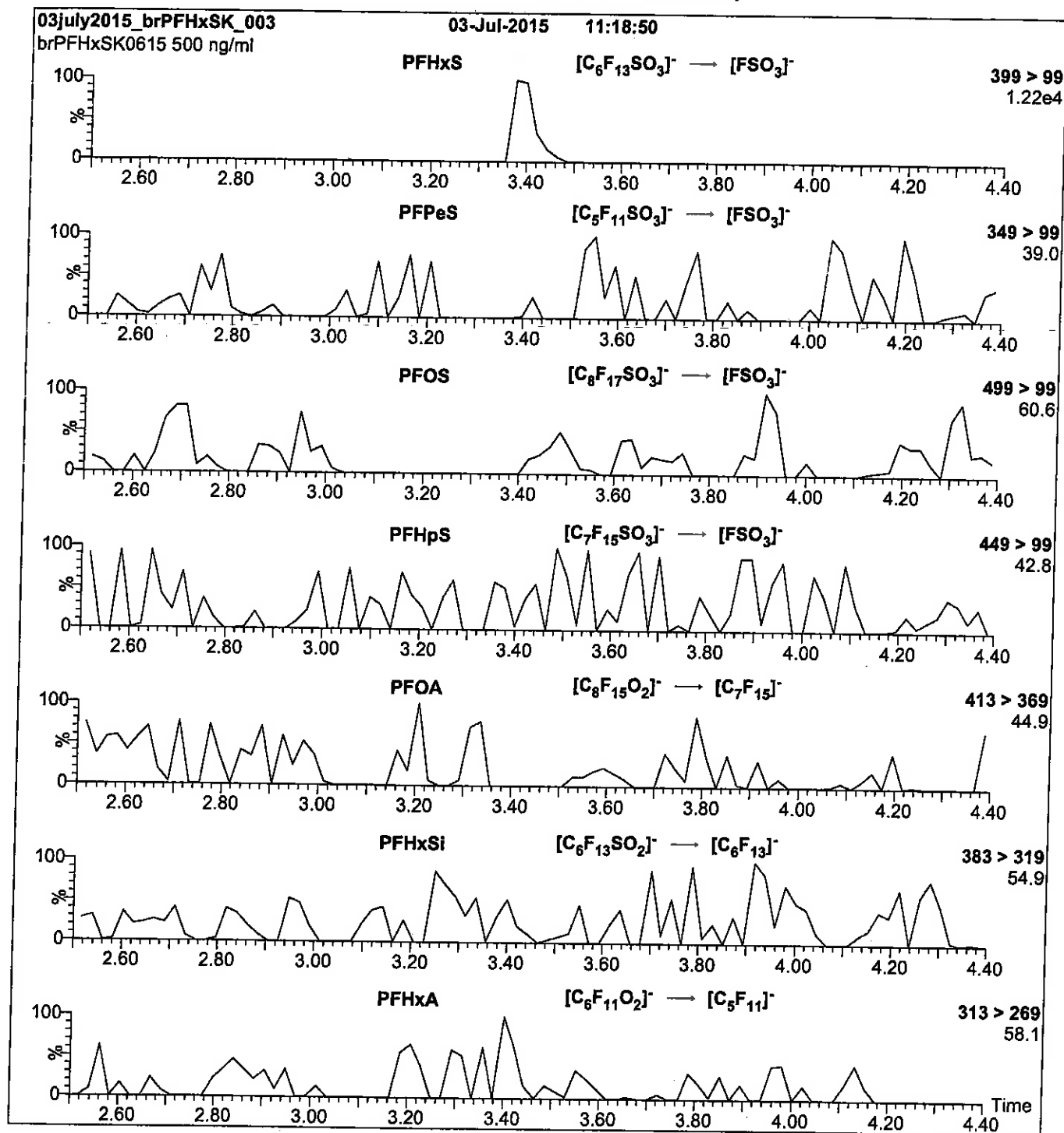
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: SIR (6 channels)

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

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



**Conditions for Figure 3:**

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

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) = 3.54e-3  
Collision Energy (eV) = 30

Reagent

---

**LCPFNA\_00005**





609703

ID: LCPFNA\_00005

Exp: 10/23/20 Prod: CBW

PF-n-nonanoic acid

R: 4/7/16 CBW



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

PFNA

**LOT NUMBER:**

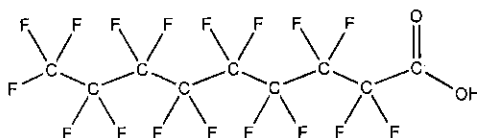
PFNA1015

**COMPOUND:**

Perfluoro-n-nonanoic acid

**STRUCTURE:****CAS #:**

375-95-1

**MOLECULAR FORMULA:** $C_9H_{17}O_2$ **MOLECULAR WEIGHT:**

464.08

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

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

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

10/23/2015

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

10/23/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

  
B.G. Chittim

Date:

10/30/2015  
(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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

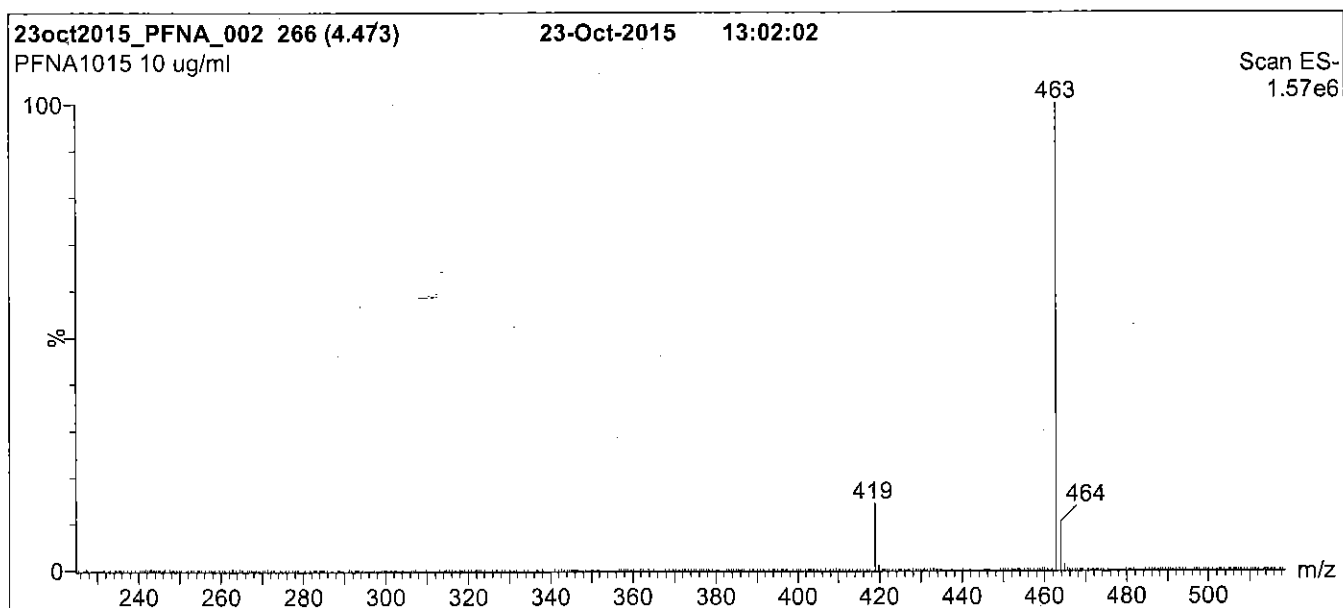
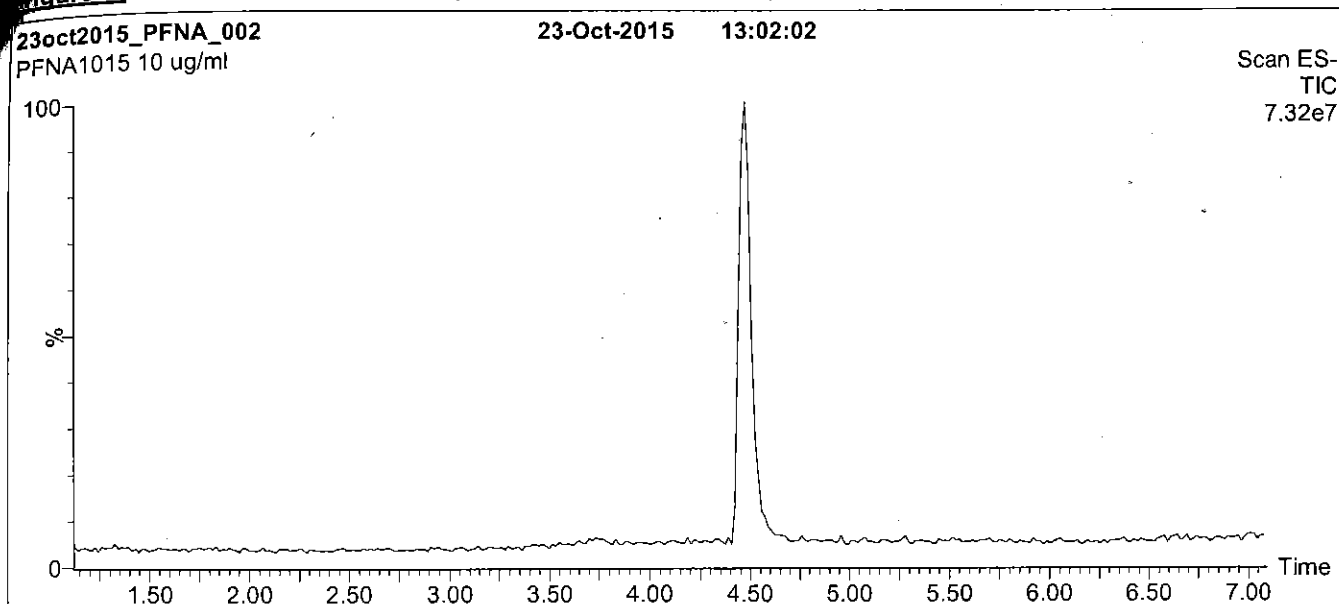
**QUALITY MANAGEMENT:**

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



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

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

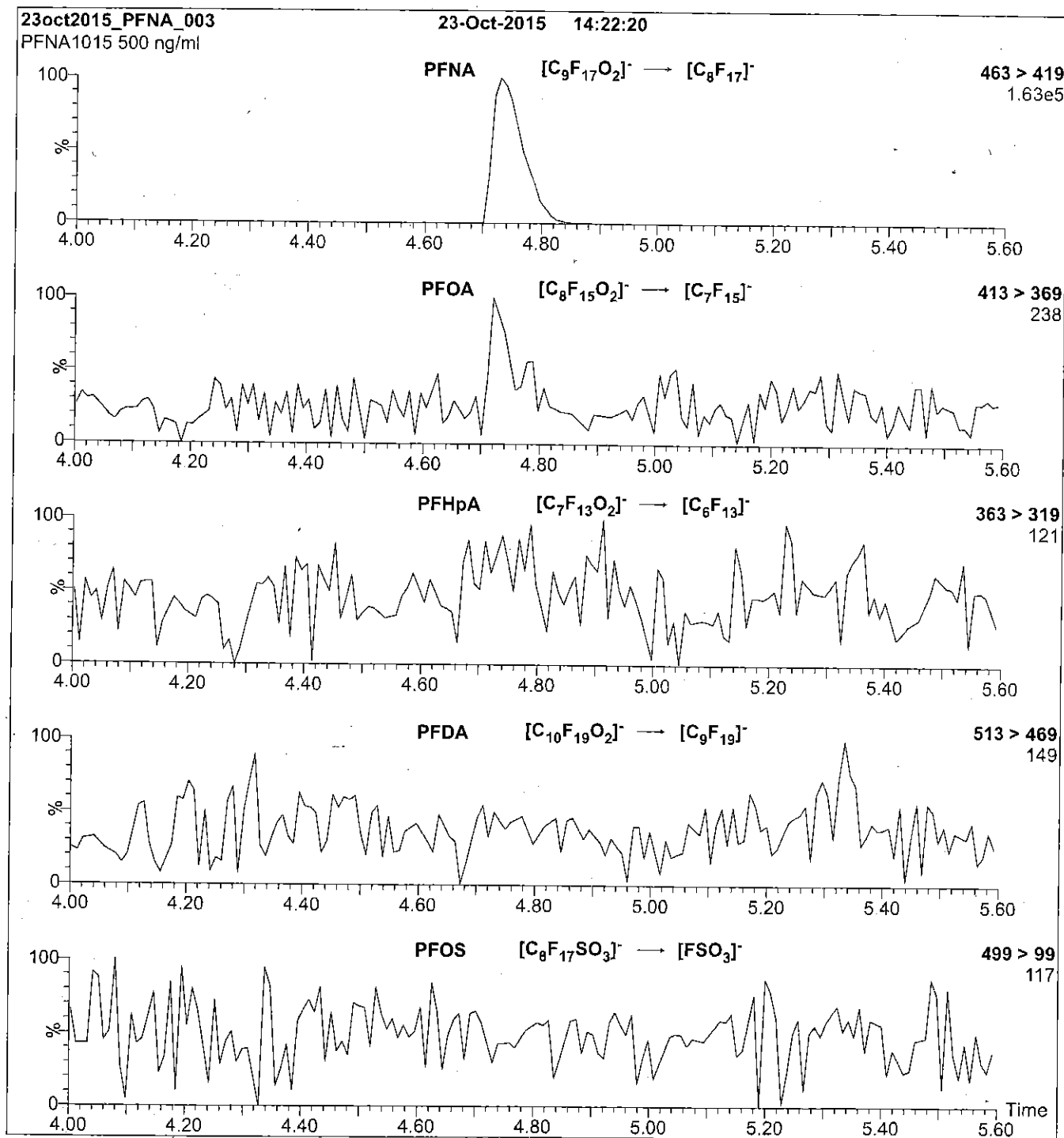
**Flow:** 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

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

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



**Conditions for Figure 2:**

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

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

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

---

**LCPFOA\_00006**

R-716/16CBW

671577  
ID: LCPFOA\_00006  
Exp: 11/06/20 Prod: CBW  
PF-n-octanoic acid**WELLINGTON**  
LABORATORIES**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION**PRODUCT CODE:**

PFOA

**LOT NUMBER:**

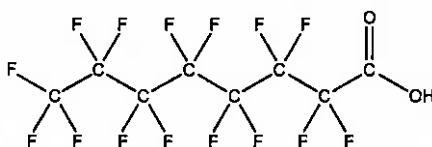
PFOA1115

**COMPOUND:**

Perfluoro-n-octanoic acid

**STRUCTURE:****CAS #:**

335-67-1

**MOLECULAR FORMULA:** $C_8H_15O_2$ **MOLECULAR WEIGHT:**

414.07

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

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

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

11/06/2015

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

11/06/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

  
B.G. Chittim

Date: 11/11/2015

(mm/dd/yyyy)

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

**INTENDED USE:**

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

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

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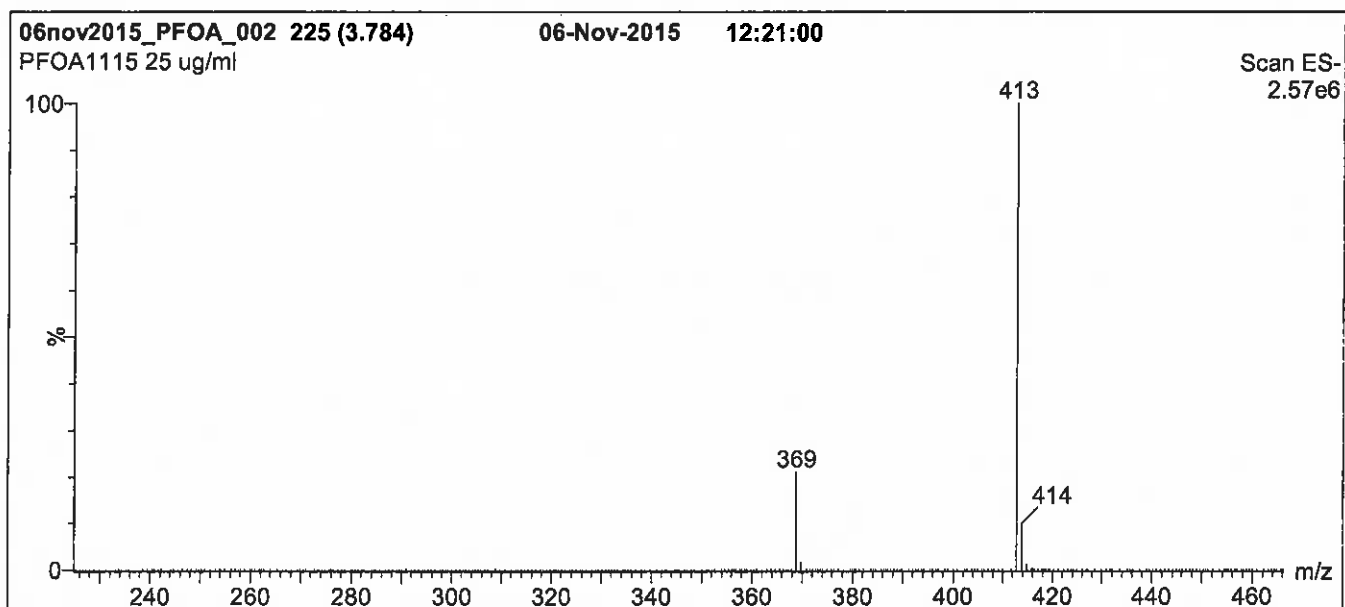
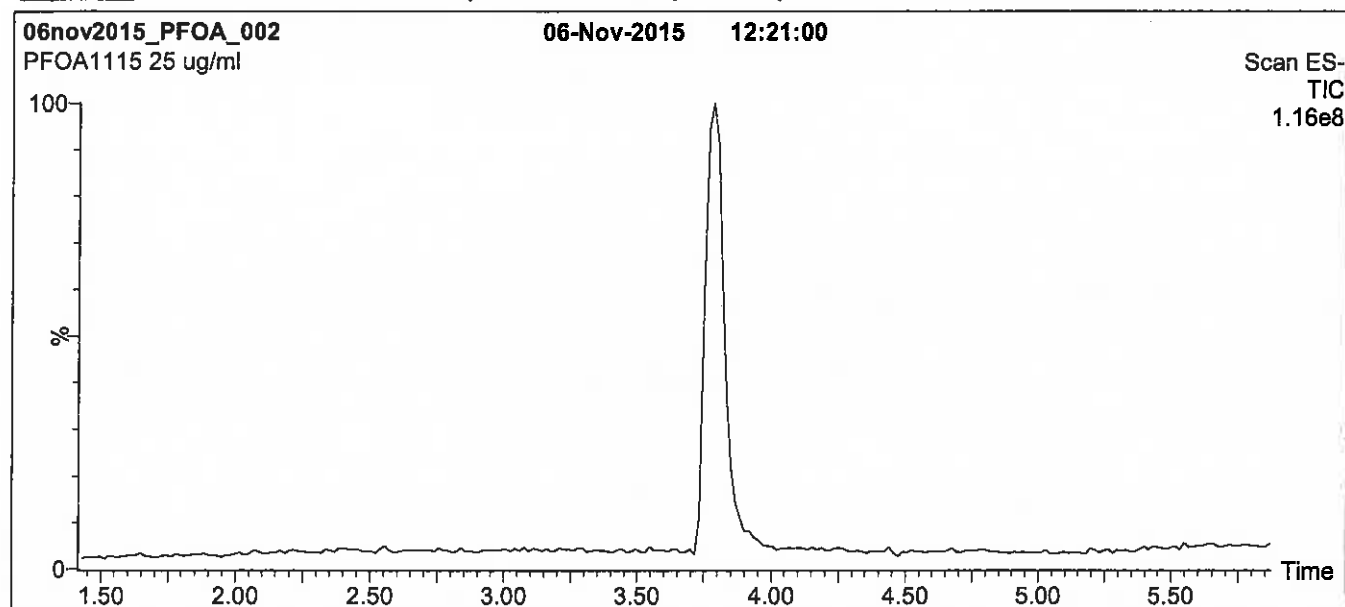
**QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

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

Flow: 300  $\mu$ l/min

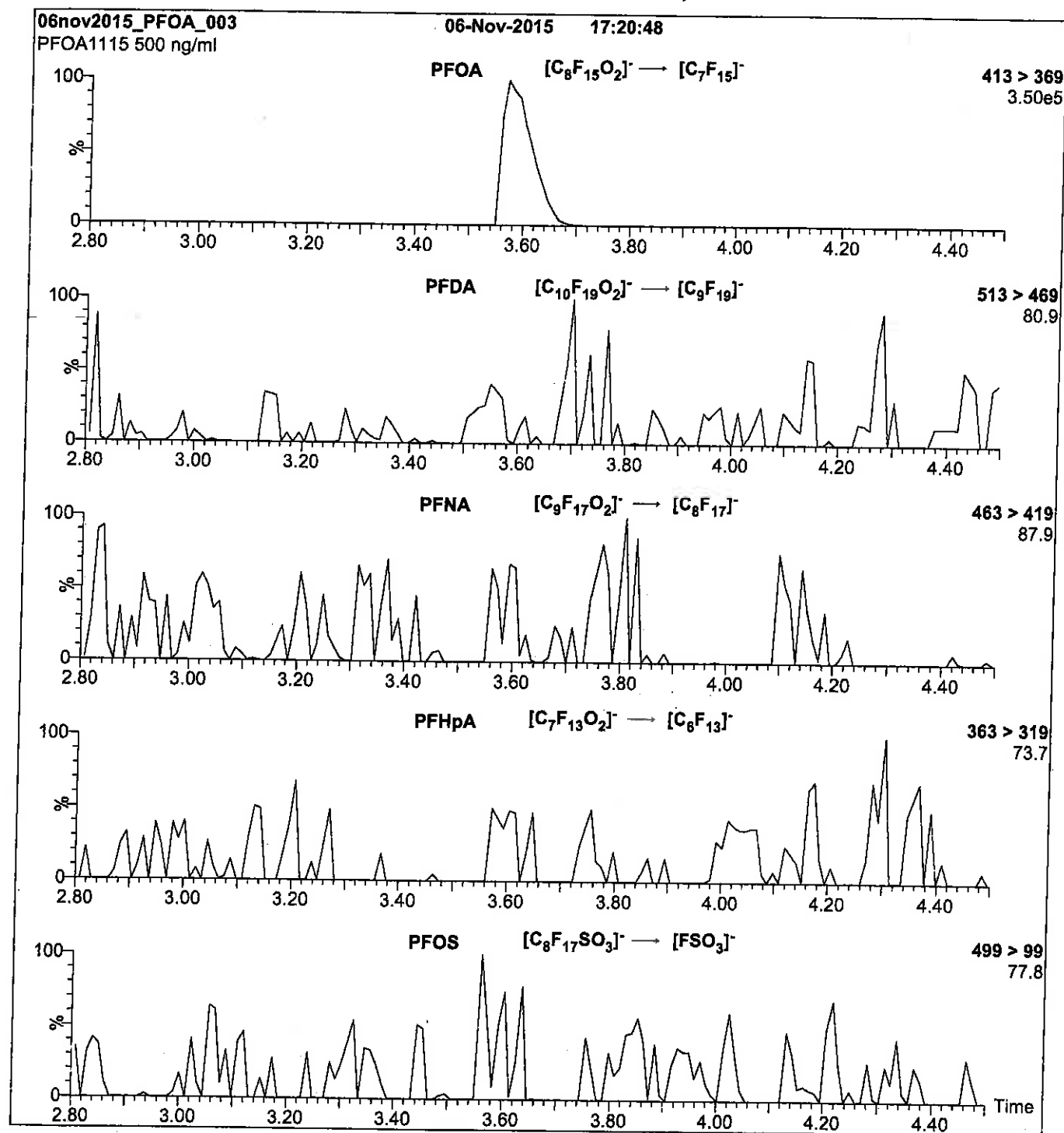
**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

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



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



**Conditions for Figure 2:**

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

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

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.17e-3  
Collision Energy (eV) = 10

Reagent

---

**LCPFODA\_00005**



605234

ID: LCPFOA\_00005

Exp: 01/30/20 Prod: CBW  
PFODA stock 50ug/mL

Rec. 3/29/16 JRB

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

PFODA

**LOT NUMBER:**

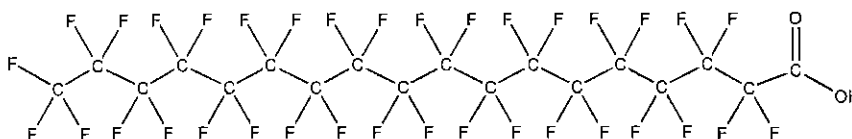
PFODA0115

**COMPOUND:**

Perfluoro-n-octadecanoic acid

**STRUCTURE:****CAS #:**

16517-11-6

**MOLECULAR FORMULA:** $C_{18}H_{35}O_2$ **MOLECULAR WEIGHT:**

914.14

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

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

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

01/30/2015

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

01/30/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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Certified By:

  
B.G. Chittim

Date: 03/25/2015

(mm/dd/yyyy)

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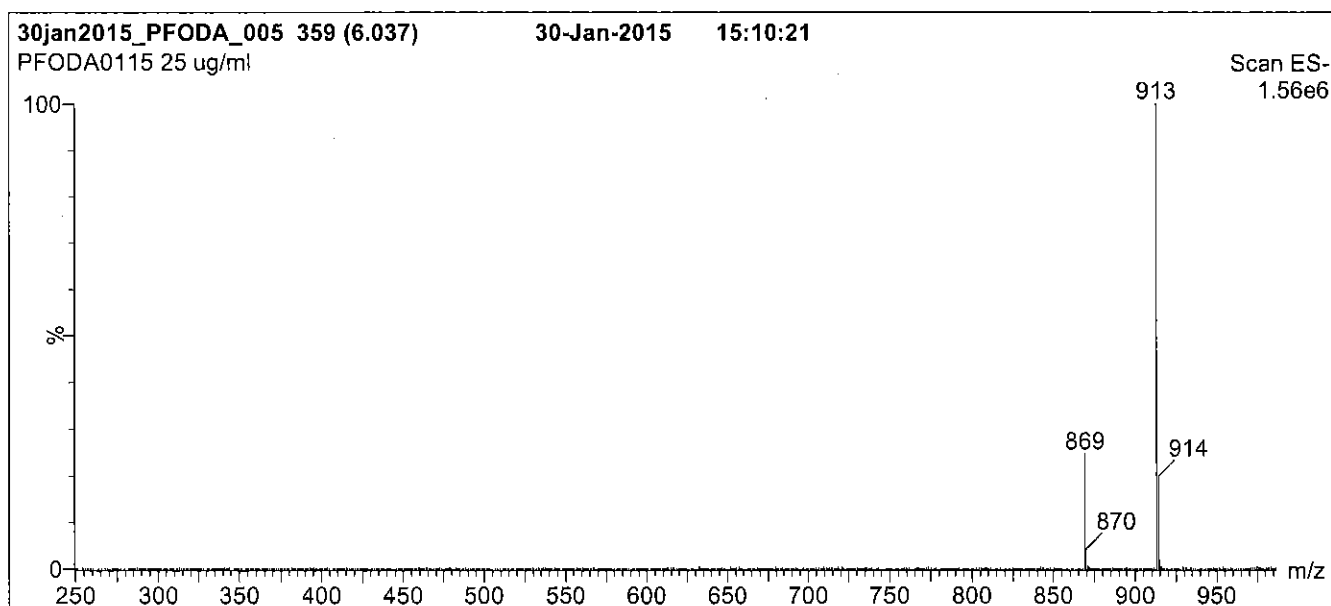
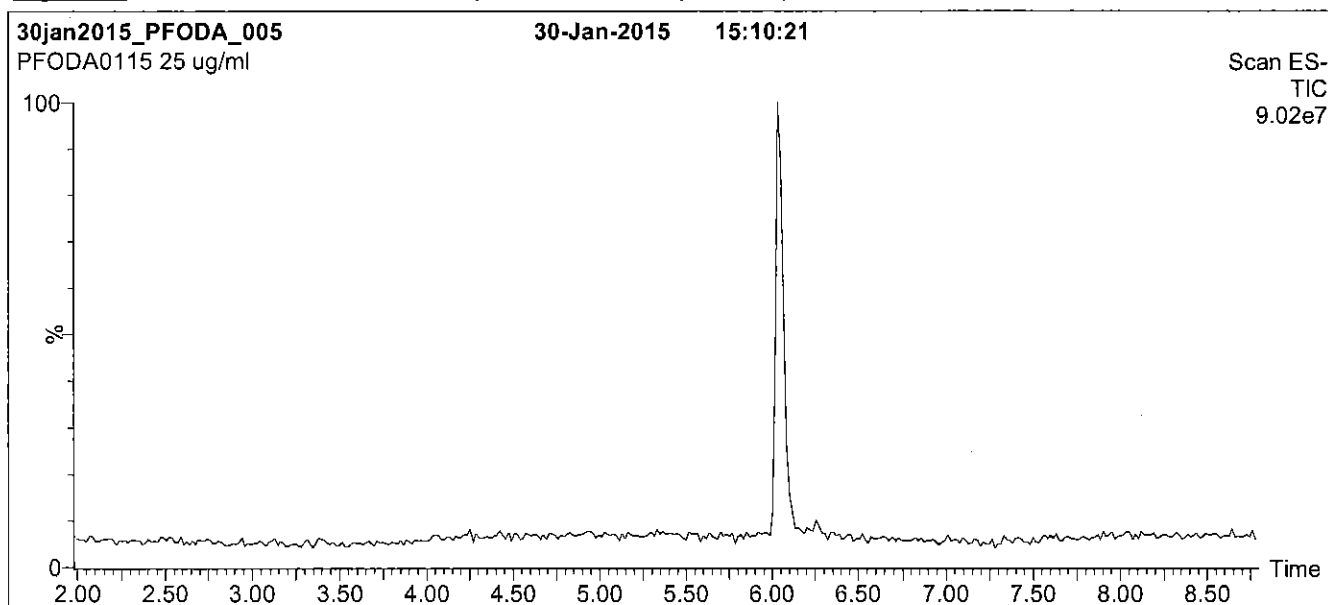
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**Figure 1: PFODA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for  
1.5 min before returning to initial conditions in 0.5 min.  
Time: 10 min

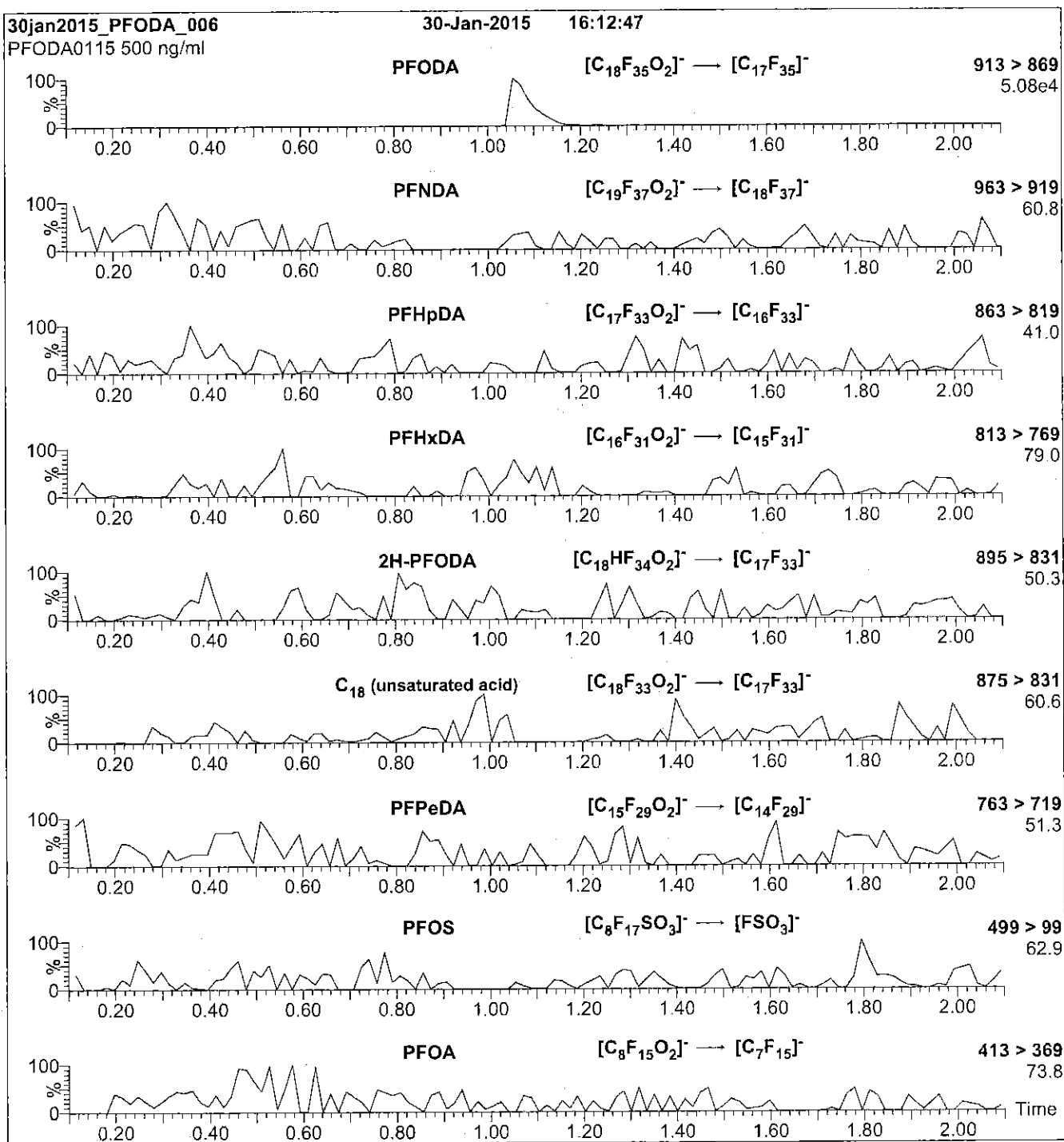
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 2.00  
Cone Voltage (V) = 25.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750

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



**Conditions for Figure 2:**

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

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) = 15

Reagent

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**LCPFOS-br\_00001**



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### br-PFOSK

Potassium Perfluorooctanesulfonate  
Solution/Mixture of Linear and  
Branched Isomers

**PRODUCT CODE:** br-PFOSK  
**LOT NUMBER:** brPFOSK1015  
**CONCENTRATION:** 50 ± 2.5 µg/ml (total potassium salt)  
46.4 ± 2.3 µg/ml (total PFOS anion)  
**SOLVENT(S):** Methanol  
**DATE PREPARED:** (mm/dd/yyyy) 10/13/2015  
**LAST TESTED:** (mm/dd/yyyy) 10/14/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 10/14/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

### DESCRIPTION:

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

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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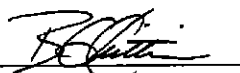
**Table A: br-PFOSK; Isomeric Components and Percent Composition (by <sup>19</sup>F-NMR)\***

| Isomer | Name                                                      | Structure                                                                                                                                                            | Percent Composition by <sup>19</sup> F-NMR |
|--------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| 1      | Potassium perfluoro-1-octanesulfonate                     | CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>                       | 78.8                                       |
| 2      | Potassium 1-trifluoromethylperfluoroheptanesulfonate**    | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CFSO}_3\text{K}^+ \\   \\ \text{CF}_3 \end{array}$                         | 1.2                                        |
| 3      | Potassium 2-trifluoromethylperfluoroheptanesulfonate      | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CFCF}_2\text{SO}_3\text{K}^+ \\   \\ \text{CF}_3 \end{array}$                         | 0.6                                        |
| 4      | Potassium 3-trifluoromethylperfluoroheptanesulfonate      | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CFCF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\   \\ \text{CF}_3 \end{array}$                         | 1.9                                        |
| 5      | Potassium 4-trifluoromethylperfluoroheptanesulfonate      | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CFCF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\   \\ \text{CF}_3 \end{array}$                         | 2.2                                        |
| 6      | Potassium 5-trifluoromethylperfluoroheptanesulfonate      | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CFCF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\   \\ \text{CF}_3 \end{array}$                         | 4.5                                        |
| 7      | Potassium 6-trifluoromethylperfluoroheptanesulfonate      | $\begin{array}{c} \text{CF}_3\text{CFCF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\   \\ \text{CF}_3 \end{array}$                         | 10.0                                       |
| 8      | Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate | $\begin{array}{c} \text{CF}_3 \\   \\ \text{CF}_3-\text{CCF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\   \\ \text{CF}_3 \end{array}$                | 0.2                                        |
| 9      | Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate | $\begin{array}{c} \text{CF}_3 \\   \\ \text{CF}_3\text{CF}_2-\text{C}-\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\   \\ \text{CF}_3 \end{array}$        | 0.03                                       |
| 10     | Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate | $\begin{array}{c} \text{CF}_3-\text{CF}-\text{CF}-\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\   \quad   \\ \text{CF}_3 \quad \text{CF}_3 \end{array}$  | 0.4                                        |
| 11     | Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate | $\begin{array}{c} \text{CF}_3-\text{CF}-\text{CF}_2-\text{CF}-\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\   \quad   \\ \text{CF}_3 \quad \text{CF}_3 \end{array}$ | 0.07                                       |

\* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.

\*\* Systematic Name: Potassium perfluorooctane-2-sulfonate.

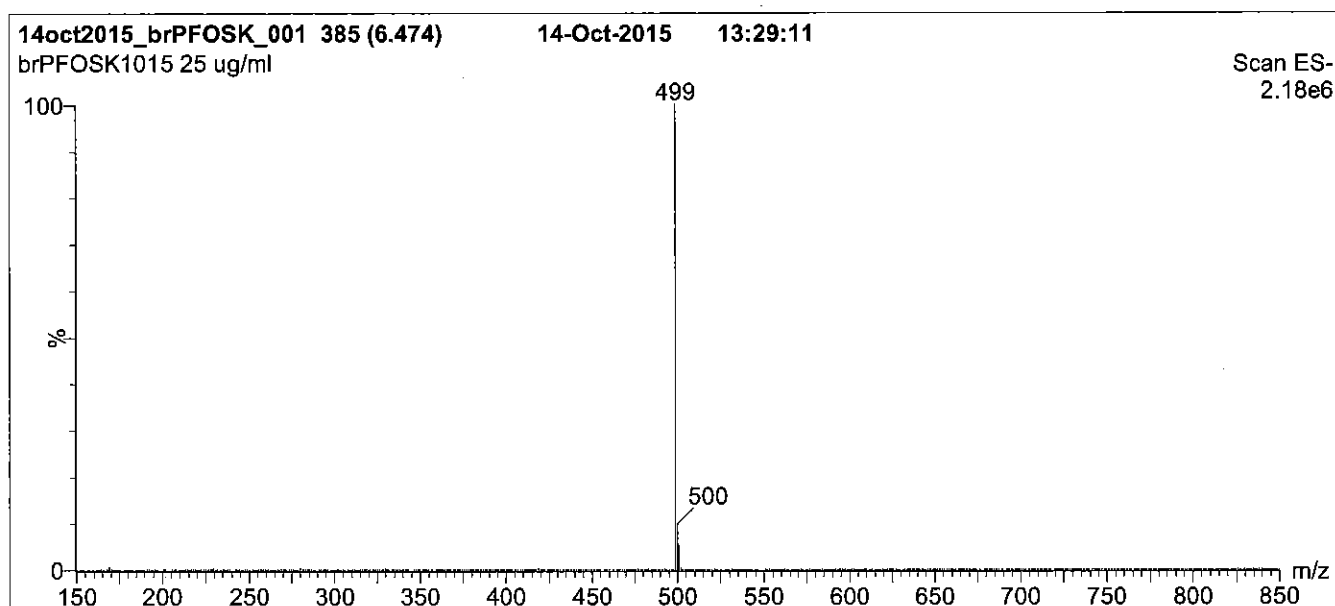
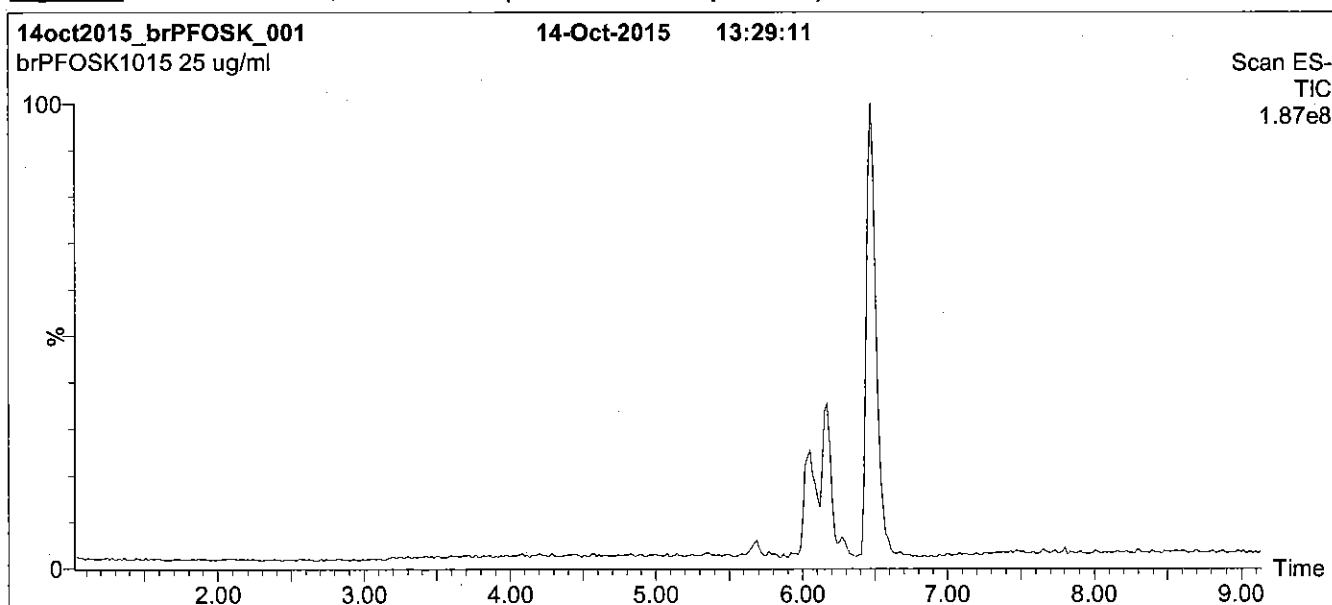
Certified By:

  
 B.G. Chittim

Date: 10/15/2015

(mm/dd/yyyy)

**Figure 1: br-PFOSK; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield 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 12 min and hold for 2 min.  
Return to initial conditions over 0.5 min.  
Time: 16 min

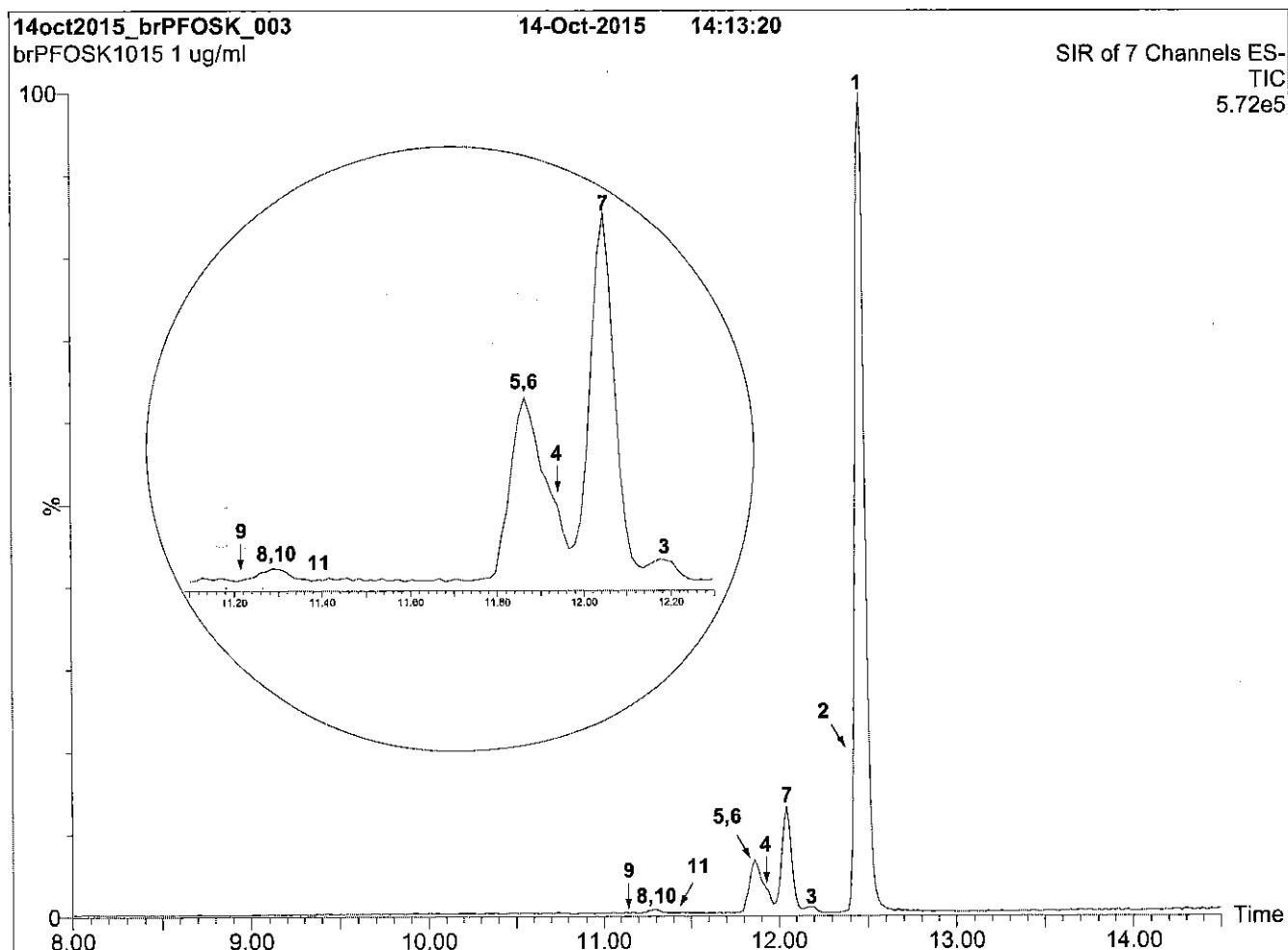
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

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

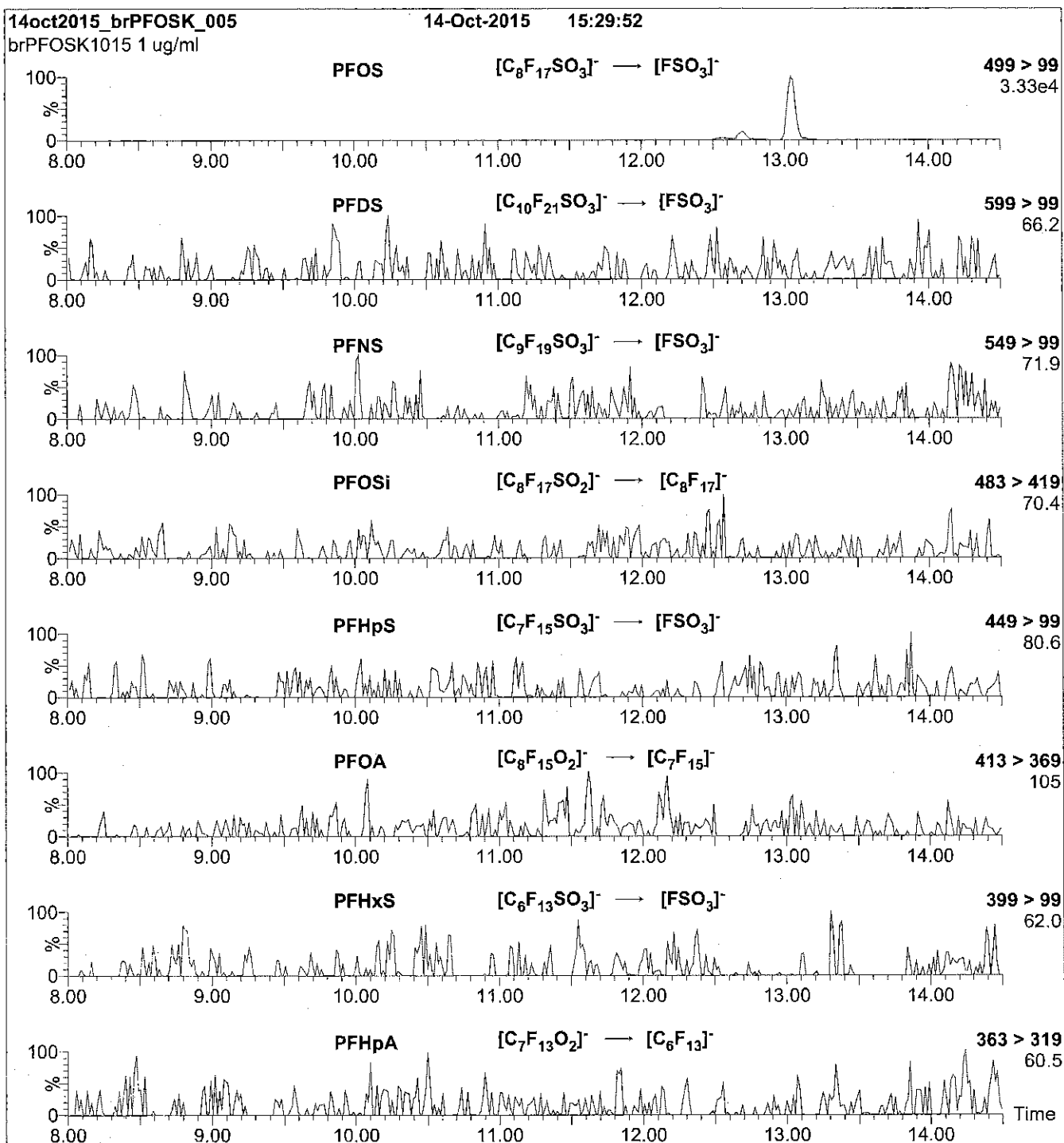
**Chromatographic Conditions:**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub> (1.7  $\mu$ m, 2.1 x 100 mm)  
**Injection:** 1.0  $\mu$ g/ml of br-PFOSK  
**Mobile Phase:** Gradient  
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 15 min and hold for 3 min.  
Return to initial conditions over 1 min.  
Time: 20 min  
**Flow:** 300  $\mu$ l/min

**MS Conditions:**

SIR (ES)  
Source = 110  $^{\circ}$ C  
Desolvation = 325  $^{\circ}$ C  
Cone Voltage = 60V

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



**Conditions for Figure 3:**

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.06e-3

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

Reagent

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**LCPFOS-br\_00002**

Scanned  
10/14/16 SR

R: SBC 9/13/16



730515  
ID: LCPFOS-br\_00002  
Exp: 10/14/20 Ppdt: SBC  
Potassium Perfluorooctane



730516  
ID: LCPFOS-br\_00003  
Exp: 10/14/20 Ppdt: SBC  
Potassium Perfluorooctane



**WELLINGTON  
LABORATORIES**

**CERTIFICATE OF ANALYSIS  
DOCUMENTATION**

**br-PFOSK**

**Potassium Perfluorooctanesulfonate  
Solution/Mixture of Linear and  
Branched Isomers**

**PRODUCT CODE:** br-PFOSK  
**LOT NUMBER:** brPFOSK1015  
**CONCENTRATION:** 50 ± 2.5 µg/ml (total potassium salt)  
46.4 ± 2.3 µg/ml (total PFOS anion)  
**SOLVENT(S):** Methanol  
**DATE PREPARED:** (mm/dd/yyyy) 10/13/2015  
**LAST TESTED:** (mm/dd/yyyy) 10/14/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 10/14/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**DESCRIPTION:**

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

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

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

### **INTENDED USE:**

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

### **HAZARDS:**

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

### **SYNTHESIS / CHARACTERIZATION:**

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

### **HOMOGENEITY:**

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

### **UNCERTAINTY:**

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

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

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where  $x$  is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of  $\pm 5\%$  (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 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.

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**Table A: br-PFOSK; Isomeric Components and Percent Composition (by <sup>19</sup>F-NMR)\***

| Isomer | Name                                                      | Structure                                                                                                                                                      | Percent Composition by <sup>19</sup> F-NMR |
|--------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| 1      | Potassium perfluoro-1-octanesulfonate                     | CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup> | 78.8                                       |
| 2      | Potassium 1-trifluoromethylperfluoroheptanesulfonate**    | CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF(SO <sub>3</sub> K <sup>+</sup> )CF <sub>3</sub>             | 1.2                                        |
| 3      | Potassium 2-trifluoromethylperfluoroheptanesulfonate      | CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF(CF <sub>3</sub> )SO <sub>3</sub> K <sup>+</sup>                             | 0.6                                        |
| 4      | Potassium 3-trifluoromethylperfluoroheptanesulfonate      | CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>                             | 1.9                                        |
| 5      | Potassium 4-trifluoromethylperfluoroheptanesulfonate      | CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>                             | 2.2                                        |
| 6      | Potassium 5-trifluoromethylperfluoroheptanesulfonate      | CF <sub>3</sub> CF <sub>2</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>                             | 4.5                                        |
| 7      | Potassium 6-trifluoromethylperfluoroheptanesulfonate      | CF <sub>3</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>                             | 10.0                                       |
| 8      | Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate | CF <sub>3</sub> CF <sub>3</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>                             | 0.2                                        |
| 9      | Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate | CF <sub>3</sub> CF <sub>2</sub> CF(CF <sub>3</sub> )CF(CF <sub>3</sub> )CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>                                         | 0.03                                       |
| 10     | Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate | CF <sub>3</sub> CF(CF <sub>3</sub> )CF(CF <sub>3</sub> )CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>                                         | 0.4                                        |
| 11     | Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate | CF <sub>3</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>                                         | 0.07                                       |

\* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.  
\*\* Systematic Name: Potassium perfluorooctane-2-sulfonate.

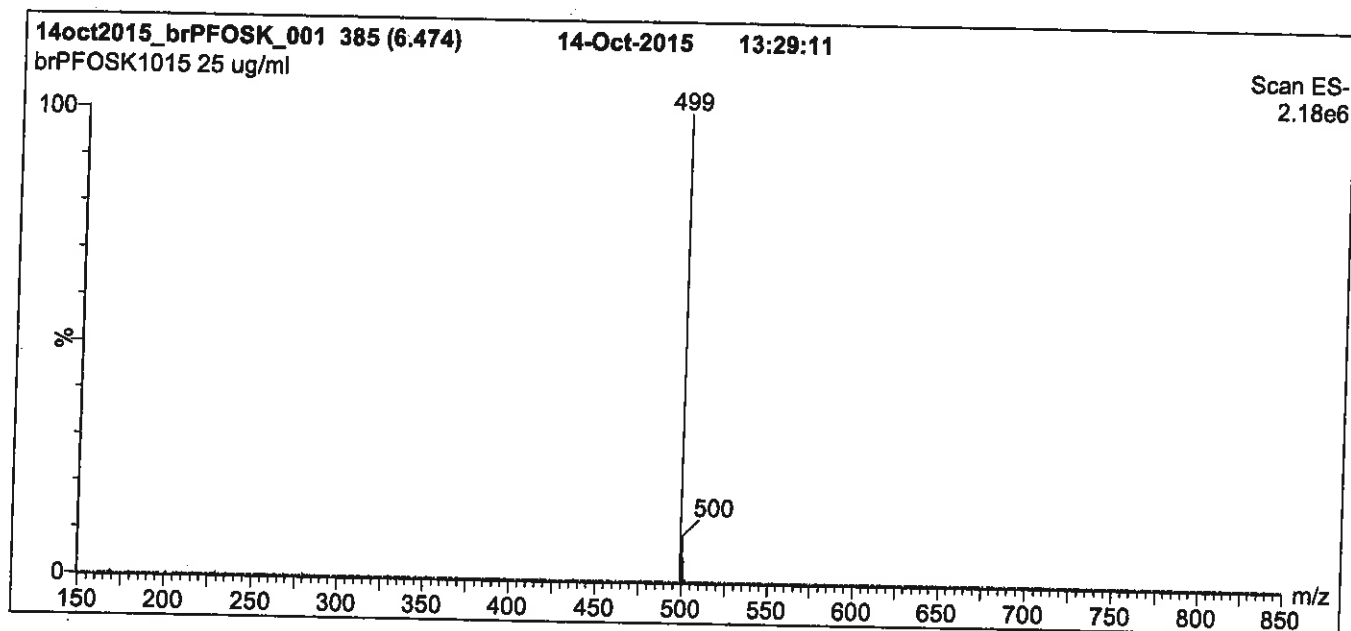
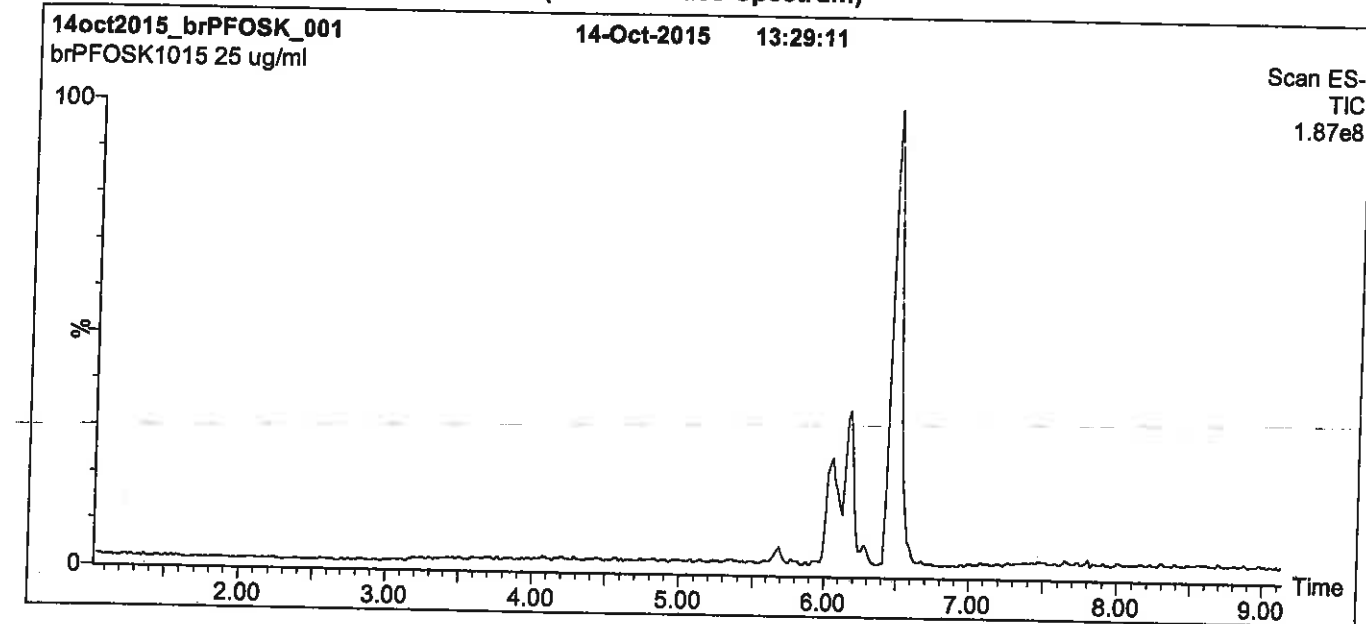
Certified By:

  
B.G. Chittim

Date: 10/15/2015

(mm/dd/yyyy)

**Figure 1: br-PFOSK; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

**LC:** Waters Acquity Ultra Performance LC  
**MS:** Micromass Quattro micro API MS

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield 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 12 min and hold for 2 min.  
Return to initial conditions over 0.5 min.  
Time: 16 min

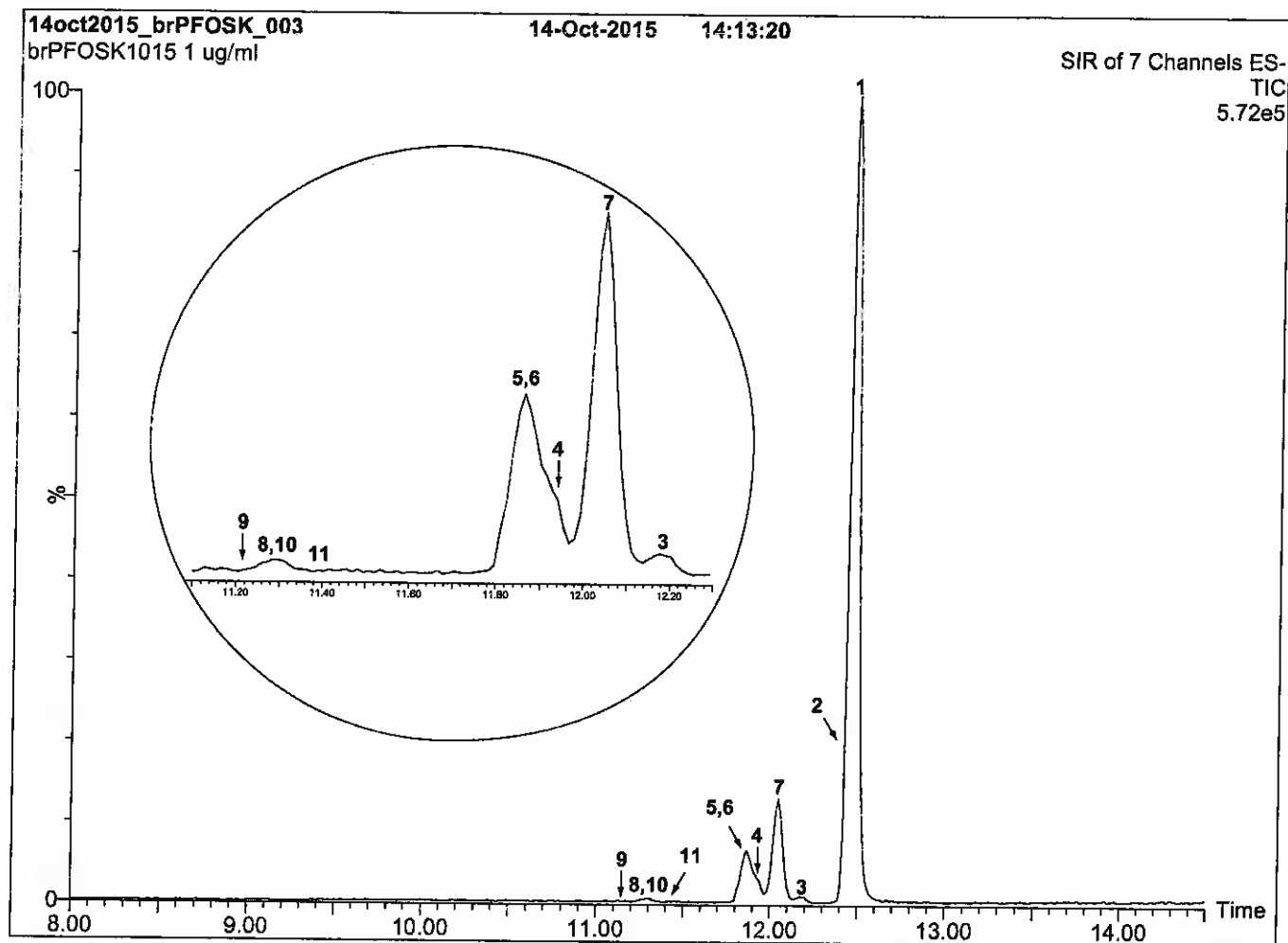
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 2.00  
Cone Voltage (V) = 60.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750

**Figure 2:** br-PFOSK; LC/MS Data (SIR)



**Conditions for Figure 2:**

**LC:** Waters Acquity Ultra Performance LC  
**MS:** Micromass Quattro micro API MS

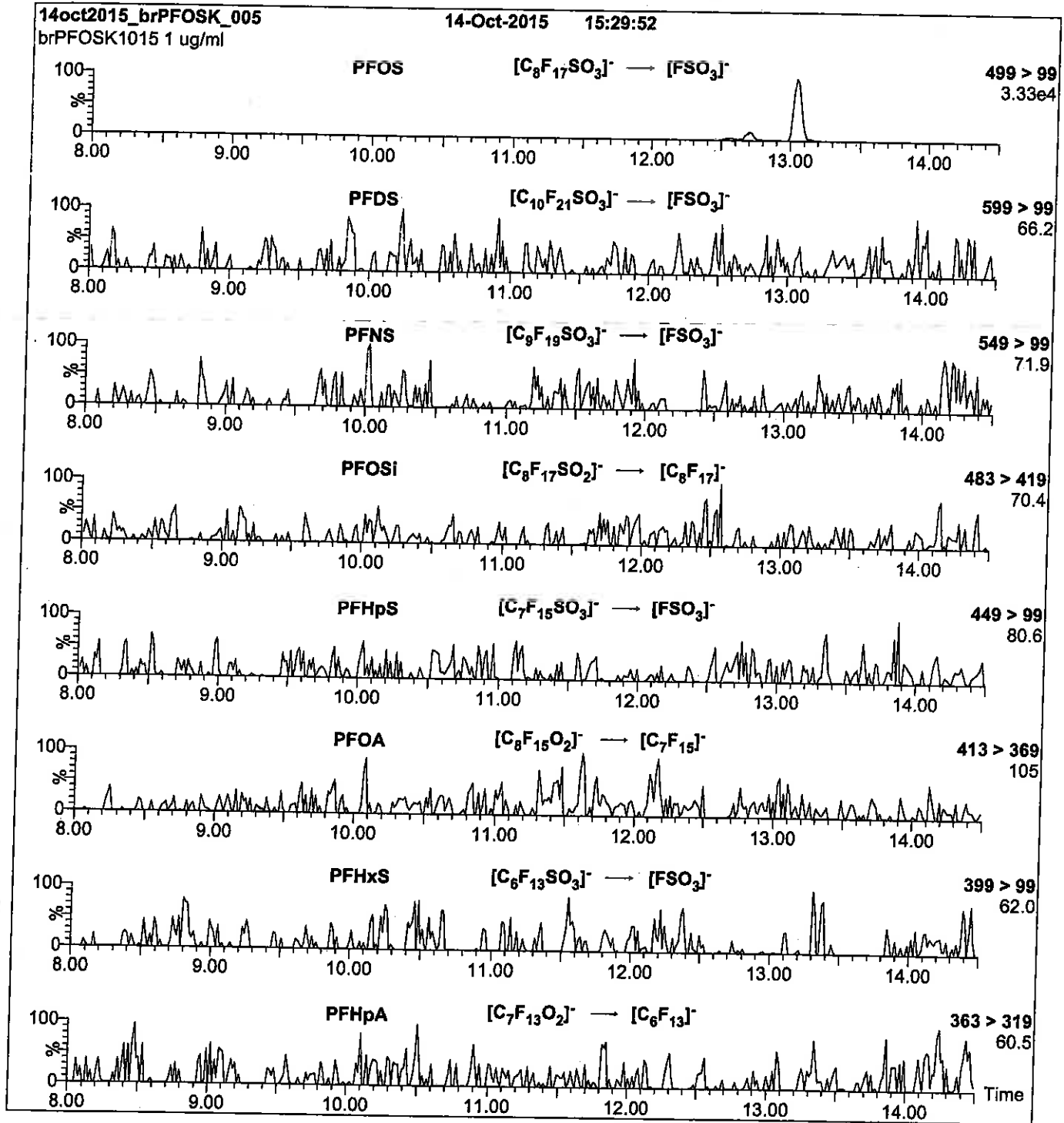
**Chromatographic Conditions:**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub> (1.7  $\mu$ m, 2.1 x 100 mm)  
**Injection:** 1.0  $\mu$ g/ml of br-PFOSK  
**Mobile Phase:** Gradient  
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 15 min and hold for 3 min.  
Return to initial conditions over 1 min.  
Time: 20 min  
**Flow:** 300  $\mu$ l/min

**MS Conditions:**

SIR (ES)  
Source = 110  $^{\circ}$ C  
Desolvation = 325  $^{\circ}$ C  
Cone Voltage = 60V

**Figure 3: br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 3:**

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300  $\mu$ /min

**MS Parameters**

Collision Gas (mbar) = 3.06e-3

Collision Energy (eV) = 11-50 (variable)

Reagent

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**LCPFOSA\_00006**



# WELLINGTON LABORATORIES

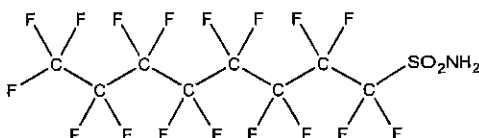
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** FOSA-I  
**COMPOUND:** Perfluoro-1-octanesulfonamide

**LOT NUMBER:** FOSA0815I

**STRUCTURE:**

**CAS #:** 754-91-6



**MOLECULAR FORMULA:**  $C_8H_2F_{17}NO_2S$   
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$   
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 09/02/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 09/02/2017  
**RECOMMENDED STORAGE:** Refrigerate ampoule

**MOLECULAR WEIGHT:** 499.14  
**SOLVENT(S):** Isopropanol

**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)  
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**

B.G. Chittim

**Date:** 09/11/2015  
(mm/dd/yyyy)

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### **INTENDED USE:**

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### **HAZARDS:**

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### **HOMOGENEITY:**

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

### **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.

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### **EXPIRY DATE / PERIOD OF VALIDITY:**

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

### **LIMITED WARRANTY:**

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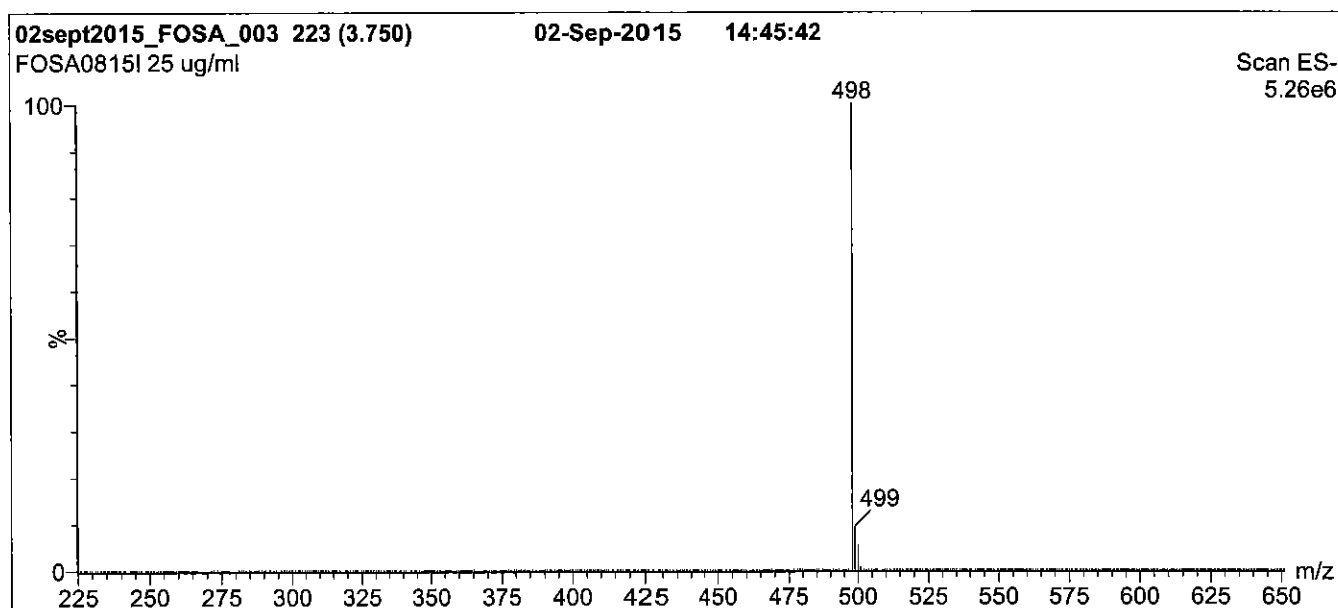
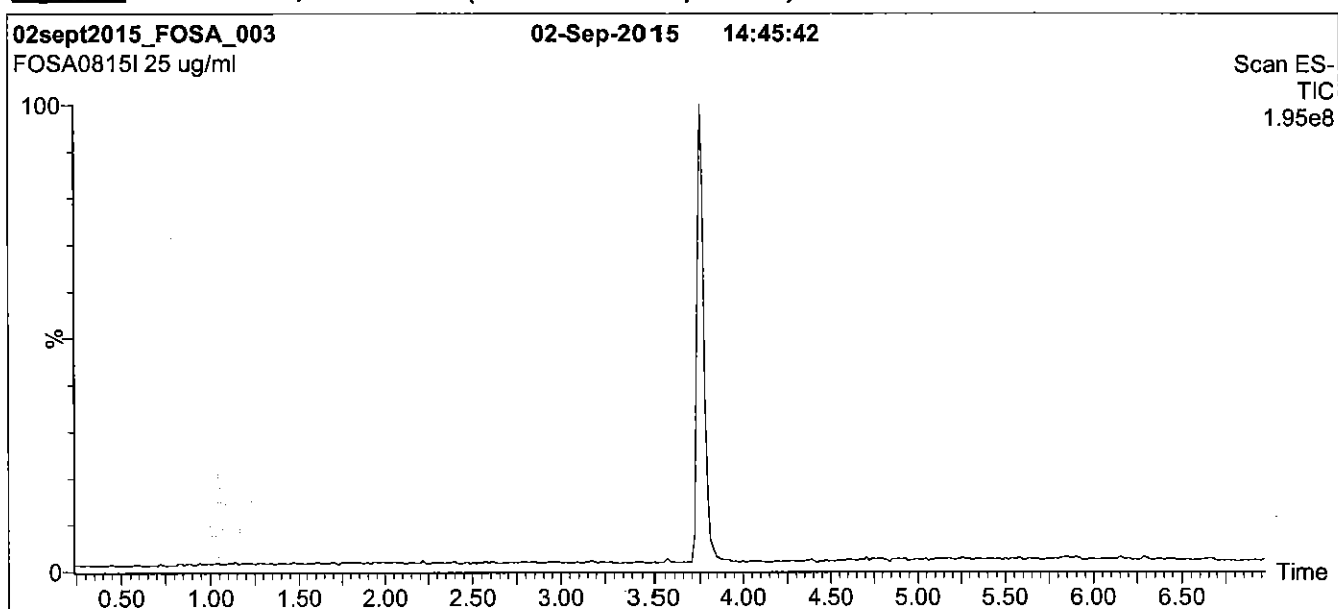
### **QUALITY MANAGEMENT:**

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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**Figure 1: FOSA-I; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

**LC:** Waters Acquity Ultra Performance LC  
**MS:** Micromass Quattro *micro* API MS

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 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

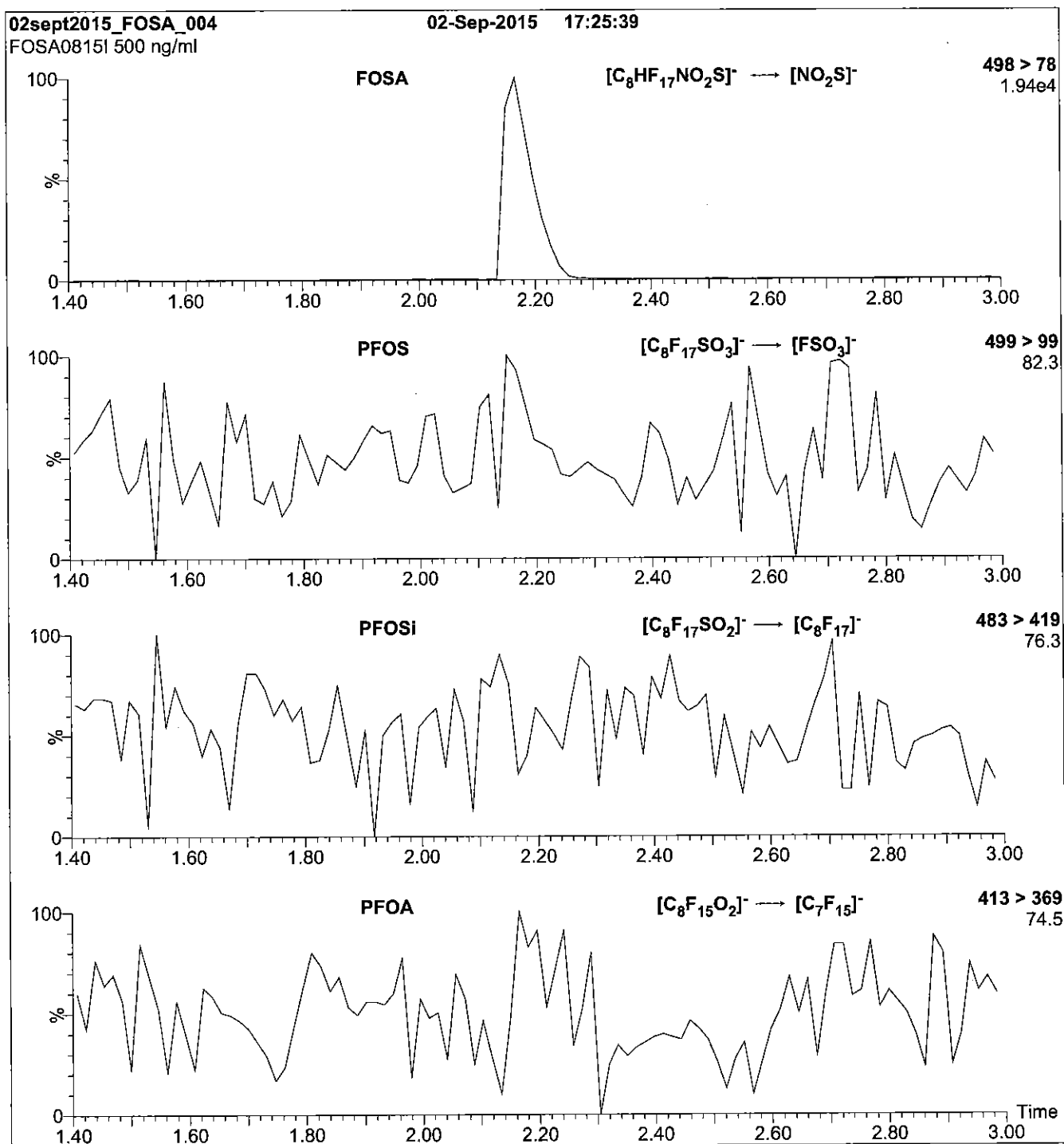
**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 2.50  
Cone Voltage (V) = 40.00  
Cone Gas Flow (l/hr) = 50  
Desolvation Gas Flow (l/hr) = 750



**Figure 2:** FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.54e-3  
Collision Energy (eV) = 30

Reagent

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**LCPFPeA\_00005**

R: 7/6/16 CBW



671579

ID: LCPFPeA\_00005

Exp: 01/30/20 Prod: CBW

PF-n-pentanoic acid

**WELLINGTON**  
LABORATORIES**CERTIFICATE OF ANALYSIS**  
**DOCUMENTATION****PRODUCT CODE:**

PFPeA

**LOT NUMBER:**

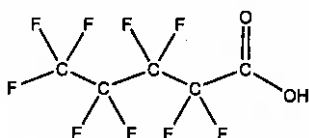
PFPeA0115

**COMPOUND:**

Perfluoro-n-pentanoic acid

**STRUCTURE:****CAS #:**

2706-90-3

**MOLECULAR FORMULA:** $C_5H_9F_9O_2$ **MOLECULAR WEIGHT:**

264.05

**CONCENTRATION:** $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

**LAST TESTED:** (mm/dd/yyyy)

01/30/2015

**EXPIRY DATE:** (mm/dd/yyyy)

01/30/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of  $C_5H_2F_8O_2$  (hydrido - derivative) as measured by  $^{19}\text{F}$  NMR.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE****Certified By:**
  
B.G. Chittim
**Date:** 03/26/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where  $x$  is expressed as a relative standard uncertainty of the individual parameter.

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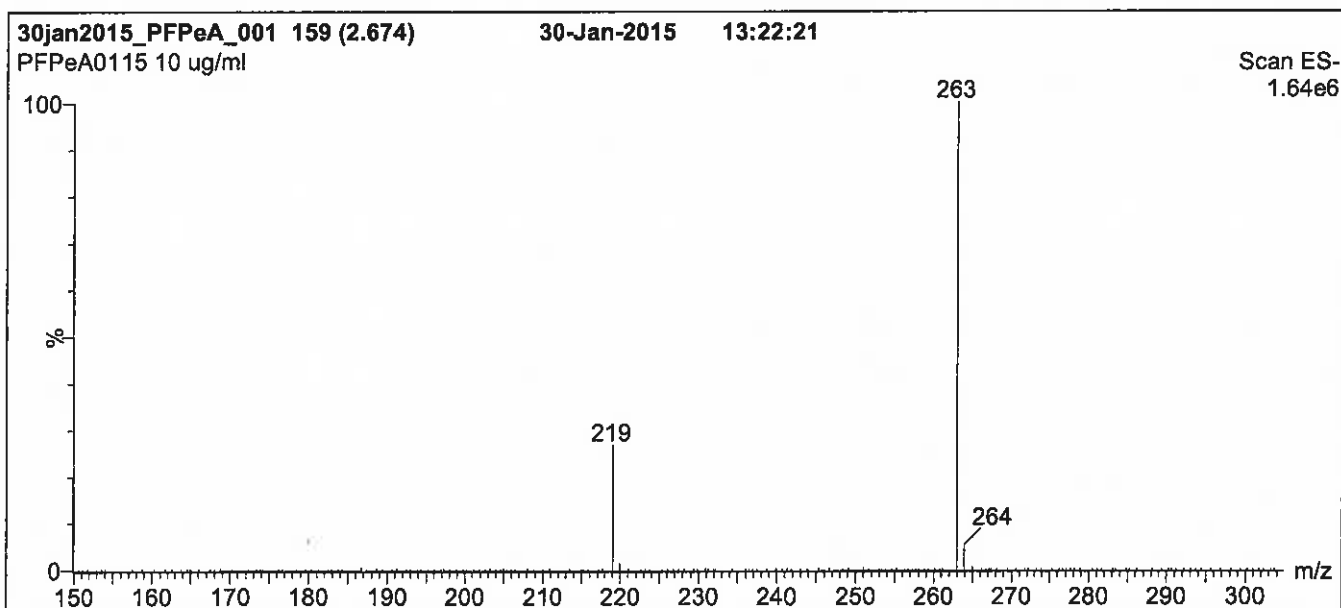
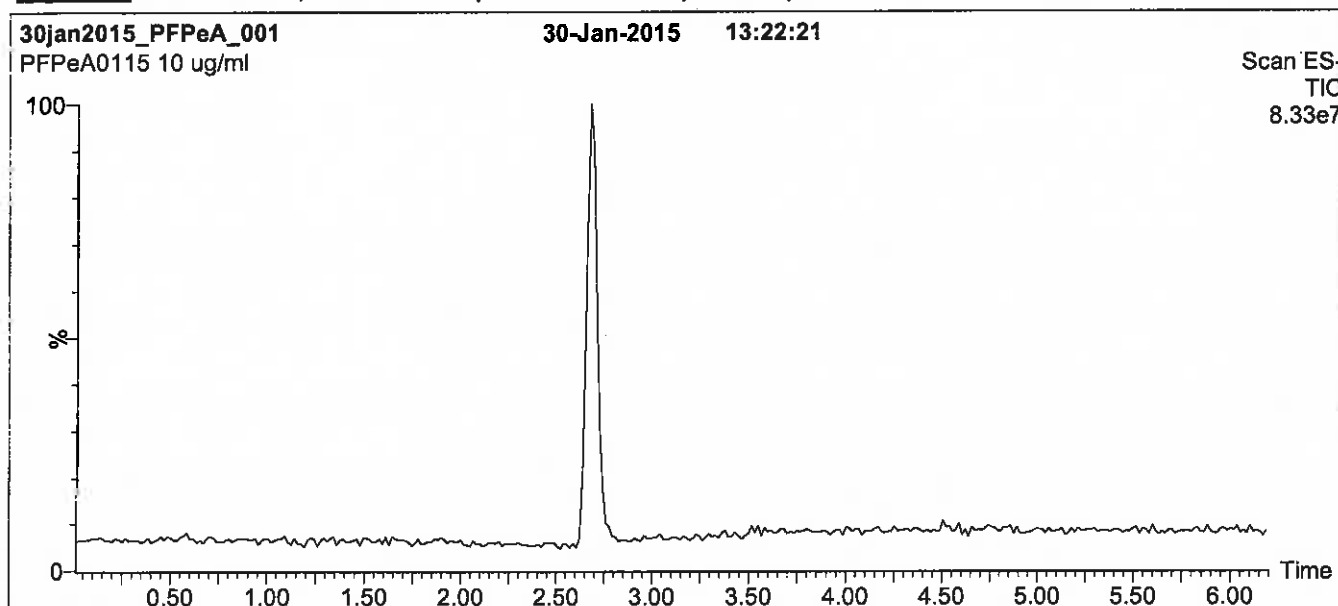
**QUALITY MANAGEMENT:**

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**\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\***

**Figure 1: PFPeA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

**LC:** Waters Acquity Ultra Performance LC  
**MS:** Micromass Quattro micro API MS

**Chromatographic Conditions**

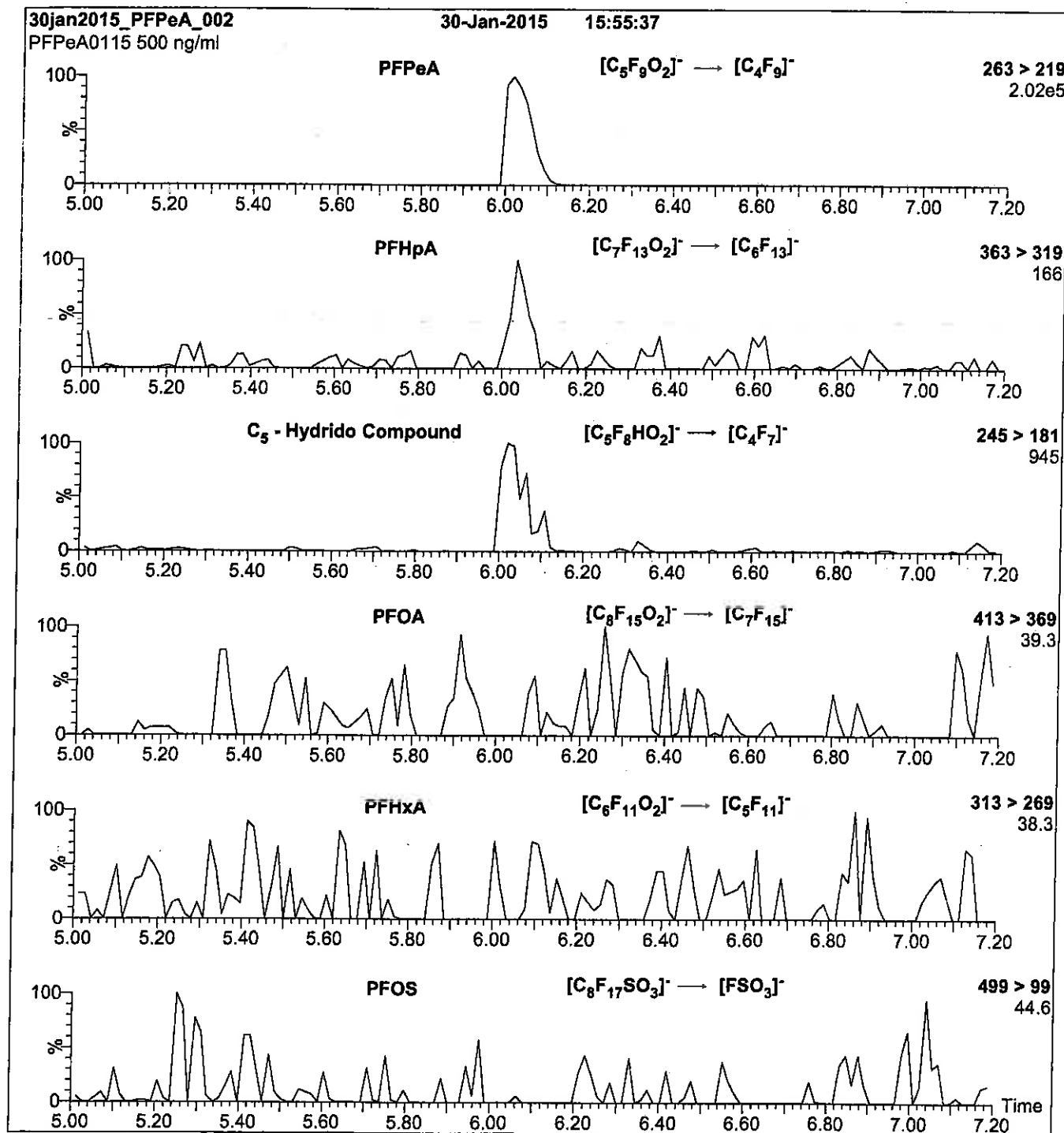
Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm  
Mobile phase: Gradient  
Start: 30% (80:20 MeOH:ACN) / 70% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7.5 min and hold for 1 min  
before returning to initial conditions in 0.5 min.  
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) = 60  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.35e-3  
Collision Energy (eV) = 9

Reagent

---

**LCPFTeDA\_00004**



609696

ID: LCPFTeDA\_00004

Exp: 12/09/20 Pripd: CBW

PF-n-tetradecanoic acid

R: 4/7/16 CBW



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

PFTeDA

**LOT NUMBER:**

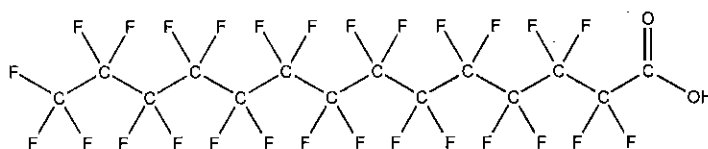
PFTeDA1215

**COMPOUND:**

Perfluoro-n-tetradecanoic acid

**STRUCTURE:****CAS #:**

376-06-7

**MOLECULAR FORMULA:** $C_{14}H_{27}O_2$ **MOLECULAR WEIGHT:**

714.11

**CONCENTRATION:** $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

**LAST TESTED:** (mm/dd/yyyy)

12/09/2015

**EXPIRY DATE:** (mm/dd/yyyy)

12/09/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDa ( $C_{12}H_{23}O_2$ ) and ~ 0.2% of PFPeDA ( $C_{15}H_{29}O_2$ ).

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:

  
B.G. Chittim

Date:

12/09/2015  
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
519-822-2436 • Fax: 519-822-2849 • [info@well-labs.com](mailto:info@well-labs.com)



**INTENDED USE:**

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

**HAZARDS:**

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

**SYNTHESIS / CHARACTERIZATION:**

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

**HOMOGENEITY:**

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

**UNCERTAINTY:**

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty,  $u_c(y)$ , of a value  $y$  and the uncertainty of the independent parameters  $x_1, x_2, \dots, x_n$  on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where  $x$  is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of  $\pm 5\%$  (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

**TRACEABILITY:**

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

**EXPIRY DATE / PERIOD OF VALIDITY:**

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**LIMITED WARRANTY:**

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

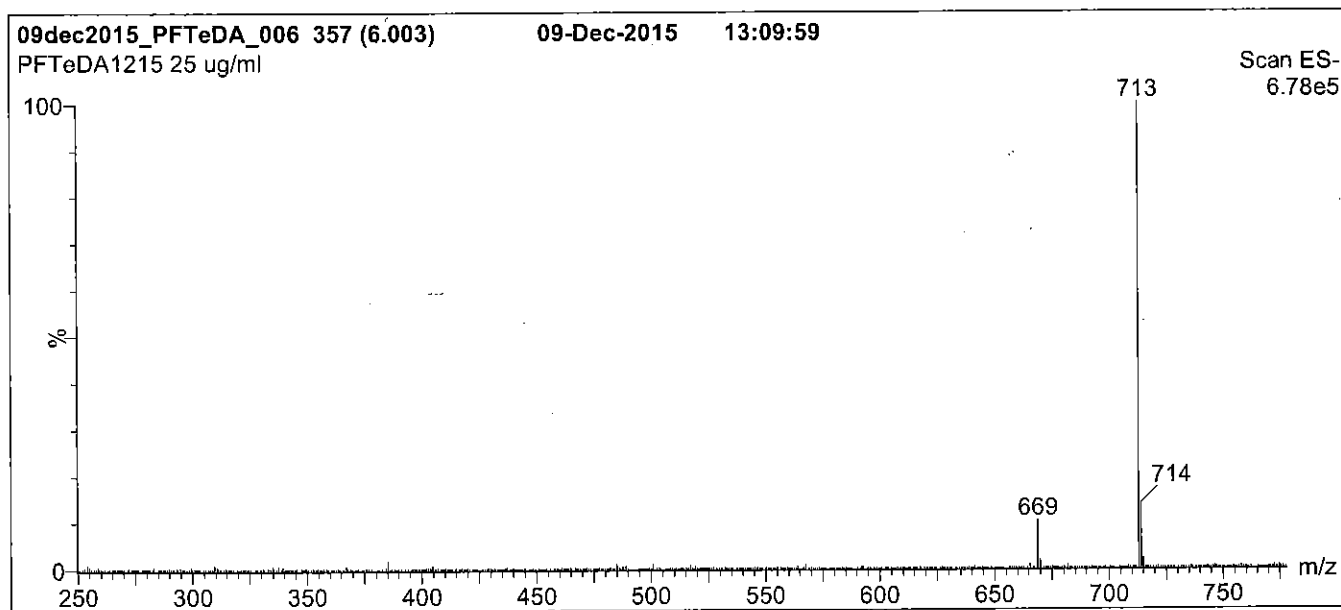
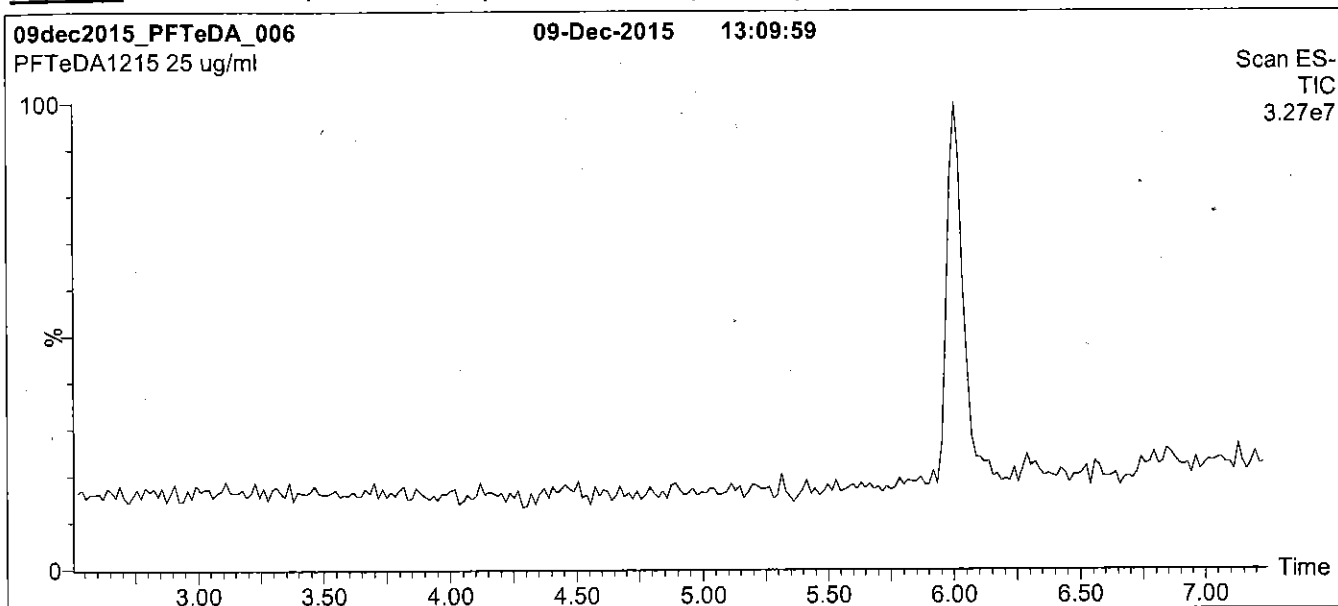
**QUALITY MANAGEMENT:**

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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**Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

**LC:** Waters Acquity Ultra Performance LC  
**MS:** Micromass Quattro micro API MS

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 65% (80:20 MeOH:ACN) / 35% 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

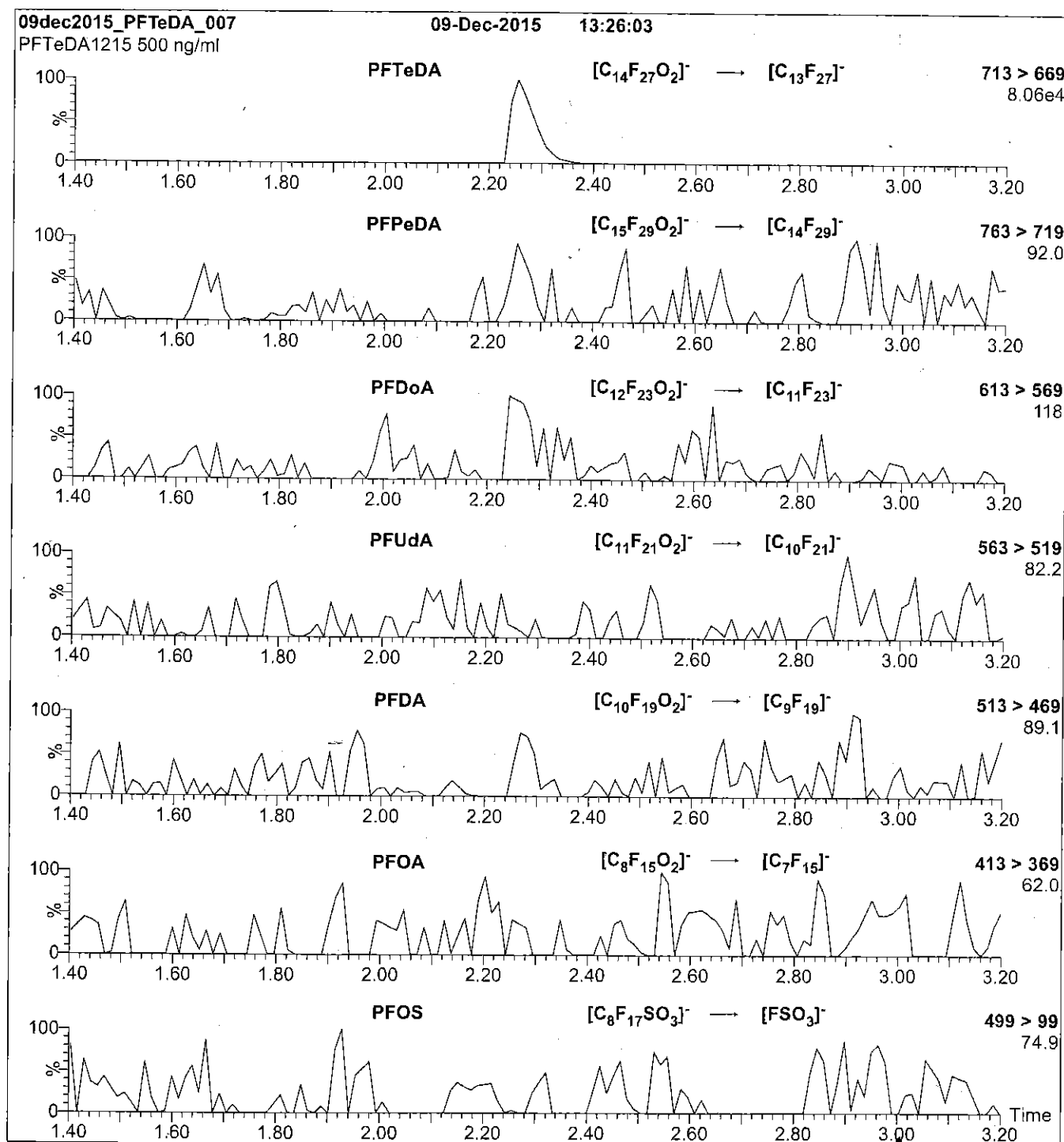
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 15.00  
Cone Gas Flow (l/hr) = 60  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20%  $H_2O$   
(both with 10 mM  $NH_4OAc$  buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.43e-3  
Collision Energy (eV) = 14

Reagent

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**LCPFT<sub>r</sub>DA\_00004**



R: 4/7/16 CBW

609697

ID: LCPFTDA\_00004

Exp: 12/10/18 Prod: CBW

PF-n-tridecanoic acid



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

PFTrDA

**LOT NUMBER:**

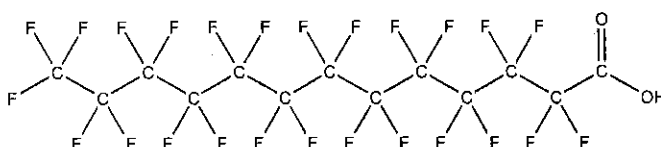
PFTrDA1213

**COMPOUND:**

Perfluoro-n-tridecanoic acid

**STRUCTURE:****CAS #:**

72629-94-8

**MOLECULAR FORMULA:** $C_{13}H_{25}O_2$ **MOLECULAR WEIGHT:**

664.11

**CONCENTRATION:** $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

**LAST TESTED:** (mm/dd/yyyy)

12/10/2013

**EXPIRY DATE:** (mm/dd/yyyy)

12/10/2018

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUDa ( $C_{11}H_{21}O_2$ ); ~ 0.4% of PFDa ( $C_{12}H_{23}O_2$ ), and ~ 0.1% of PFTeDA ( $C_{14}H_{27}O_2$ ).

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:

  
B.G. Chittim

Date:

03/25/2015  
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON 'N1G 3M5 CANADA  
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

**INTENDED USE:**

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**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:**

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**UNCERTAINTY:**

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where  $x$  is expressed as a relative standard uncertainty of the individual parameter.

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**EXPIRY DATE / PERIOD OF VALIDITY:**

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**LIMITED WARRANTY:**

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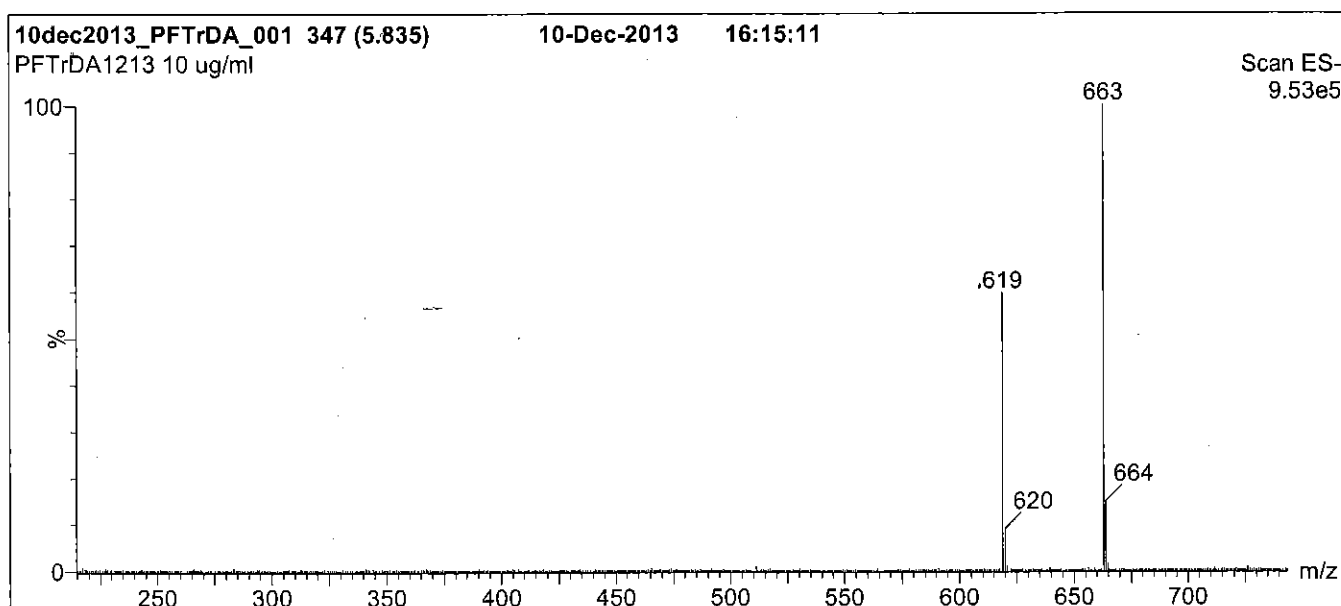
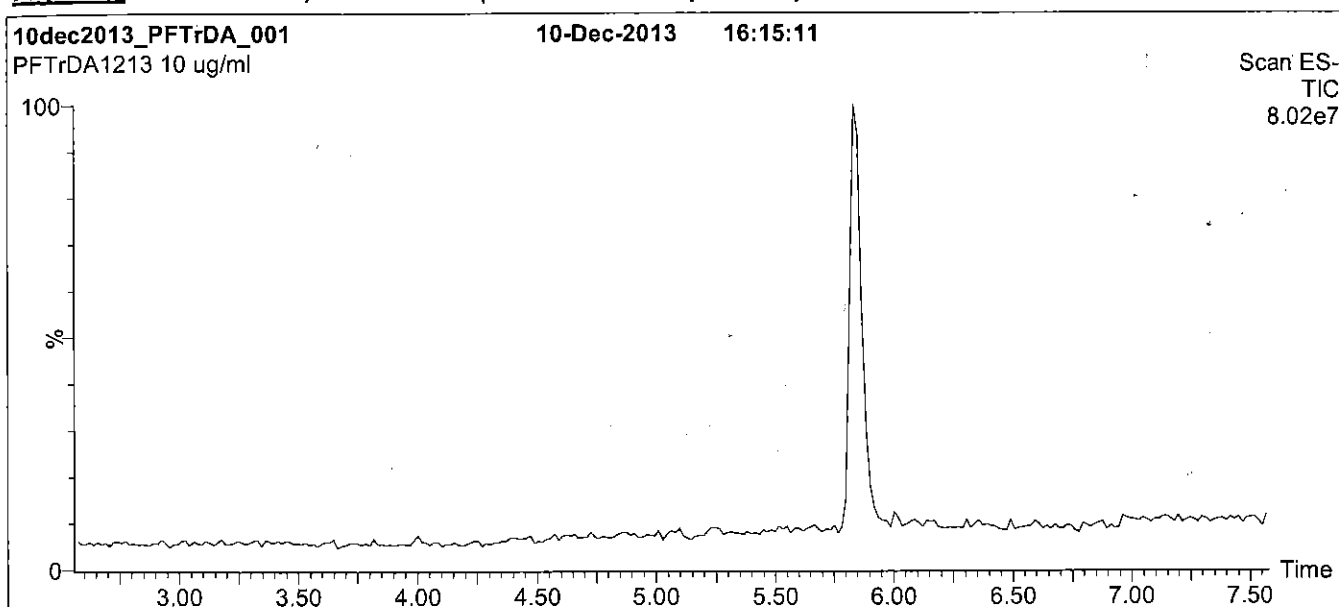
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**Figure 1: PFTrDA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

**LC:** Waters Acquity Ultra Performance LC  
**MS:** Micromass Quattro micro API MS

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

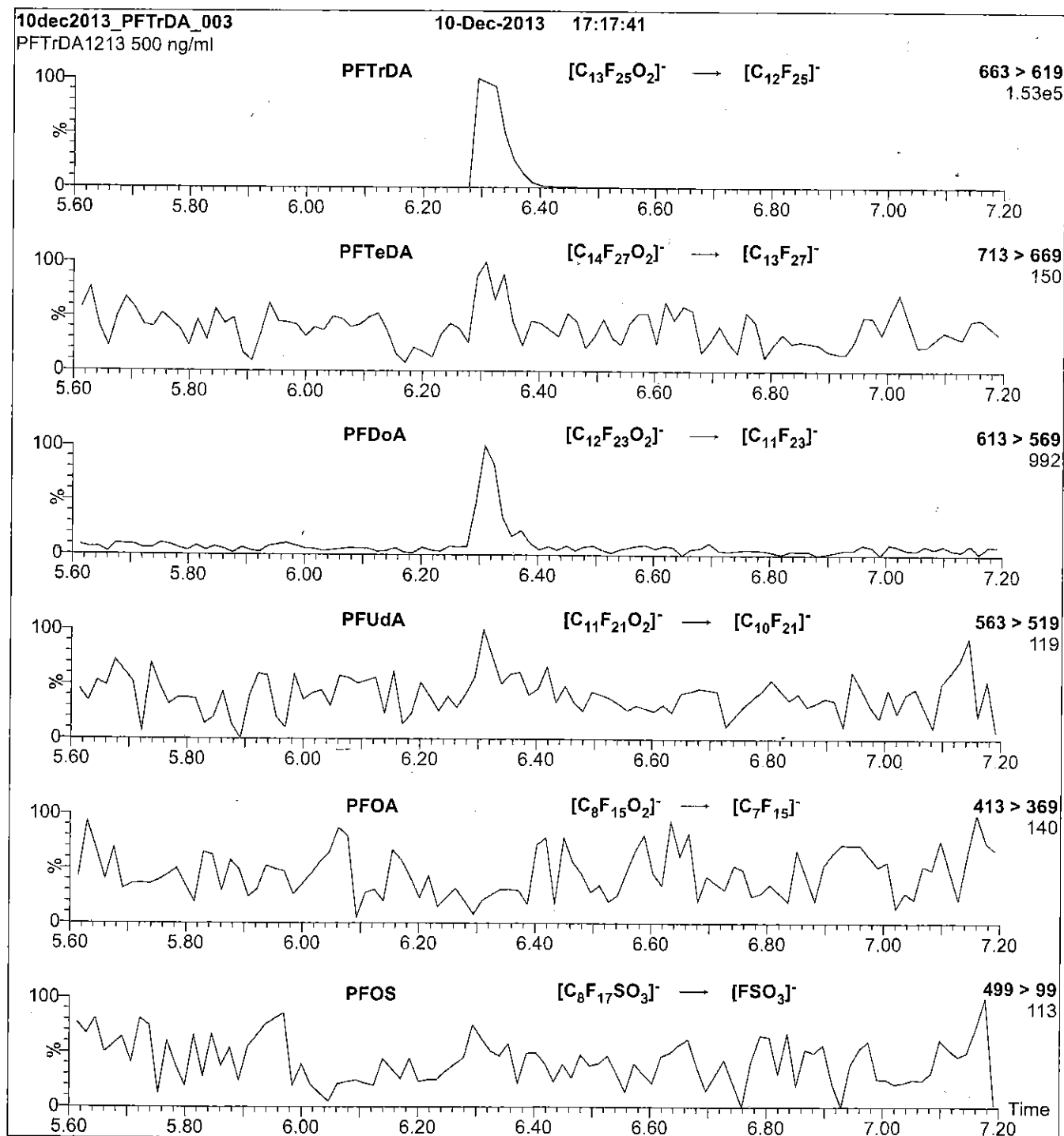
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (215 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 2.00  
Cone Voltage (V) = 22.00  
Cone Gas Flow (l/hr) = 60  
Desolvation Gas Flow (l/hr) = 650

**Figure 2: PFTrDA; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml PFTTrDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.28e-3  
Collision Energy (eV) = 15



Reagent

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**LCPFUdA\_00004**



# WELLINGTON LABORATORIES

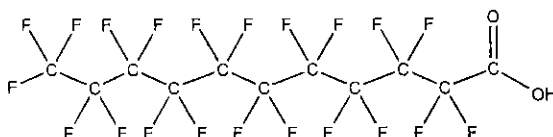
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** PFUdA  
**COMPOUND:** Perfluoro-n-undecanoic acid

**LOT NUMBER:** PFUdA0815

**STRUCTURE:**

**CAS #:** 2058-94-8



**MOLECULAR FORMULA:**  $C_{11}HF_{21}O_2$   
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$

**MOLECULAR WEIGHT:** 564.09  
**SOLVENT(S):** Methanol  
Water (<1%)

**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 08/19/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 08/19/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)  
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**

B.G. Chittim

**Date:** 08/21/2015  
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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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:**

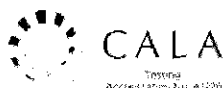
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**LIMITED WARRANTY:**

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

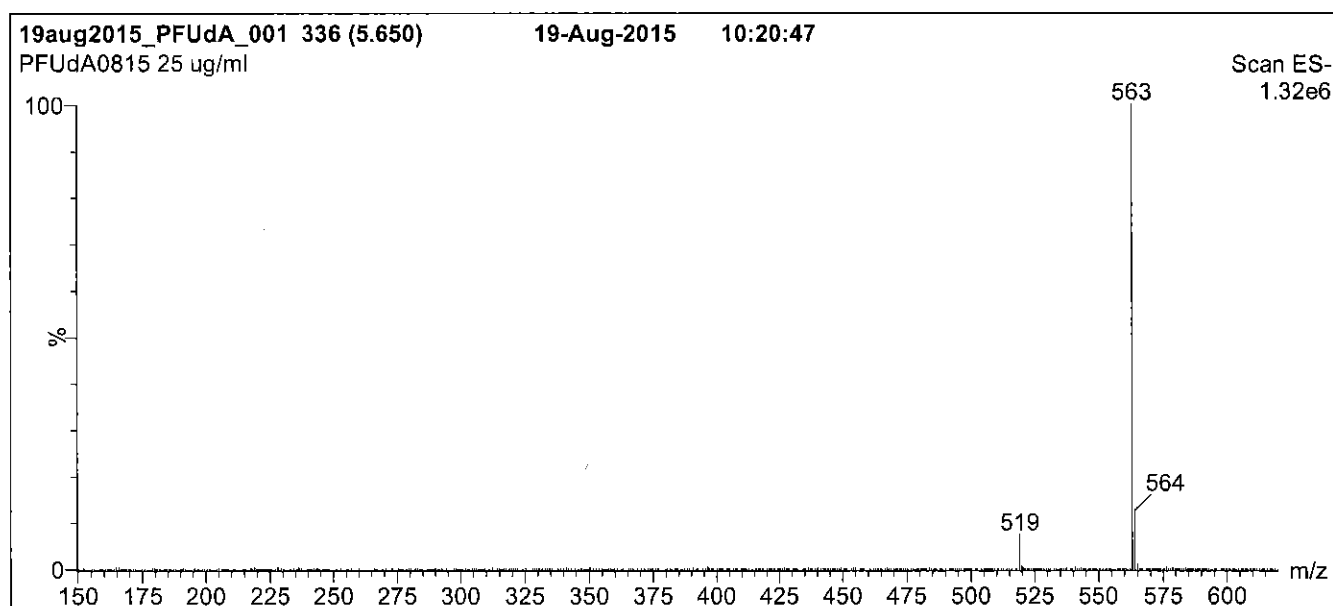
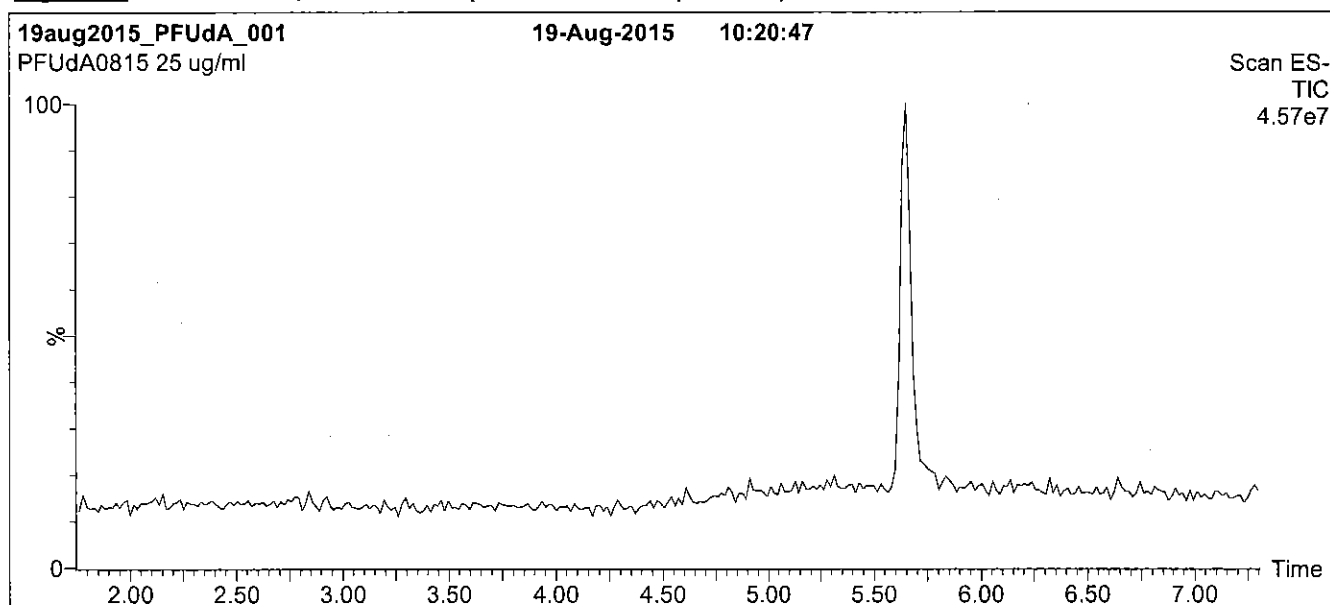
**QUALITY MANAGEMENT:**

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**Figure 1: PFUdA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

**LC:** Waters Acquity Ultra Performance LC  
**MS:** Micromass Quattro *micro* API MS

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

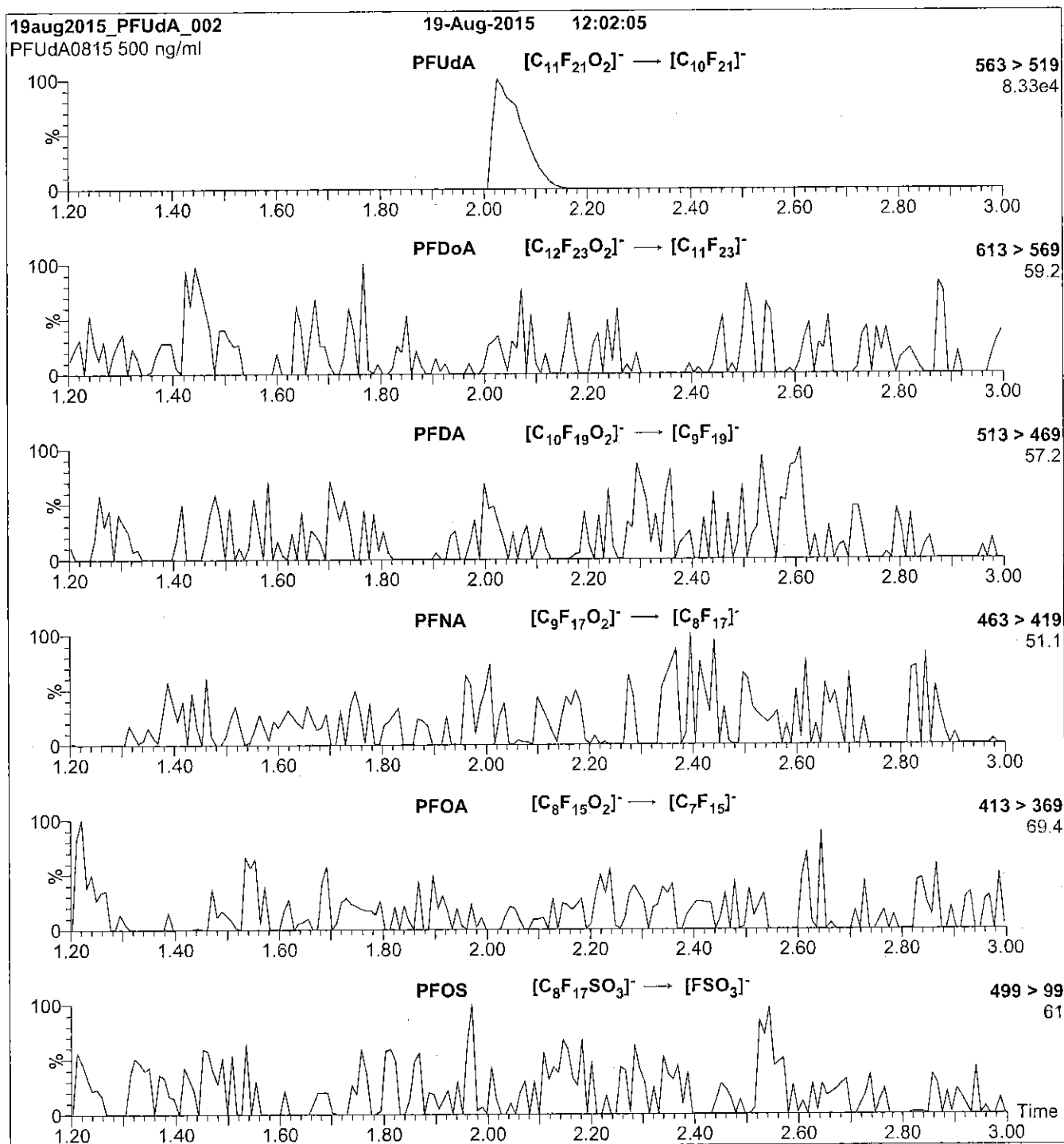
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (150 - 850 amu)

**Source:** Electrospray (negative)  
**Capillary Voltage (kV)** = 3.00  
**Cone Voltage (V)** = 15.00  
**Cone Gas Flow (l/hr)** = 65  
**Desolvation Gas Flow (l/hr)** = 750

**Figure 2: PFUdA; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml PFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.31e-3  
Collision Energy (eV) = 11

Reagent

---

**LCPFUdA\_00005**

Scanned  
10/14/16 R: SBC 9/13/16



730535  
ID: LCPFUdA\_00005  
Exp: 08/19/20 Prpd: SBC  
PF-n-undecanoic acid



730536  
ID: LCPFUdA\_00006  
Exp: 08/19/20 Prpd: SBC  
PF-n-undecanoic acid



**WELLINGTON**  
LABORATORIES

**CERTIFICATE OF ANALYSIS**  
**DOCUMENTATION**

**PRODUCT CODE:**

PFUdA

**LOT NUMBER:**

PFUdA0815

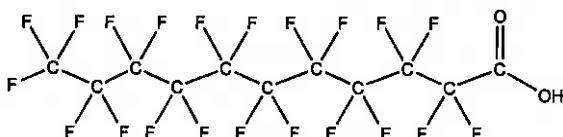
**COMPOUND:**

Perfluoro-n-undecanoic acid

**STRUCTURE:**

**CAS #:**

2058-94-8



**MOLECULAR FORMULA:**

$C_{11}HF_{21}O_2$

**MOLECULAR WEIGHT:**

564.09

**CONCENTRATION:**

$50 \pm 2.5 \mu\text{g/ml}$

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

08/19/2015

**EXPIRY DATE:** (mm/dd/yyyy)

08/19/2020

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**

B.G. Chittim

**Date:** 08/21/2015

(mm/dd/yyyy)

**Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA**  
519-822-2436 • Fax: 519-822-2849 • [info@well-labs.com](mailto: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:**

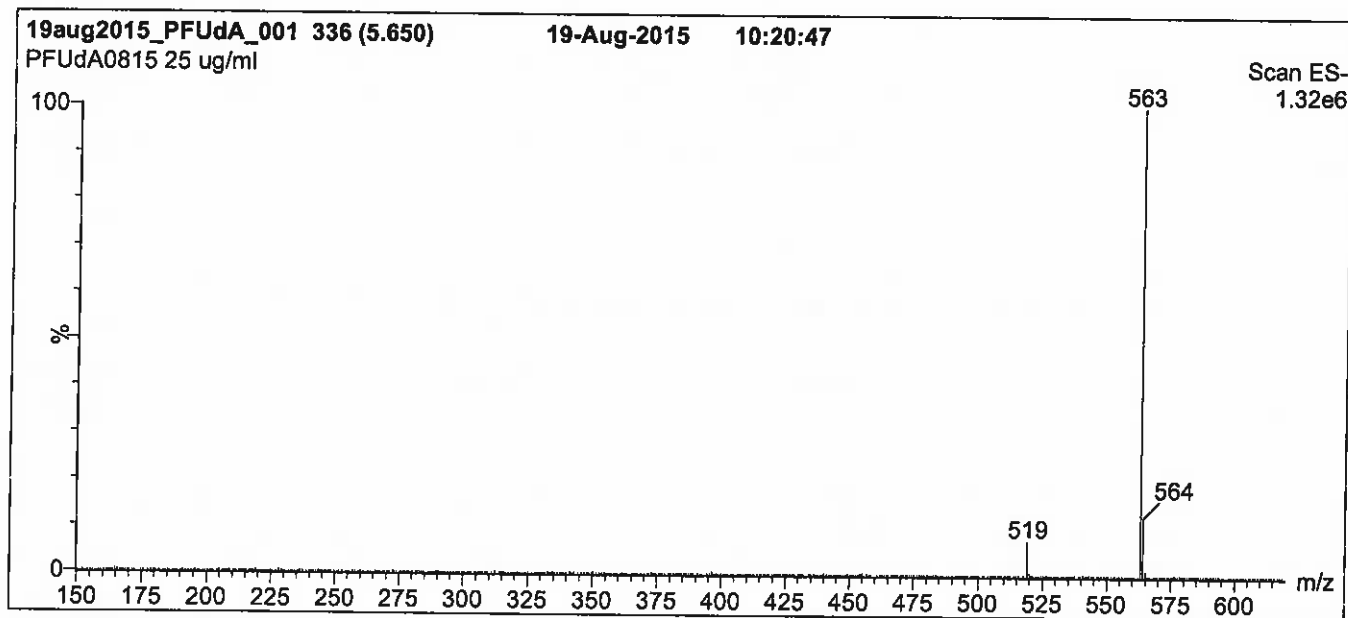
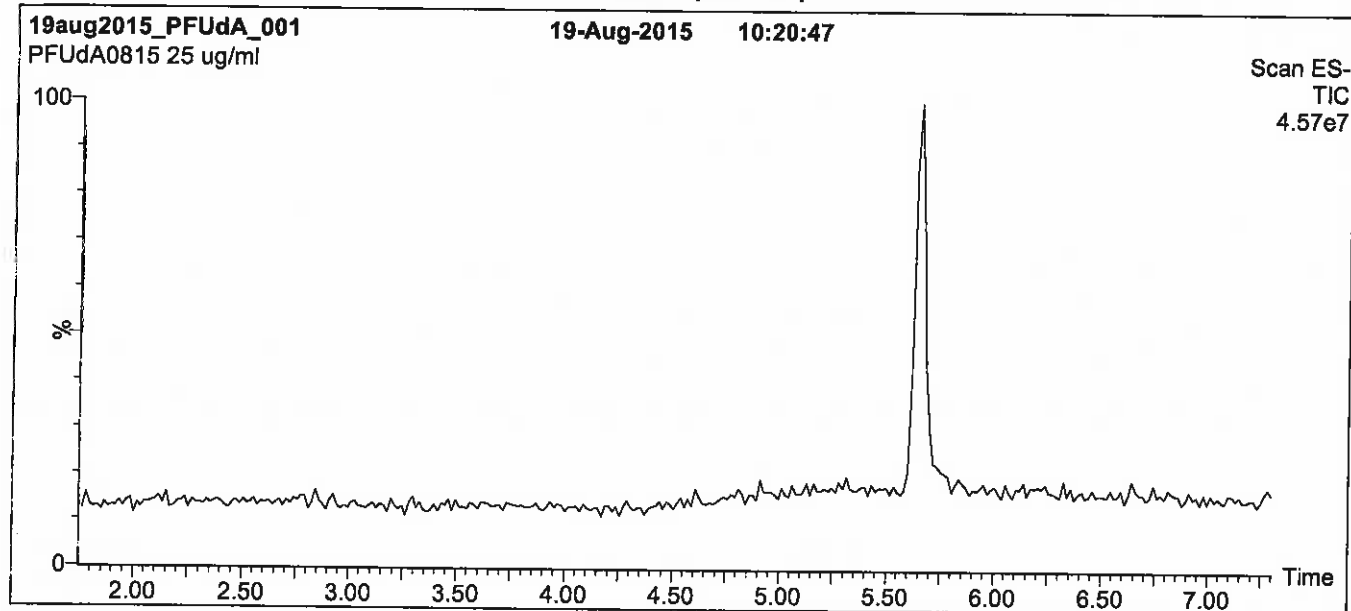
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



**\*\*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: PFUdA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

**LC:** Waters Acquity Ultra Performance LC  
**MS:** Micromass Quattro micro API MS

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

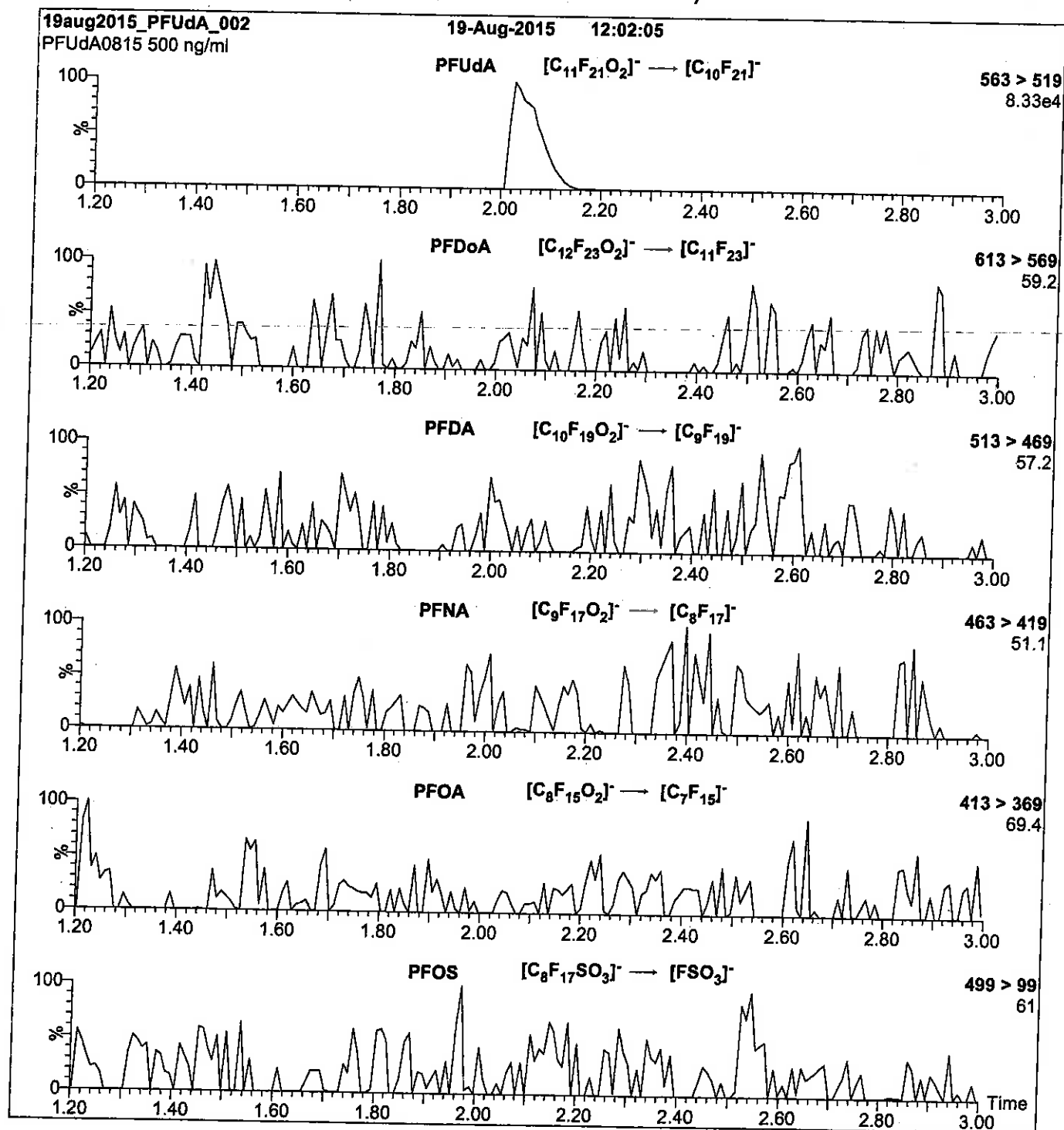
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
Cone Voltage (V) = 15.00  
Cone Gas Flow (l/hr) = 65  
Desolvation Gas Flow (l/hr) = 750

**Figure 2: PFUdA; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml PFUdA)

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) = 11

# Method PFC DOD

---

Perfluronated Hydrocarbons (LC/MS)  
by Method PFC\_DOD

FORM II  
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

SDG No.: \_\_\_\_\_

Matrix: Solid Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

| Client Sample ID         | Lab Sample ID         | PFHxS # | PFOA # | PFOS # |
|--------------------------|-----------------------|---------|--------|--------|
| DPT-16-35-SO-00-01       | 320-23783-1           | 86      | 93     | 73     |
| DPT-16-35-SO-19-20       | 320-23783-2           | 108     | 112    | 101    |
| DPT-16-19-SO-00-01       | 320-23783-5           | 85      | 96     | 54     |
| DPT-16-19-SO-00-01<br>DL | 320-23783-5 DL        | 106     | 136    | 90     |
| DPT-16-19-SO-17-18       | 320-23783-6           | 73      | 69     | 64     |
| DPT-16-32-SO-14-15       | 320-23783-7           | 70      | 96     | 62     |
| DPT-16-31-SO-14-15       | 320-23783-8           | 93      | 108    | 82     |
| DPT-16-30-SO-14-15       | 320-23783-9           | 90      | 101    | 63     |
| DPT-16-28-SO-14-15       | 320-23783-10          | 89      | 105    | 61     |
| DPT-16-15-SO-14-15       | 320-23783-11          | 89      | 101    | 66     |
|                          | MB<br>320-139627/1-A  | 104     | 108    | 94     |
|                          | LCS<br>320-139627/2-A | 120     | 119    | 112    |

|                    |                  |
|--------------------|------------------|
|                    | <u>QC LIMITS</u> |
| PFHxS = 1802 PFHxS | 25-150           |
| PFOA = 13C4 PFOA   | 25-150           |
| PFOS = 13C4 PFOS   | 25-150           |

# Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II  
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

| Client Sample ID         | Lab Sample ID          | PFHxS # | PFOA # | PFOS # |
|--------------------------|------------------------|---------|--------|--------|
| DPT-16-35-GW-21-25       | 320-23783-3            | 43      | 70     | 58     |
| DPT-16-35-GW-21-25<br>DL | 320-23783-3 DL         | 83      | 91     | 87     |
| DPT-16-35-GW-31-35       | 320-23783-4            | 30      | 52     | 76     |
| DPT-16-35-GW-31-35<br>DL | 320-23783-4 DL         | 73      | 78     | 91     |
| DPT-16-15-GW-18-22       | 320-23783-12           | 21 Q    | 23 Q   | 29     |
| DPT-16-15-GW-18-22<br>DL | 320-23783-12 DL        | 104     | 83     | 94     |
| DPT-16-15-GW-31-35       | 320-23783-13           | 66      | 22 Q   | 82     |
| DPT-16-15-GW-31-35<br>DL | 320-23783-13 DL        | 101     | 33     | 95     |
|                          | MB<br>320-139749/1-A   | 86      | 93     | 85     |
|                          | LCS<br>320-139749/2-A  | 105     | 108    | 104    |
|                          | LCSD<br>320-139749/3-A | 104     | 116    | 104    |

|                    |                  |
|--------------------|------------------|
|                    | <u>QC LIMITS</u> |
| PFHxS = 1802 PFHxS | 25-150           |
| PFOA = 13C4 PFOA   | 25-150           |
| PFOS = 13C4 PFOS   | 25-150           |

# Column to be used to flag recovery values

FORM II 537 (Modified)

FORM III  
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Solid Level: Low Lab File ID: 02DEC2016C\_002.d  
 Lab ID: LCS 320-139627/2-A Client ID: \_\_\_\_\_

| COMPOUND                            | SPIKE<br>ADDED<br>(ug/Kg) | LCS<br>CONCENTRATION<br>(ug/Kg) | LCS<br>%<br>REC | QC<br>LIMITS<br>REC | # |
|-------------------------------------|---------------------------|---------------------------------|-----------------|---------------------|---|
| Perfluorooctanoic acid (PFOA)       | 4.00                      | 4.25                            | 106             | 60-140              |   |
| Perfluorooctane Sulfonate (PFOS)    | 3.71                      | 3.66                            | 99              | 60-140              |   |
| 13C4 PFOA                           | 10.0                      | 11.9                            | 119             | 25-150              |   |
| 13C4 PFOS                           | 9.56                      | 10.7                            | 112             | 25-150              |   |
| Perfluorobutanesulfonic acid (PFBS) | 3.54                      | 4.03                            | 114             | 50-150              |   |
| 18O2 PFHxS                          | 9.46                      | 11.3                            | 120             | 25-150              |   |

# Column to be used to flag recovery and RPD values  
 FORM III 537 (Modified)

FORM III  
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 03DEC2016B\_002.d  
 Lab ID: LCS 320-139749/2-A Client ID: \_\_\_\_\_

| COMPOUND                            | SPIKE<br>ADDED<br>(ug/L) | LCS<br>CONCENTRATION<br>(ug/L) | LCS<br>%<br>REC | QC<br>LIMITS<br>REC | # |
|-------------------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorooctanoic acid (PFOA)       | 0.0400                   | 0.0296                         | 74              | 60-140              |   |
| Perfluorooctane Sulfonate (PFOS)    | 0.0371                   | 0.0261                         | 70              | 60-140              |   |
| 13C4 PFOA                           | 0.100                    | 0.108                          | 108             | 25-150              |   |
| 13C4 PFOS                           | 0.0956                   | 0.0995                         | 104             | 25-150              |   |
| Perfluorobutanesulfonic acid (PFBS) | 0.0354                   | 0.0289                         | 82              | 50-150              |   |
| 18O2 PFHxS                          | 0.0946                   | 0.0995                         | 105             | 25-150              |   |

# Column to be used to flag recovery and RPD values  
 FORM III 537 (Modified)

FORM III  
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 03DEC2016B\_003.d  
 Lab ID: LCSD 320-139749/3-A Client ID: \_\_\_\_\_

| COMPOUND                            | SPIKE<br>ADDED<br>(ug/L) | LCSD<br>CONCENTRATION<br>(ug/L) | LCSD<br>%<br>REC | %<br>RPD | QC LIMITS |        | # |
|-------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
|                                     |                          |                                 |                  |          | RPD       | REC    |   |
| Perfluorooctanoic acid (PFOA)       | 0.0400                   | 0.0314                          | 79               | 6        | 30        | 60-140 |   |
| Perfluorooctane Sulfonate (PFOS)    | 0.0371                   | 0.0289                          | 78               | 10       | 30        | 60-140 |   |
| 13C4 PFOA                           | 0.100                    | 0.116                           | 116              |          |           | 25-150 |   |
| 13C4 PFOS                           | 0.0956                   | 0.0990                          | 104              |          |           | 25-150 |   |
| Perfluorobutanesulfonic acid (PFBS) | 0.0354                   | 0.0325                          | 92               | 12       | 30        | 50-150 |   |
| 18O2 PFHxS                          | 0.0946                   | 0.0981                          | 104              |          |           | 25-150 |   |

# Column to be used to flag recovery and RPD values  
 FORM III 537 (Modified)



FORM IV  
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 02DEC2016C\_001.d Lab Sample ID: MB 320-139627/1-A  
 Matrix: Solid Date Extracted: 11/28/2016 11:03  
 Instrument ID: A8\_N Date Analyzed: 12/02/2016 14:59  
 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 320-139627/2-A | 02DEC2016C_<br>002.d | 12/02/2016 15:07 |
| DPT-16-35-SO-00-01    | 320-23783-1        | 02DEC2016C_<br>008.d | 12/02/2016 15:52 |
| DPT-16-35-SO-19-20    | 320-23783-2        | 02DEC2016C_<br>009.d | 12/02/2016 15:59 |
| DPT-16-19-SO-00-01    | 320-23783-5        | 02DEC2016C_<br>010.d | 12/02/2016 16:07 |
| DPT-16-19-SO-17-18    | 320-23783-6        | 02DEC2016C_<br>015.d | 12/02/2016 16:44 |
| DPT-16-32-SO-14-15    | 320-23783-7        | 02DEC2016C_<br>016.d | 12/02/2016 16:52 |
| DPT-16-31-SO-14-15    | 320-23783-8        | 02DEC2016C_<br>017.d | 12/02/2016 16:59 |
| DPT-16-30-SO-14-15    | 320-23783-9        | 02DEC2016C_<br>018.d | 12/02/2016 17:07 |
| DPT-16-28-SO-14-15    | 320-23783-10       | 02DEC2016C_<br>019.d | 12/02/2016 17:14 |
| DPT-16-15-SO-14-15    | 320-23783-11       | 02DEC2016C_<br>020.d | 12/02/2016 17:22 |
| DPT-16-19-SO-00-01 DL | 320-23783-5 DL     | 07DEC2016B_<br>009.d | 12/07/2016 17:33 |

FORM IV  
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 03DEC2016B\_001.d Lab Sample ID: MB 320-139749/1-A  
 Matrix: Water Date Extracted: 11/28/2016 16:55  
 Instrument ID: A8\_N Date Analyzed: 12/03/2016 16:03  
 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 320-139749/2-A  | 03DEC2016B_<br>002.d | 12/03/2016 16:11 |
|                       | LCSD 320-139749/3-A | 03DEC2016B_<br>003.d | 12/03/2016 16:18 |
| DPT-16-35-GW-21-25    | 320-23783-3         | 03DEC2016B_<br>004.d | 12/03/2016 16:26 |
| DPT-16-35-GW-31-35    | 320-23783-4         | 03DEC2016B_<br>005.d | 12/03/2016 16:33 |
| DPT-16-15-GW-18-22    | 320-23783-12        | 03DEC2016B_<br>006.d | 12/03/2016 16:41 |
| DPT-16-15-GW-31-35    | 320-23783-13        | 03DEC2016B_<br>007.d | 12/03/2016 16:48 |
| DPT-16-15-GW-18-22 DL | 320-23783-12 DL     | 07DEC2016B_<br>005.d | 12/07/2016 17:03 |
| DPT-16-35-GW-21-25 DL | 320-23783-3 DL      | 07DEC2016B_<br>006.d | 12/07/2016 17:10 |
| DPT-16-35-GW-31-35 DL | 320-23783-4 DL      | 07DEC2016B_<br>007.d | 12/07/2016 17:18 |
| DPT-16-15-GW-31-35 DL | 320-23783-13 DL     | 07DEC2016B_<br>008.d | 12/07/2016 17:25 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                             |                                               |
|---------------------------------------------|-----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>     | Job No.: <u>320-23783-1</u>                   |
| SDG No.: _____                              |                                               |
| Client Sample ID: <u>DPT-16-35-SO-00-01</u> | Lab Sample ID: <u>320-23783-1</u>             |
| Matrix: <u>Solid</u>                        | Lab File ID: <u>02DEC2016C_008.d</u>          |
| Analysis Method: <u>537 (Modified)</u>      | Date Collected: <u>11/22/2016 09:24</u>       |
| Extraction Method: <u>SHAKE</u>             | Date Extracted: <u>11/28/2016 11:03</u>       |
| Sample wt/vol: <u>5.01(g)</u>               | Date Analyzed: <u>12/02/2016 15:52</u>        |
| Con. Extract Vol.: <u>1.00 (mL)</u>         | Dilution Factor: <u>1</u>                     |
| Injection Volume: <u>2 (uL)</u>             | GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u> |
| % Moisture: <u>13.5</u>                     | GPC Cleanup: (Y/N) <u>N</u>                   |
| Analysis Batch No.: <u>140429</u>           | Units: <u>ug/Kg</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 12     | M | 0.58 | 0.12 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 28     |   | 0.58 | 0.15 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.21   | J | 0.46 | 0.12 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 93   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 73   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 86   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_008.d  
 Lims ID: 320-23783-A-1-A  
 Client ID: DPT-16-35-SO-00-01  
 Sample Type: Client  
 Inject. Date: 02-Dec-2016 15:52:08 ALS Bottle#: 8 Worklist Smp#: 12  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-1-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:25:25 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:22:28

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                   | 1.900 | 1.907     | -0.007    | 1.000     | 376131   | 0.9011          |                 |      |         |       |
| 298.90 > 99.00                   | 1.900 | 1.907     | -0.007    | 1.000     | 161964   |                 | 2.32(0.00-0.00) |      |         |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                   | 2.527 | 2.534     | -0.007    |           | 12236591 | 40.5            |                 | 85.5 | 1572000 |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                  | 2.886 | 2.886     | 0.0       |           | 10158301 | 46.3            |                 | 92.6 | 967819  |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 413.00 > 369.00                  | 2.886 | 2.894     | -0.008    | 1.000     | 10474209 | 50.5            |                 |      |         | M     |
| 413.00 > 169.00                  | 2.886 | 2.894     | -0.008    | 1.000     | 6995834  |                 | 1.50(0.90-1.10) |      | 59538   | M     |
|                                  |       |           |           |           |          |                 |                 |      | 279169  | M     |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 499.00 > 80.00                   | 3.268 | 3.267     | 0.001     | 1.000     | 23227692 | 119.5           |                 |      | 623949  |       |
| 499.00 > 99.00                   | 3.268 | 3.267     | 0.001     | 1.000     | 4818749  |                 | 4.82(0.90-1.10) |      | 175438  |       |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |         |       |
| 503.00 > 80.00                   | 3.268 | 3.267     | 0.001     |           | 8546516  | 34.9            |                 | 73.1 | 153218  |       |

**QC Flag Legend**

Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_008.d

Injection Date: 02-Dec-2016 15:52:08

Instrument ID: A8\_N

Lims ID: 320-23783-A-1-A

Lab Sample ID: 320-23783-1

Client ID: DPT-16-35-SO-00-01

Operator ID: A8-PC\A8

ALS Bottle#: 8

Worklist Smp#: 12

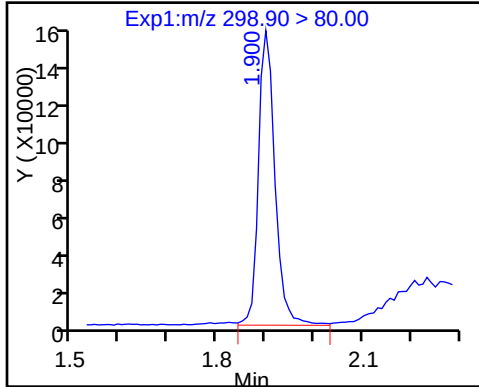
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

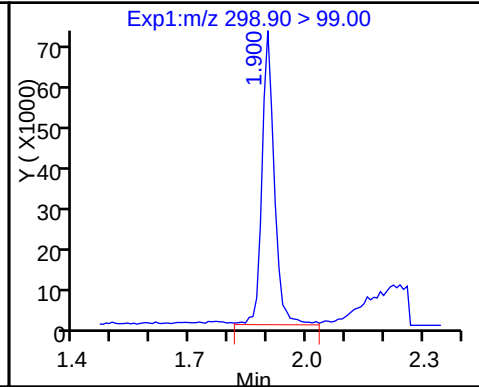
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

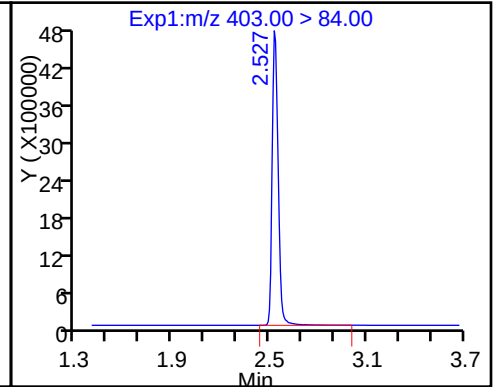
5 Perfluorobutanesulfonic acid



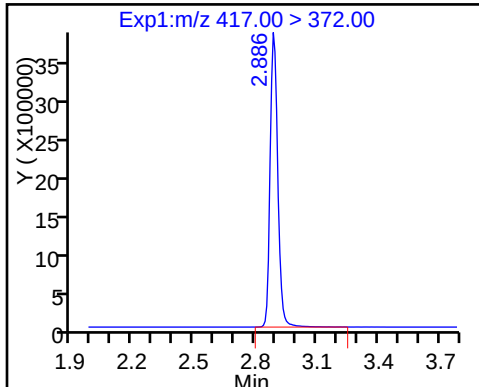
5 Perfluorobutanesulfonic acid



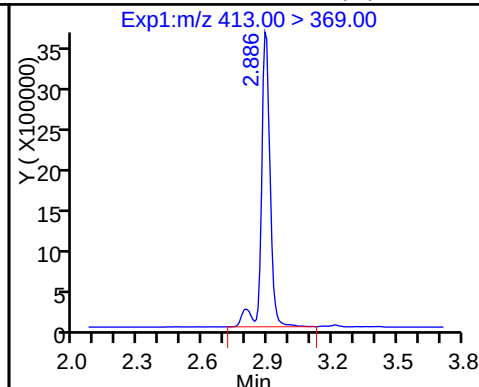
D 10 18O2 PFHxS



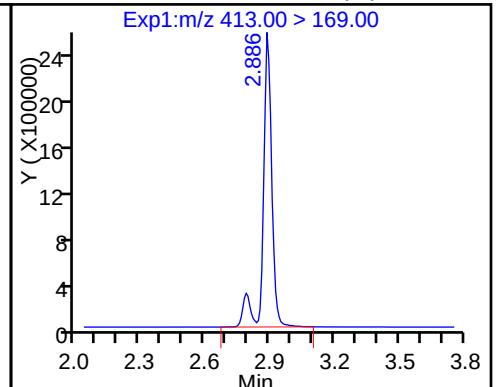
D 14 13C4 PFOA



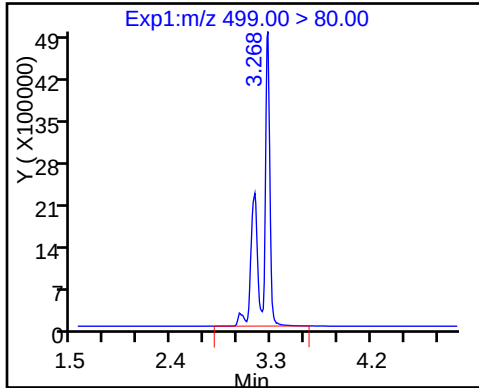
15 Perfluorooctanoic acid (M)



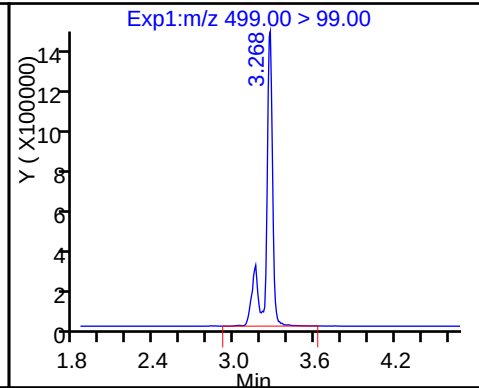
15 Perfluorooctanoic acid (M)



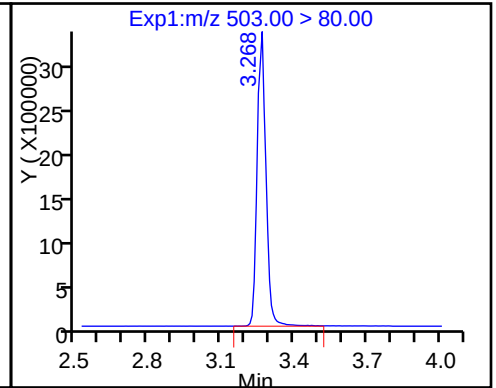
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



## TestAmerica Sacramento

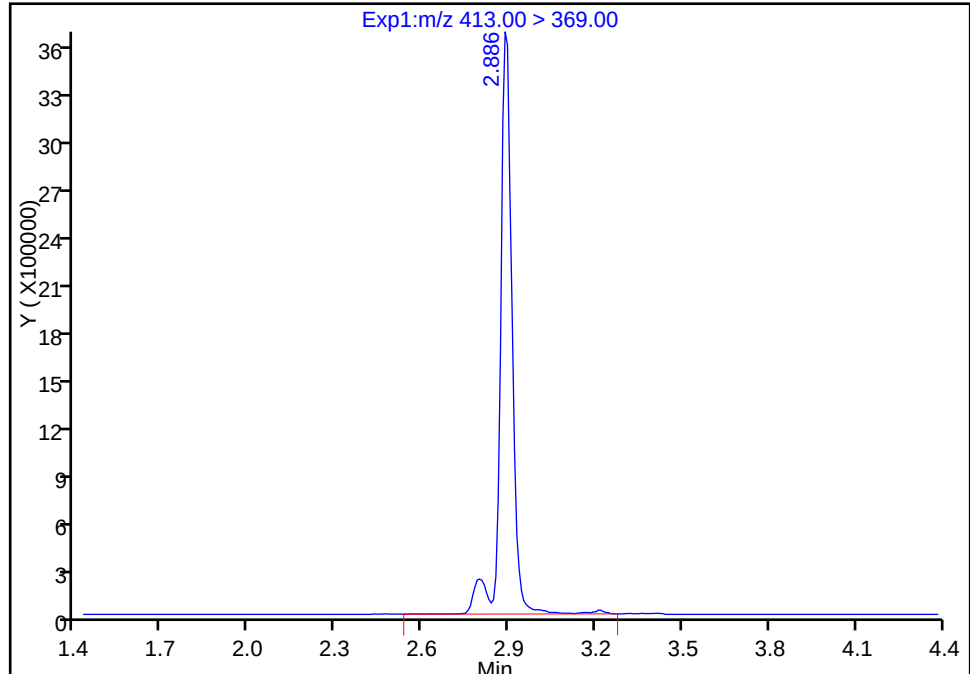
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_008.d  
Injection Date: 02-Dec-2016 15:52:08 Instrument ID: A8\_N  
Lims ID: 320-23783-A-1-A Lab Sample ID: 320-23783-1  
Client ID: DPT-16-35-SO-00-01  
Operator ID: A8-PC\A8 ALS Bottle#: 8 Worklist Smp#: 12  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

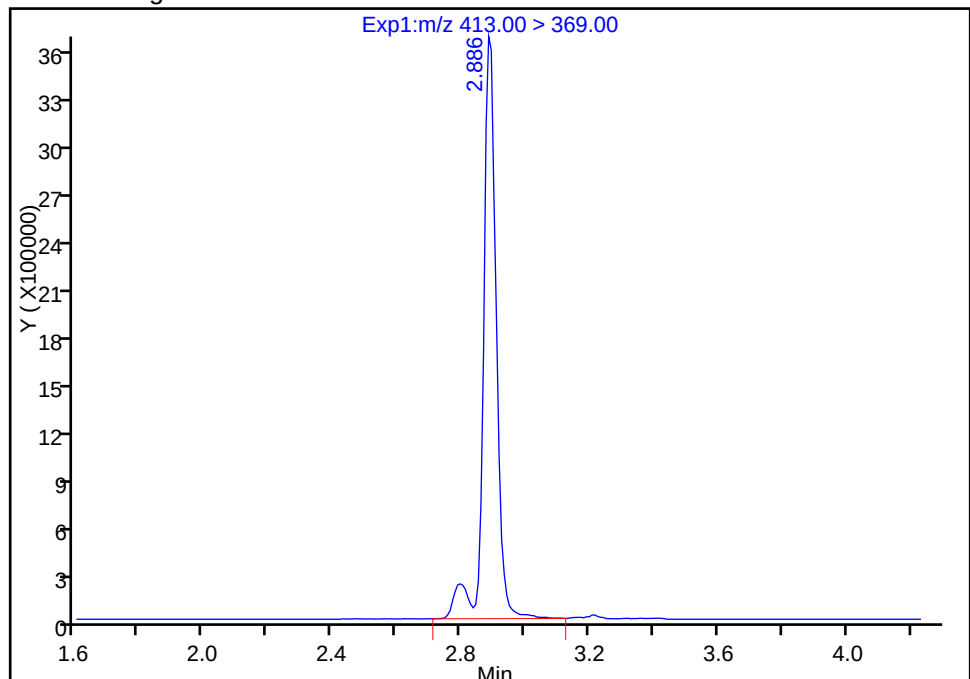
RT: 2.89  
Area: 10606743  
Amount: 51.168180  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.89  
Area: 10474209  
Amount: 50.528821  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:22:28

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

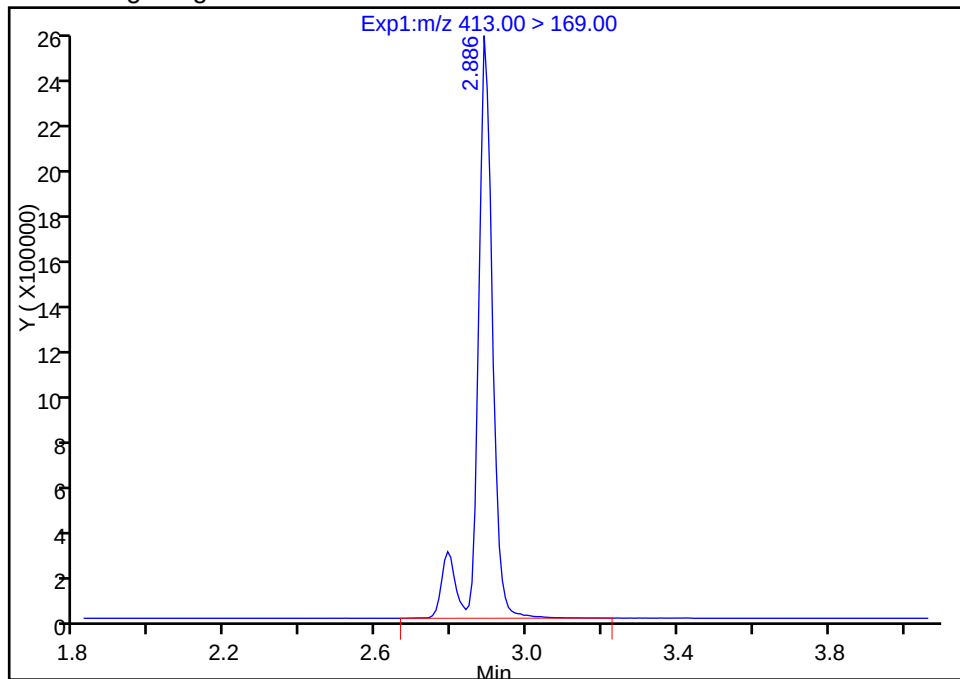
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_008.d  
Injection Date: 02-Dec-2016 15:52:08 Instrument ID: A8\_N  
Lims ID: 320-23783-A-1-A Lab Sample ID: 320-23783-1  
Client ID: DPT-16-35-SO-00-01  
Operator ID: A8-PCVA8 ALS Bottle#: 8 Worklist Smp#: 12  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 2

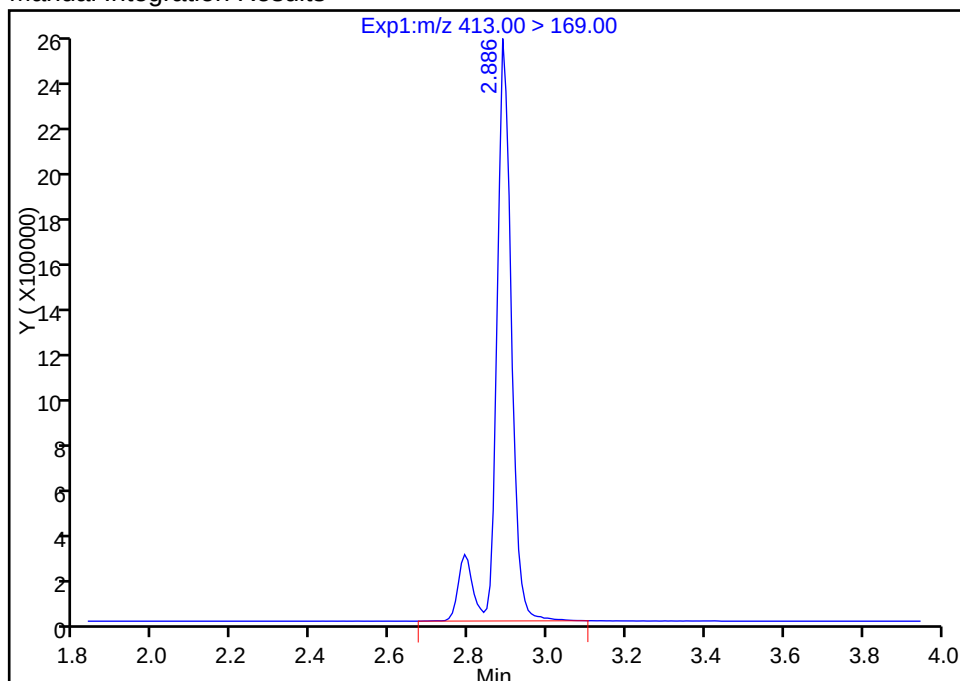
RT: 2.89  
Area: 7020249  
Amount: 51.168180  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.89  
Area: 6995834  
Amount: 50.528821  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:22:28

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                             |                                               |
|---------------------------------------------|-----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>     | Job No.: <u>320-23783-1</u>                   |
| SDG No.: _____                              |                                               |
| Client Sample ID: <u>DPT-16-35-SO-19-20</u> | Lab Sample ID: <u>320-23783-2</u>             |
| Matrix: <u>Solid</u>                        | Lab File ID: <u>02DEC2016C_009.d</u>          |
| Analysis Method: <u>537 (Modified)</u>      | Date Collected: <u>11/22/2016 09:36</u>       |
| Extraction Method: <u>SHAKE</u>             | Date Extracted: <u>11/28/2016 11:03</u>       |
| Sample wt/vol: <u>5.07(g)</u>               | Date Analyzed: <u>12/02/2016 15:59</u>        |
| Con. Extract Vol.: <u>1.00 (mL)</u>         | Dilution Factor: <u>1</u>                     |
| Injection Volume: <u>2 (uL)</u>             | GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u> |
| % Moisture: <u>17.2</u>                     | GPC Cleanup: (Y/N) <u>N</u>                   |
| Analysis Batch No.: <u>140429</u>           | Units: <u>ug/Kg</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.56   | J | 0.60 | 0.12 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 4.0    | M | 0.60 | 0.15 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.36   | U | 0.48 | 0.12 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 112  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 101  |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 108  |   | 25-150 |



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_009.d  
 Lims ID: 320-23783-A-2-A  
 Client ID: DPT-16-35-SO-19-20  
 Sample Type: Client  
 Inject. Date: 02-Dec-2016 15:59:39 ALS Bottle#: 9 Worklist Smp#: 13  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-2-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:25:25 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:23:39

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                   | 1.897 | 1.907     | -0.010    | 1.000     | 139624   | 0.2652          |                 |      |         |       |
| 298.90 > 99.00                   | 1.897 | 1.907     | -0.010    | 1.000     | 63391    |                 | 2.20(0.00-0.00) |      |         |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                   | 2.538 | 2.534     | 0.004     |           | 15434355 | 51.0            |                 | 108  | 736230  |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                  | 2.888 | 2.886     | 0.002     |           | 12258453 | 55.9            |                 | 112  | 1106294 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 413.00 > 369.00                  | 2.888 | 2.894     | -0.006    | 1.000     | 591556   | 2.36            |                 |      | 7002    |       |
| 413.00 > 169.00                  | 2.888 | 2.894     | -0.006    | 1.000     | 387219   |                 | 1.53(0.90-1.10) |      | 22352   |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 499.00 > 80.00                   | 3.270 | 3.267     | 0.003     | 1.000     | 4485030  | 16.7            |                 |      | 140297  | M     |
| 499.00 > 99.00                   | 3.270 | 3.267     | 0.003     | 1.000     | 1003003  |                 | 4.47(0.90-1.10) |      | 39467   | M     |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |         |       |
| 503.00 > 80.00                   | 3.262 | 3.267     | -0.005    |           | 11777207 | 48.1            |                 | 101  | 763283  |       |

**QC Flag Legend**

Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_009.d

Injection Date: 02-Dec-2016 15:59:39

Instrument ID: A8\_N

Lims ID: 320-23783-A-2-A

Lab Sample ID: 320-23783-2

Client ID: DPT-16-35-SO-19-20

Operator ID: A8-PC\A8

ALS Bottle#: 9

Worklist Smp#: 13

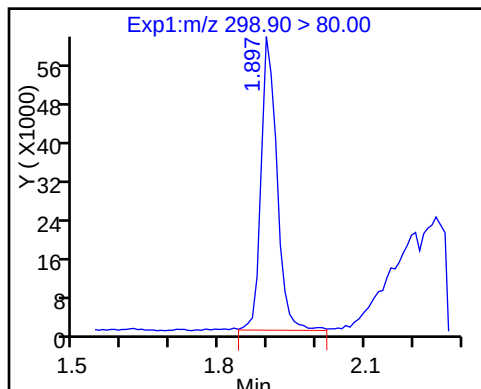
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

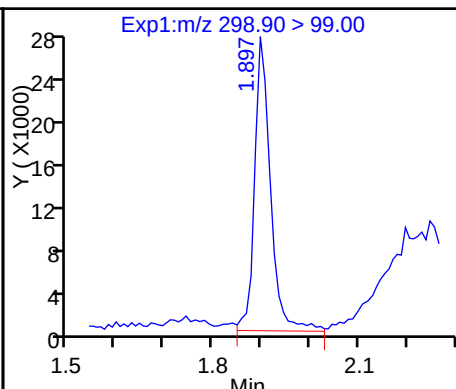
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

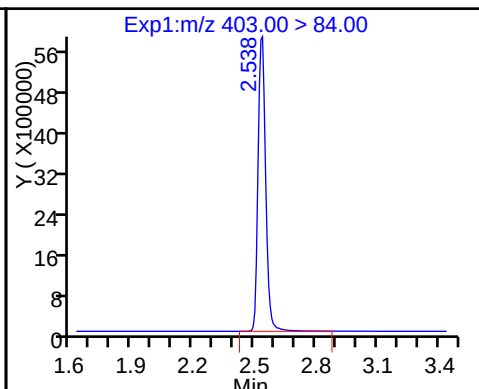
5 Perfluorobutanesulfonic acid



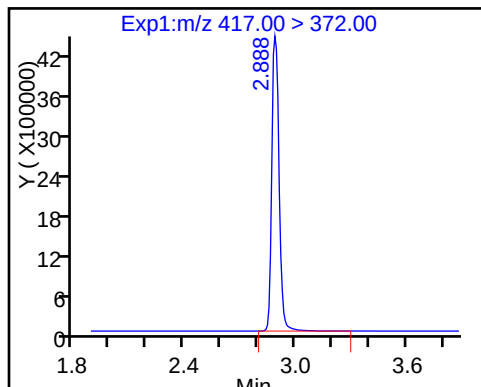
5 Perfluorobutanesulfonic acid



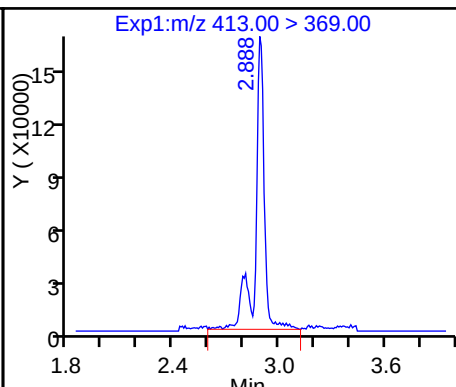
D 10 18O2 PFHxS



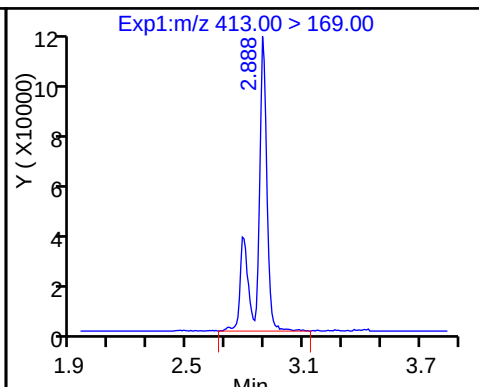
D 14 13C4 PFOA



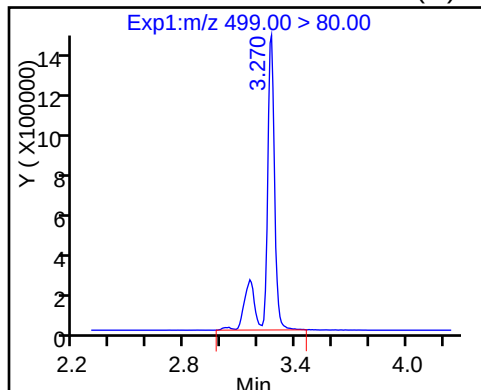
15 Perfluorooctanoic acid



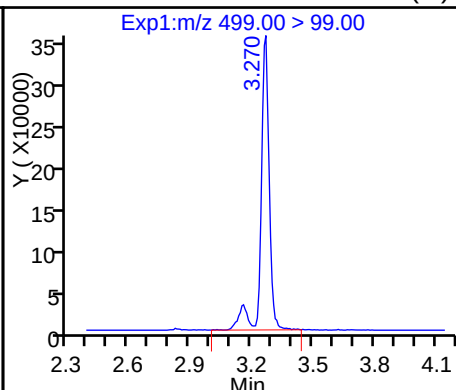
15 Perfluorooctanoic acid



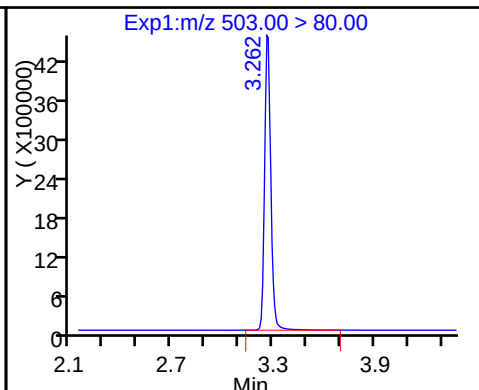
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



## TestAmerica Sacramento

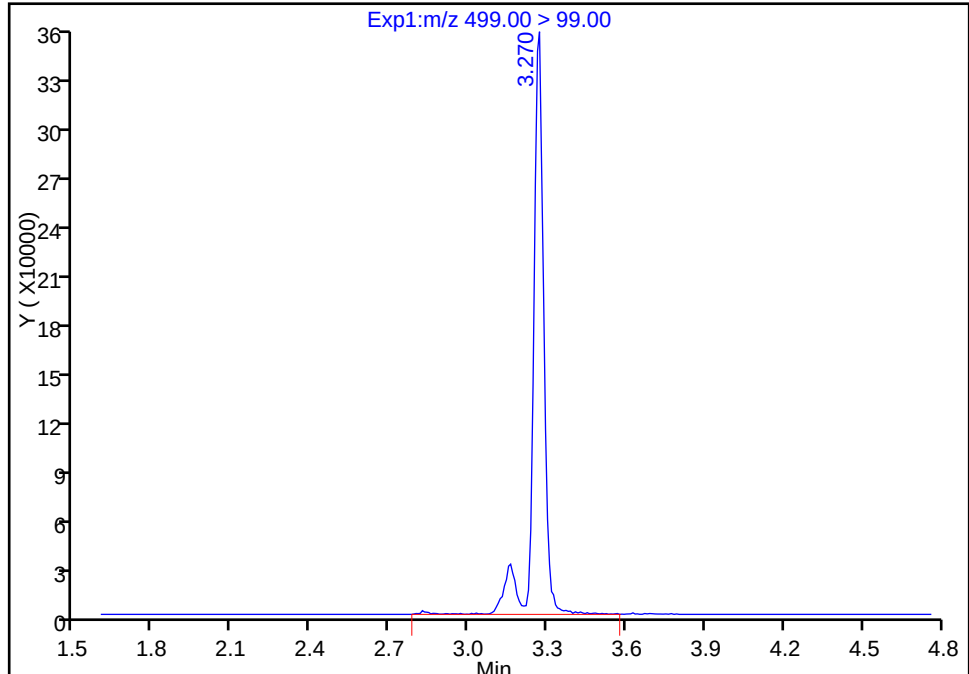
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_009.d |                |                 |                |    |
| Injection Date: | 02-Dec-2016 15:59:39                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-2-A                                                       | Lab Sample ID: | 320-23783-2     |                |    |
| Client ID:      | DPT-16-35-SO-19-20                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 9               | Worklist Smp#: | 13 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

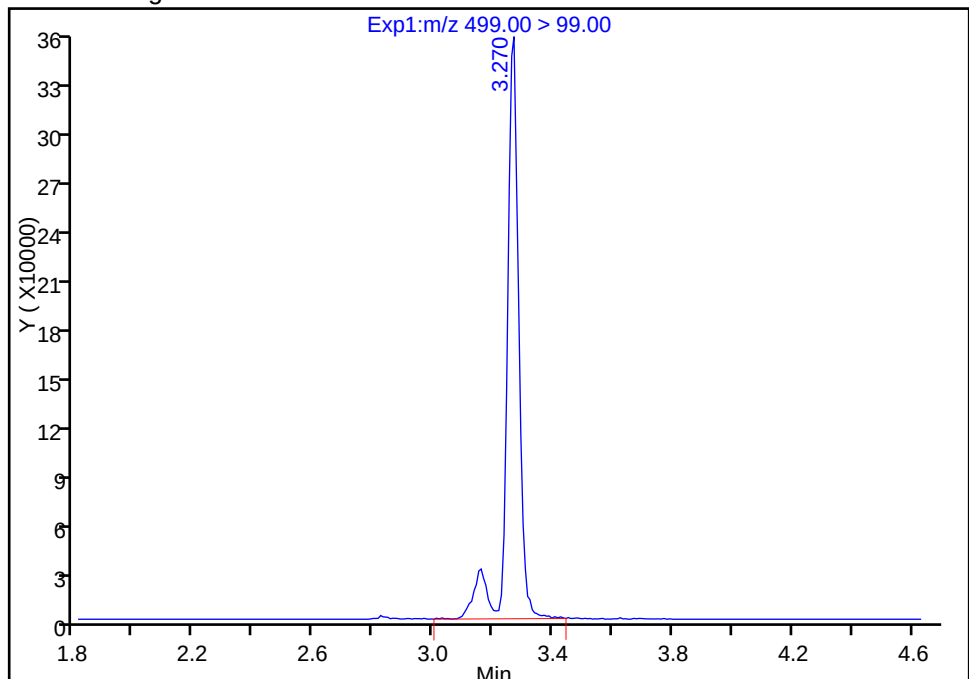
RT: 3.27  
Area: 1020091  
Amount: 16.875521  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.27  
Area: 1003003  
Amount: 16.741126  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:23:39

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

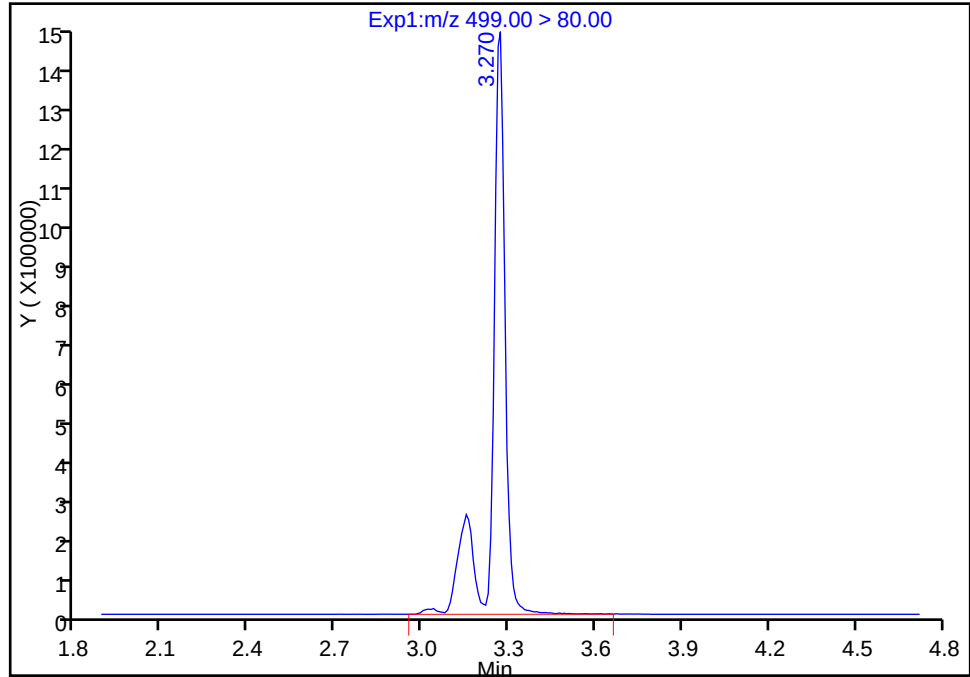
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_009.d  
Injection Date: 02-Dec-2016 15:59:39 Instrument ID: A8\_N  
Lims ID: 320-23783-A-2-A Lab Sample ID: 320-23783-2  
Client ID: DPT-16-35-SO-19-20  
Operator ID: A8-PCVA8 ALS Bottle#: 9 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

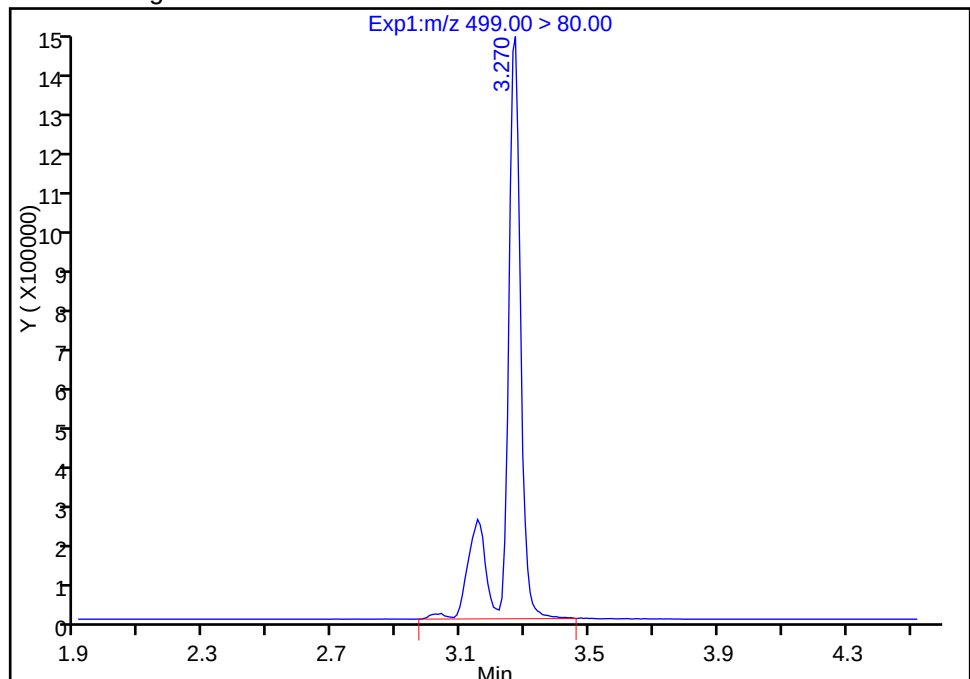
RT: 3.27  
Area: 4521035  
Amount: 16.875521  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.27  
Area: 4485030  
Amount: 16.741126  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:23:39

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                             |                                               |
|---------------------------------------------|-----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>     | Job No.: <u>320-23783-1</u>                   |
| SDG No.: _____                              |                                               |
| Client Sample ID: <u>DPT-16-35-GW-21-25</u> | Lab Sample ID: <u>320-23783-3</u>             |
| Matrix: <u>Water</u>                        | Lab File ID: <u>03DEC2016B_004.d</u>          |
| Analysis Method: <u>537 (Modified)</u>      | Date Collected: <u>11/22/2016 10:10</u>       |
| Extraction Method: <u>3535</u>              | Date Extracted: <u>11/28/2016 16:55</u>       |
| Sample wt/vol: <u>250.2 (mL)</u>            | Date Analyzed: <u>12/03/2016 16:26</u>        |
| Con. Extract Vol.: <u>0.5 (mL)</u>          | Dilution Factor: <u>1</u>                     |
| Injection Volume: <u>2 (uL)</u>             | GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u> |
| % Moisture: _____                           | GPC Cleanup: (Y/N) <u>N</u>                   |
| Analysis Batch No.: <u>140564</u>           | Units: <u>ug/L</u>                            |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q   | RL     | MDL     |
|-----------|-------------------------------------|--------|-----|--------|---------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.60   | E M | 0.0025 | 0.00075 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 1.9    | E M | 0.0040 | 0.0013  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.28   |     | 0.0025 | 0.00092 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 70   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 58   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 43   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_004.d  
 Lims ID: 320-23783-A-3-A  
 Client ID: DPT-16-35-GW-21-25  
 Sample Type: Client  
 Inject. Date: 03-Dec-2016 16:26:12 ALS Bottle#: 35 Worklist Smp#: 25  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-3-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:45:18 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 10:31:29

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response  | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|-----------|-----------|-----------|-----------|-----------------|-----------------|------|--------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |           |                 |                 |      |        |       |
| 298.90 > 80.00                   | 1.878 | 1.900     | -0.022    | 1.000     | 29884773  | 138.9           |                 |      |        |       |
| 298.90 > 99.00                   | 1.878 | 1.900     | -0.022    | 1.000     | 13466947  |                 | 2.22(0.00-0.00) |      |        |       |
| D 10 18O2 PFHxS                  |       |           |           |           |           |                 |                 |      |        |       |
| 403.00 > 84.00                   | 2.496 | 2.531     | -0.035    |           | 6375608   | 20.4            |                 | 43.2 | 910398 |       |
| D 14 13C4 PFOA                   |       |           |           |           |           |                 |                 |      |        |       |
| 417.00 > 372.00                  | 2.848 | 2.880     | -0.032    |           | 7643048   | 34.9            |                 | 69.7 | 414375 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |           |                 |                 |      |        |       |
| 413.00 > 369.00                  | 2.848 | 2.887     | -0.039    | 1.000     | 49480944  | 302.0           |                 |      | 255484 | EM    |
| 413.00 > 169.00                  | 2.848 | 2.887     | -0.039    | 1.000     | 37577807  |                 | 1.32(0.90-1.10) |      | 0.0    | M     |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |           |                 |                 |      |        |       |
| 499.00 > 80.00                   | 3.225 | 3.258     | -0.033    | 1.000     | 142928519 | 926.0           |                 |      | 0.0    | EM    |
| 499.00 > 99.00                   | 3.225 | 3.258     | -0.033    | 1.000     | 38827184  |                 | 3.68(0.90-1.10) |      | 0.0    | M     |
| D 17 13C4 PFOS                   |       |           |           |           |           |                 |                 |      |        |       |
| 503.00 > 80.00                   | 3.225 | 3.259     | -0.034    |           | 6798776   | 27.6            |                 | 57.8 | 26873  |       |

**QC Flag Legend**

## Processing Flags

E - Exceeded Maximum Amount

## Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_004.d

Injection Date: 03-Dec-2016 16:26:12

Instrument ID: A8\_N

Lims ID: 320-23783-A-3-A

Lab Sample ID: 320-23783-3

Client ID: DPT-16-35-GW-21-25

Operator ID: A8-PC\A8

ALS Bottle#: 35

Worklist Smp#: 25

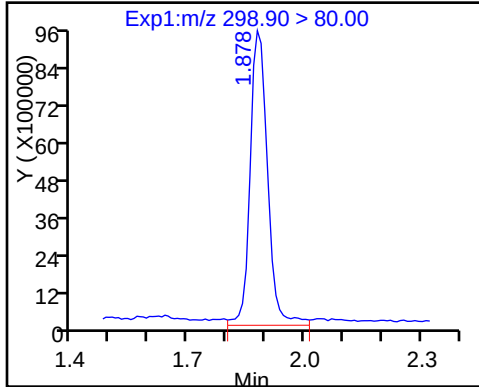
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

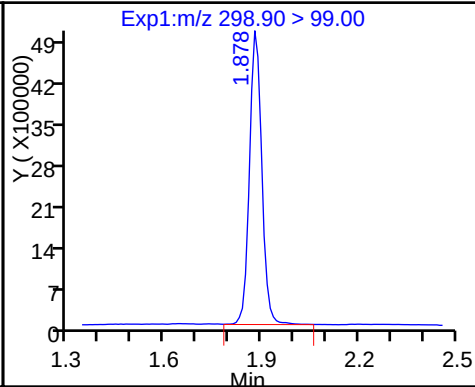
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

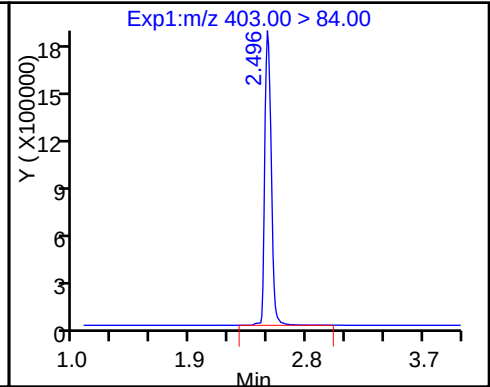
5 Perfluorobutanesulfonic acid



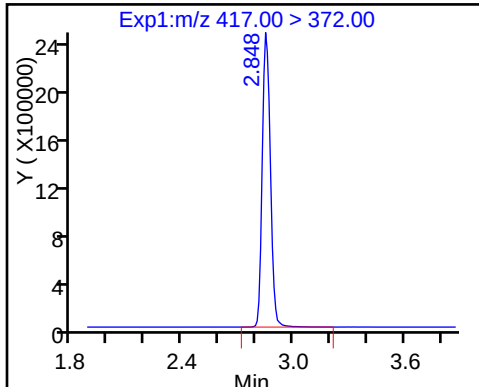
5 Perfluorobutanesulfonic acid



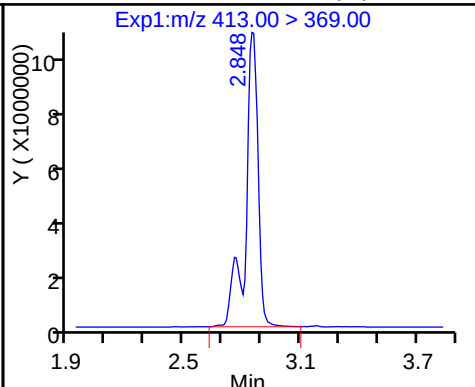
D 10 18O2 PFHxS



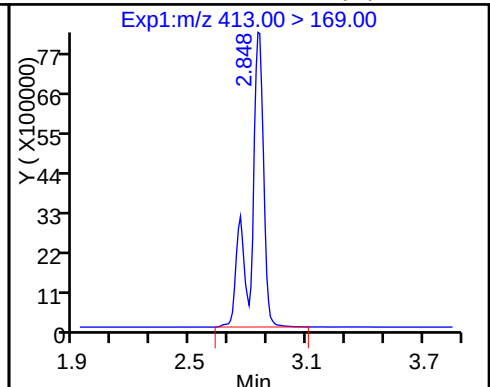
D 14 13C4 PFOA



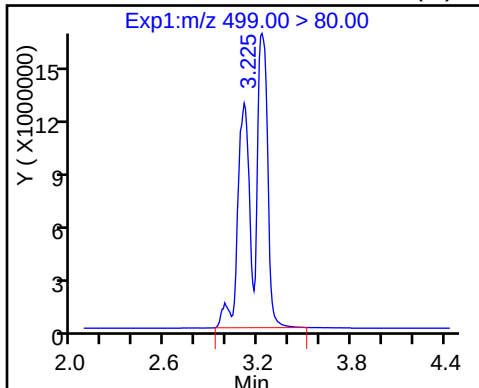
15 Perfluorooctanoic acid (M)



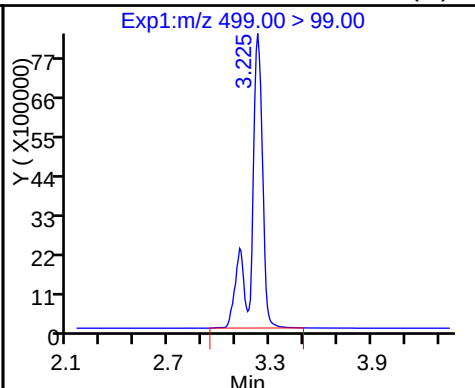
15 Perfluorooctanoic acid (M)



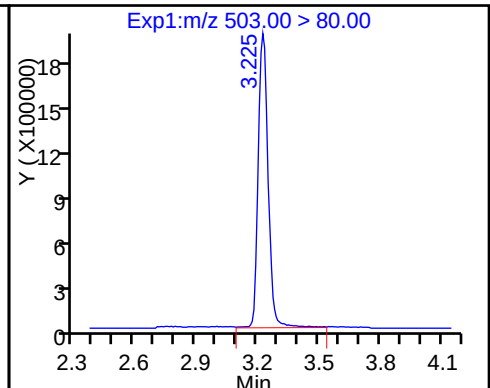
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



## TestAmerica Sacramento

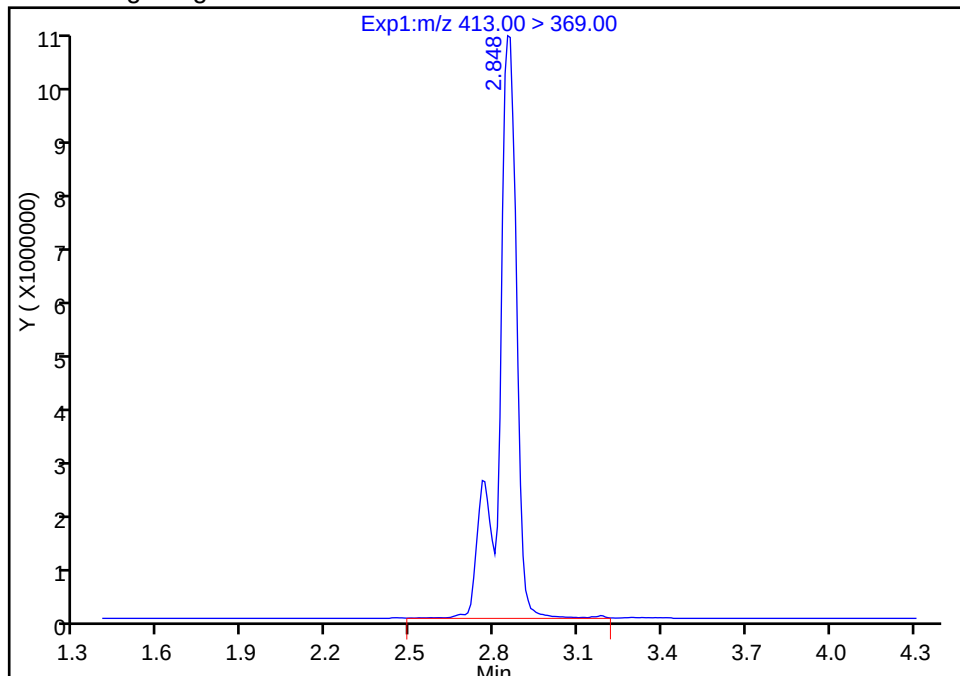
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016B_004.d |                |                 |                |    |
| Injection Date: | 03-Dec-2016 16:26:12                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-3-A                                                       | Lab Sample ID: | 320-23783-3     |                |    |
| Client ID:      | DPT-16-35-GW-21-25                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 35              | Worklist Smp#: | 25 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

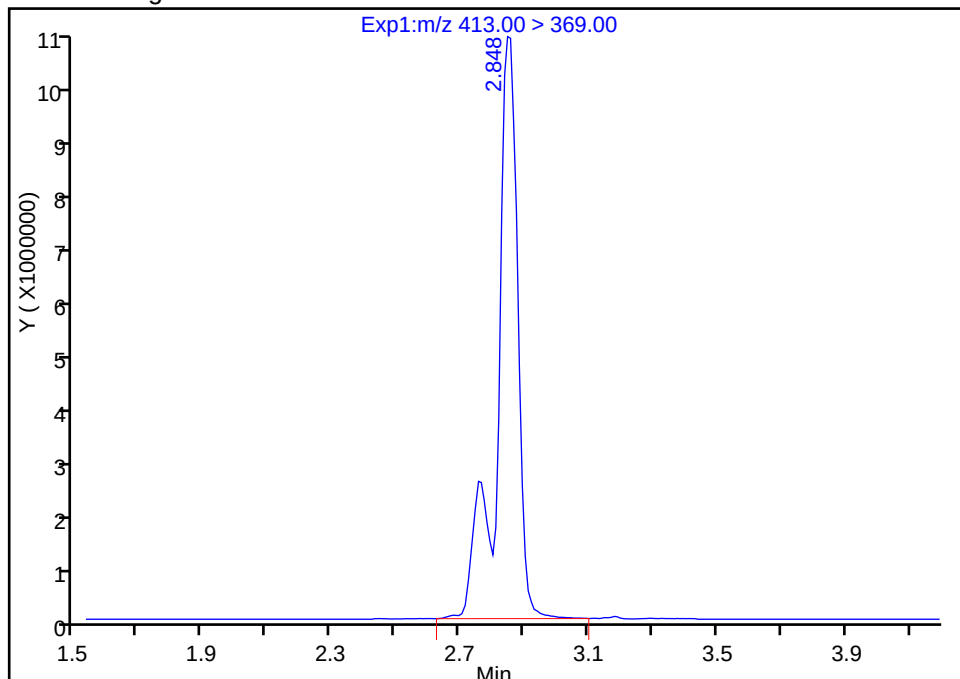
RT: 2.85  
Area: 50072994  
Amount: 305.5952  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.85  
Area: 49480944  
Amount: 301.9820  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:31:29

Audit Action: Manually Integrated

Audit Reason: Baseline



## TestAmerica Sacramento

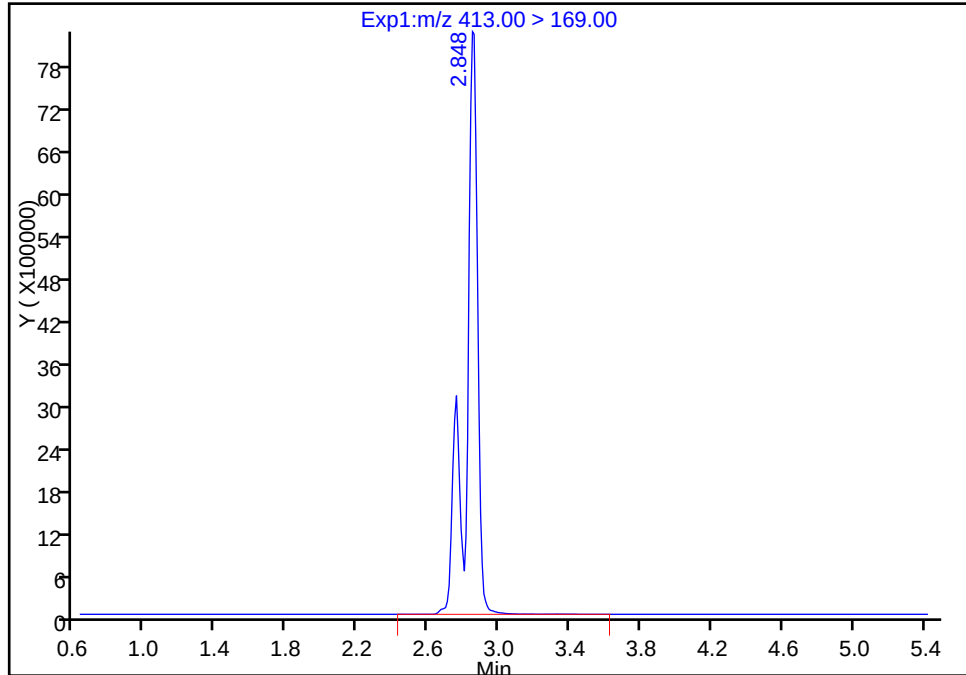
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_004.d  
Injection Date: 03-Dec-2016 16:26:12 Instrument ID: A8\_N  
Lims ID: 320-23783-A-3-A Lab Sample ID: 320-23783-3  
Client ID: DPT-16-35-GW-21-25  
Operator ID: A8-PCVA8 ALS Bottle#: 35 Worklist Smp#: 25  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 2

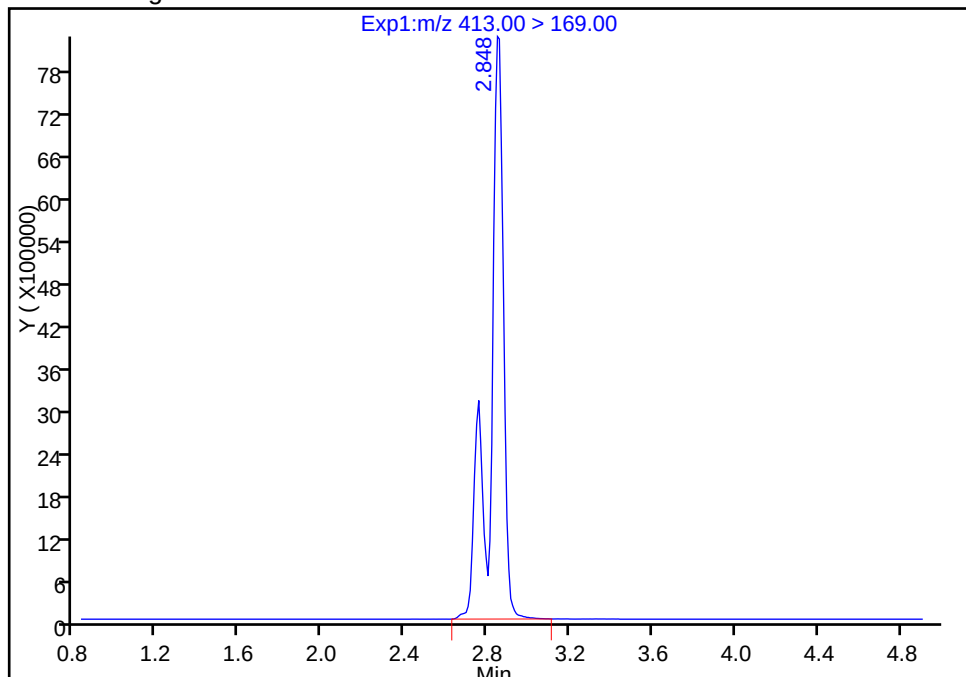
RT: 2.85  
Area: 37697521  
Amount: 305.5952  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.85  
Area: 37577807  
Amount: 301.9820  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:31:29

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

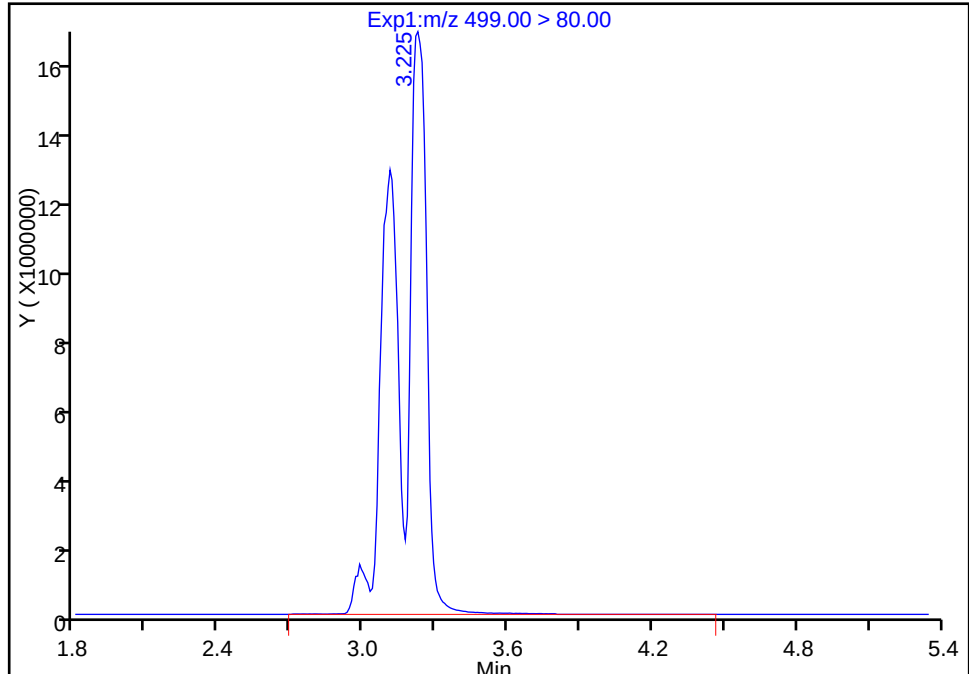
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016B_004.d |                |                 |                |    |
| Injection Date: | 03-Dec-2016 16:26:12                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-3-A                                                       | Lab Sample ID: | 320-23783-3     |                |    |
| Client ID:      | DPT-16-35-GW-21-25                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 35              | Worklist Smp#: | 25 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

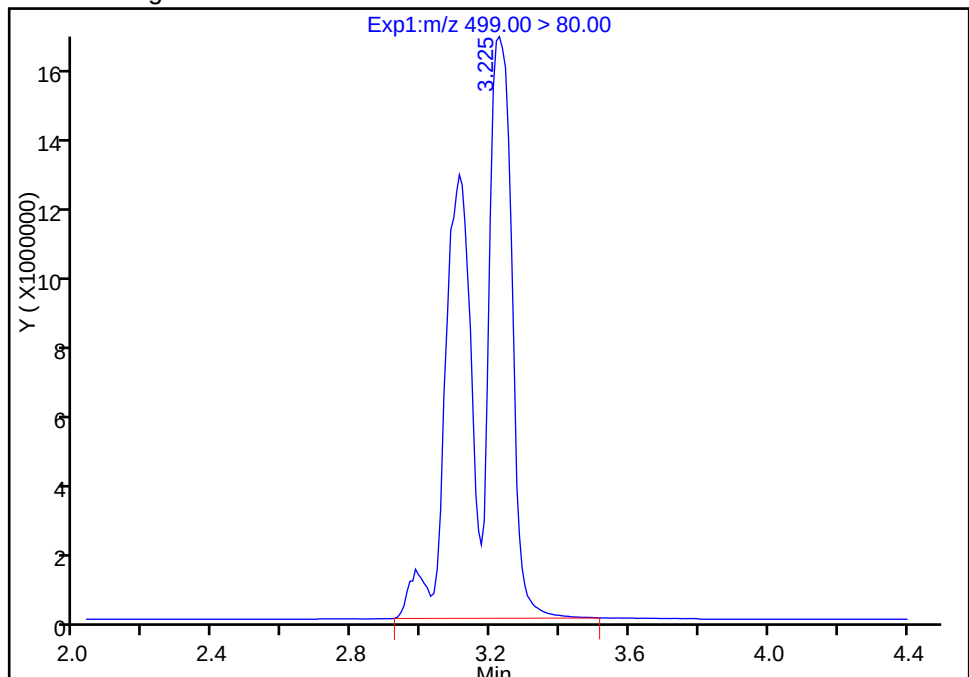
RT: 3.22  
Area: 144567877  
Amount: 936.5901  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.22  
Area: 142928519  
Amount: 925.9694  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:31:29

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

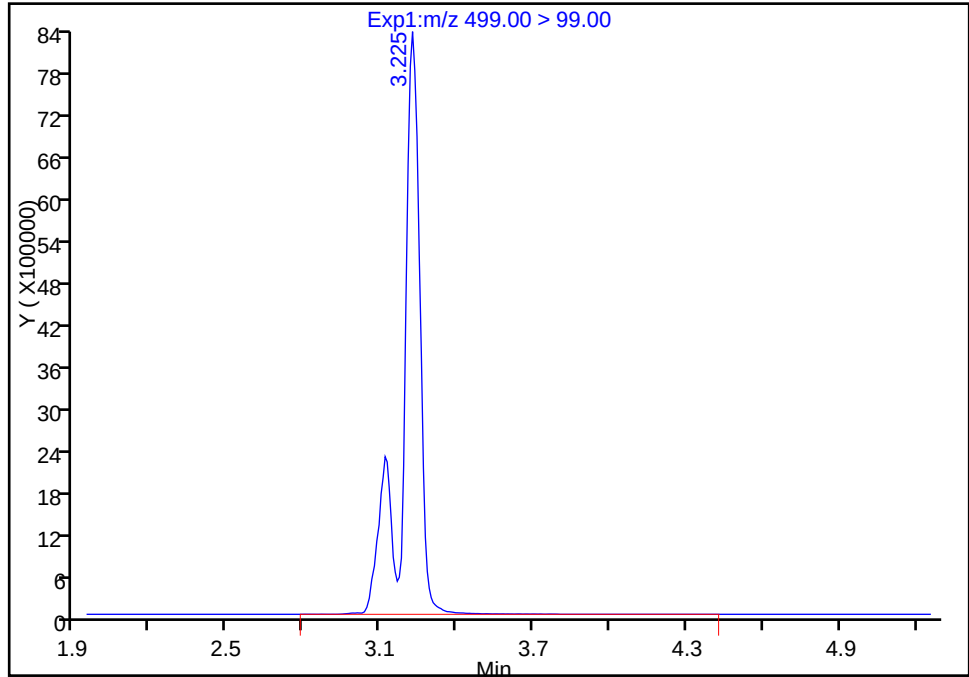
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_004.d  
Injection Date: 03-Dec-2016 16:26:12 Instrument ID: A8\_N  
Lims ID: 320-23783-A-3-A Lab Sample ID: 320-23783-3  
Client ID: DPT-16-35-GW-21-25  
Operator ID: A8-PCVA8 ALS Bottle#: 35 Worklist Smp#: 25  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

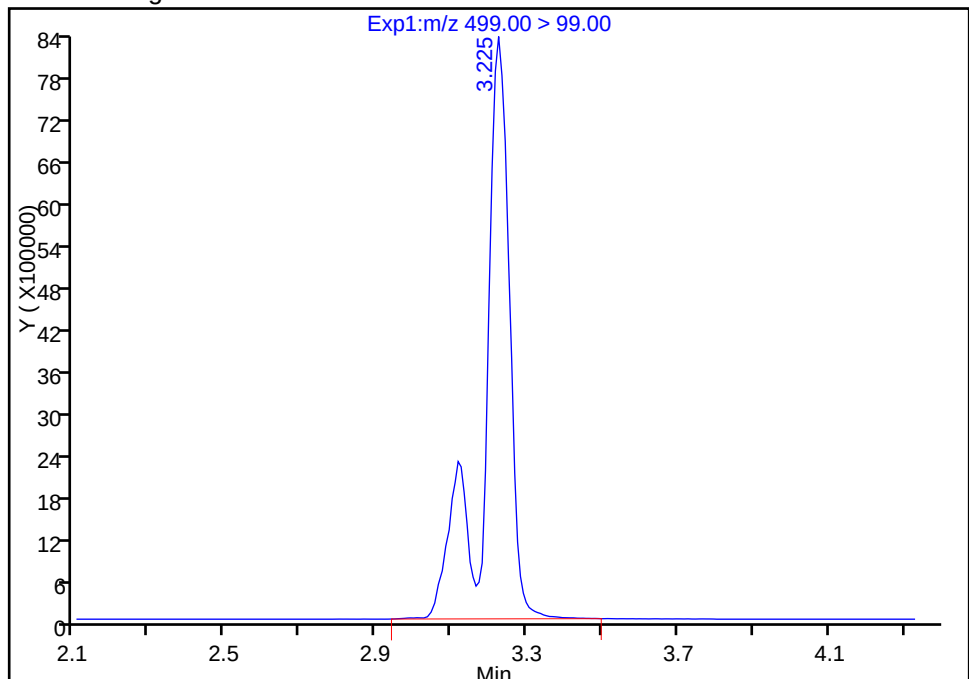
RT: 3.22  
Area: 39077186  
Amount: 936.5901  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.22  
Area: 38827184  
Amount: 925.9694  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:31:29

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                                |                                               |
|------------------------------------------------|-----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>        | Job No.: <u>320-23783-1</u>                   |
| SDG No.: _____                                 |                                               |
| Client Sample ID: <u>DPT-16-35-GW-21-25 DL</u> | Lab Sample ID: <u>320-23783-3 DL</u>          |
| Matrix: <u>Water</u>                           | Lab File ID: <u>07DEC2016B_006.d</u>          |
| Analysis Method: <u>537 (Modified)</u>         | Date Collected: <u>11/22/2016 10:10</u>       |
| Extraction Method: <u>3535</u>                 | Date Extracted: <u>11/28/2016 16:55</u>       |
| Sample wt/vol: <u>250.2 (mL)</u>               | Date Analyzed: <u>12/07/2016 17:10</u>        |
| Con. Extract Vol.: <u>0.5 (mL)</u>             | Dilution Factor: <u>10</u>                    |
| Injection Volume: <u>2 (uL)</u>                | GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u> |
| % Moisture: _____                              | GPC Cleanup: (Y/N) <u>N</u>                   |
| Analysis Batch No.: <u>141062</u>              | Units: <u>ug/L</u>                            |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL    | MDL    |
|-----------|-------------------------------------|--------|---|-------|--------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.76   | D | 0.025 | 0.0075 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 2.4    | D | 0.040 | 0.013  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.19   | D | 0.025 | 0.0092 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 91   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 87   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 83   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_006.d  
 Lims ID: 320-23783-A-3-A  
 Client ID: DPT-16-35-GW-21-25  
 Sample Type: Client  
 Inject. Date: 07-Dec-2016 17:10:55 ALS Bottle#: 19 Worklist Smp#: 6  
 Injection Vol: 2.0 ul Dil. Factor: 10.0000  
 Sample Info: 320-23783-a-3-a 10X  
 Misc. Info.: Plate: 1 Rack: 3  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 08-Dec-2016 09:41:54 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 08-Dec-2016 08:54:57

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |        |       |
| 298.90 > 80.00                   | 1.848 | 1.848     | 0.0       | 1.000     | 3907991  | 9.41            |                 |      |        |       |
| 298.90 > 99.00                   | 1.848 | 1.848     | 0.0       | 1.000     | 1604262  |                 | 2.44(0.00-0.00) |      |        |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |        |       |
| 403.00 > 84.00                   | 2.457 | 2.460     | -0.003    |           | 1230623  | 3.94            |                 | 8.3  | 107443 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 413.00 > 369.00                  | 2.803 | 2.802     | 0.001     | 1.000     | 8183022  | 38.2            |                 |      | 208567 |       |
| 413.00 > 169.00                  | 2.803 | 2.802     | 0.001     | 1.000     | 5434289  |                 | 1.51(0.90-1.10) |      | 201585 |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |        |       |
| 417.00 > 372.00                  | 2.803 | 2.802     | 0.001     |           | 998595   | 4.55            |                 | 9.1  | 120423 |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 499.00 > 80.00                   | 3.170 | 3.061     | 0.109     | 1.000     | 27465853 | 118.2           |                 |      | 0.0    |       |
| 499.00 > 99.00                   | 3.062 | 3.061     | 0.001     | 0.966     | 5756275  |                 | 4.77(0.90-1.10) |      | 40061  |       |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |        |       |
| 503.00 > 80.00                   | 3.170 | 3.169     | 0.001     |           | 1023919  | 4.16            |                 | 8.7  | 16170  |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_006.d

Injection Date: 07-Dec-2016 17:10:55

Instrument ID: A8\_N

Lims ID: 320-23783-A-3-A

Lab Sample ID: 320-23783-3

Client ID: DPT-16-35-GW-21-25

Operator ID: A8-PC\A8

ALS Bottle#: 19

Worklist Smp#: 6

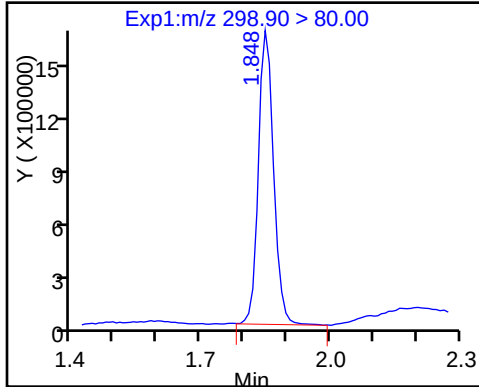
Injection Vol: 2.0 ul

Dil. Factor: 10.0000

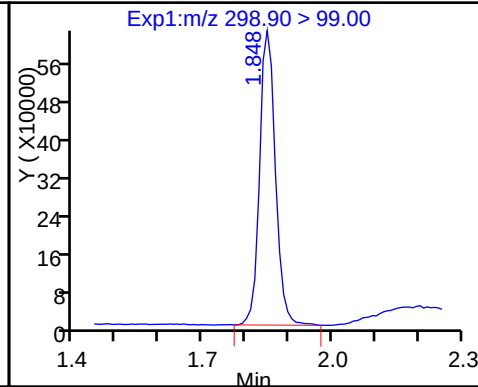
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

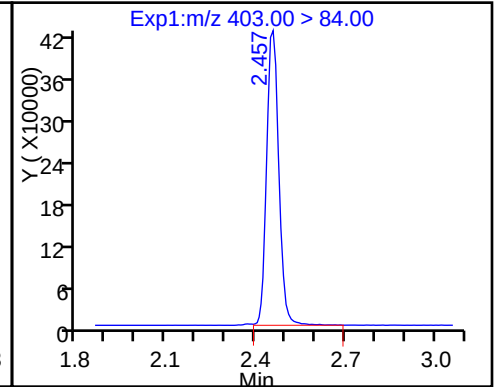
5 Perfluorobutanesulfonic acid



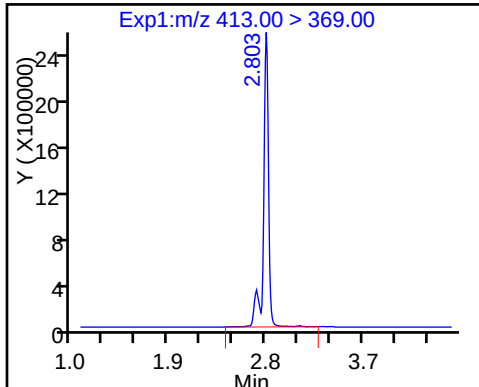
5 Perfluorobutanesulfonic acid



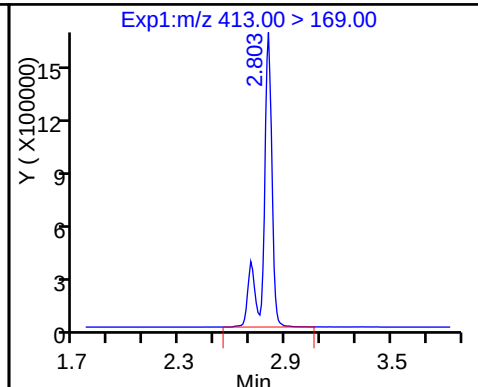
D 10 18O2 PFHxS



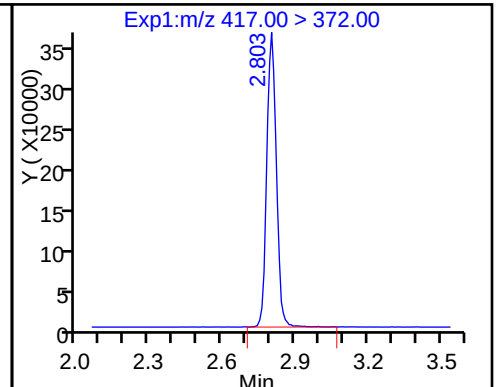
15 Perfluorooctanoic acid



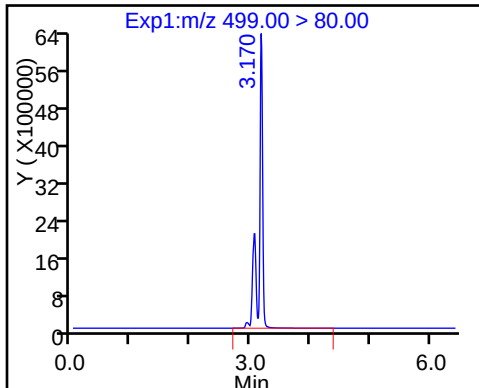
15 Perfluorooctanoic acid



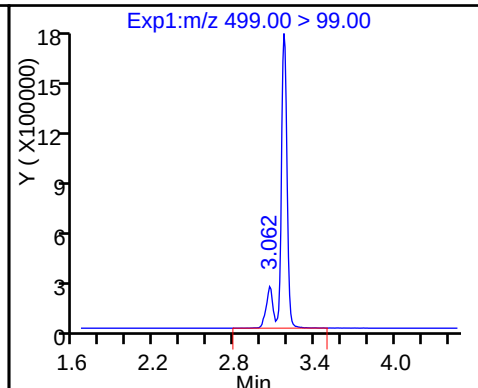
D 14 13C4 PFOA



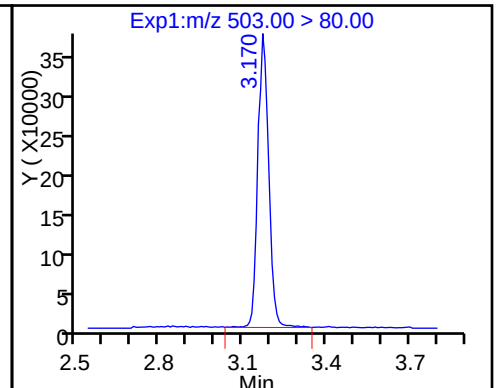
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: DPT-16-35-GW-31-35 Lab Sample ID: 320-23783-4  
 Matrix: Water Lab File ID: 03DEC2016B\_005.d  
 Analysis Method: 537 (Modified) Date Collected: 11/22/2016 10:30  
 Extraction Method: 3535 Date Extracted: 11/28/2016 16:55  
 Sample wt/vol: 249.6(mL) Date Analyzed: 12/03/2016 16:33  
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 140564 Units: ug/L

| CAS NO.   | COMPOUND NAME                       | RESULT | Q   | RL     | MDL     |
|-----------|-------------------------------------|--------|-----|--------|---------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 1.1    | E M | 0.0025 | 0.00075 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 0.72   | E   | 0.0040 | 0.0013  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.58   | E   | 0.0025 | 0.00092 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 52   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 76   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 30   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_005.d  
 Lims ID: 320-23783-A-4-A  
 Client ID: DPT-16-35-GW-31-35  
 Sample Type: Client  
 Inject. Date: 03-Dec-2016 16:33:42 ALS Bottle#: 36 Worklist Smp#: 26  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-4-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:34:03 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 10:34:03

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 5 Perfluorobutanesulfonic acid   |       |        |        |        |          |              |                 |      |         | E     |
| 298.90 > 80.00                   | 1.878 | 1.900  | -0.022 | 1.000  | 42955471 | 291.6        |                 |      |         | E     |
| 298.90 > 99.00                   | 1.878 | 1.900  | -0.022 | 1.000  | 21977968 |              | 1.95(0.00-0.00) |      |         |       |
| D 10 18O2 PFHxS                  |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                   | 2.496 | 2.531  | -0.035 |        | 4364938  | 14.0         |                 | 29.5 | 61505   |       |
| D 14 13C4 PFOA                   |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                  | 2.846 | 2.880  | -0.034 |        | 5746936  | 26.2         |                 | 52.4 | 436796  |       |
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |         | EM    |
| 413.00 > 369.00                  | 2.846 | 2.887  | -0.041 | 1.000  | 65382761 | 530.7        |                 |      | 276814  | EM    |
| 413.00 > 169.00                  | 2.846 | 2.887  | -0.041 | 1.000  | 52263596 |              | 1.25(0.90-1.10) |      | 154214  | M     |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |         | E     |
| 499.00 > 80.00                   | 3.220 | 3.258  | -0.038 | 1.000  | 72785937 | 358.1        |                 |      | 2044570 | E     |
| 499.00 > 99.00                   | 3.220 | 3.258  | -0.038 | 1.000  | 16679335 |              | 4.36(0.90-1.10) |      | 2131667 |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |         |       |
| 503.00 > 80.00                   | 3.220 | 3.259  | -0.039 |        | 8953037  | 36.4         |                 | 76.1 | 114840  |       |

**QC Flag Legend**

## Processing Flags

E - Exceeded Maximum Amount

## Review Flags

M - Manually Integrated



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_005.d

Injection Date: 03-Dec-2016 16:33:42

Instrument ID: A8\_N

Lims ID: 320-23783-A-4-A

Lab Sample ID: 320-23783-4

Client ID: DPT-16-35-GW-31-35

Operator ID: A8-PC\A8

ALS Bottle#: 36

Worklist Smp#: 26

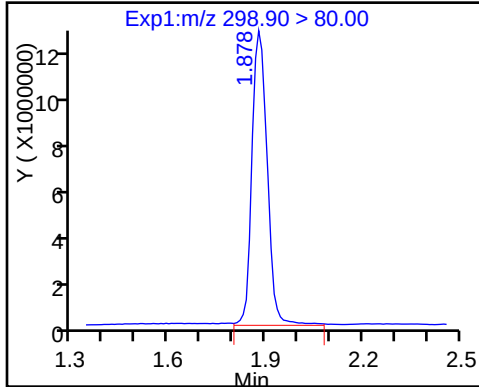
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

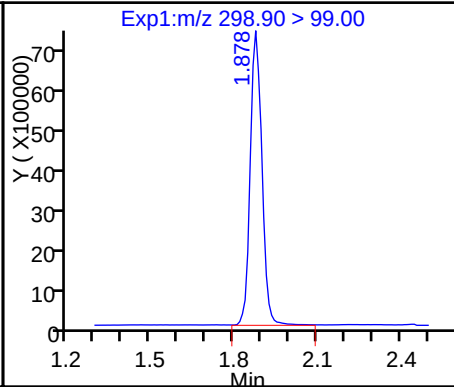
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

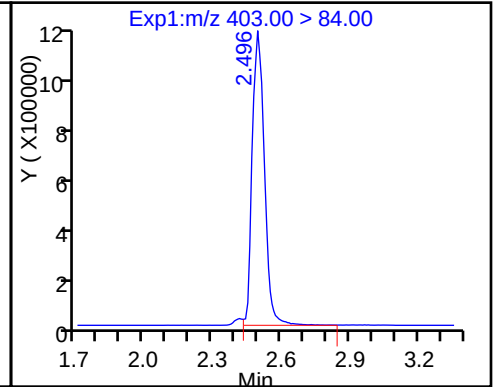
5 Perfluorobutanesulfonic acid



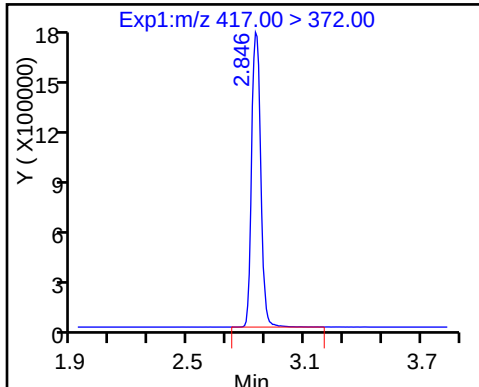
5 Perfluorobutanesulfonic acid



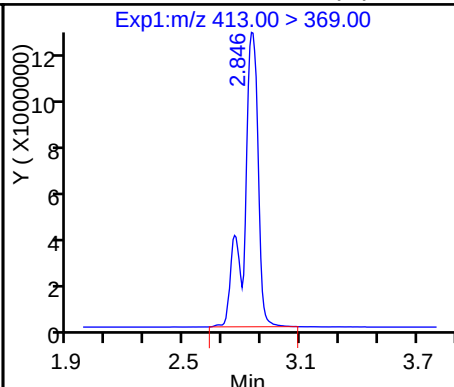
D 10 18O2 PFHxS



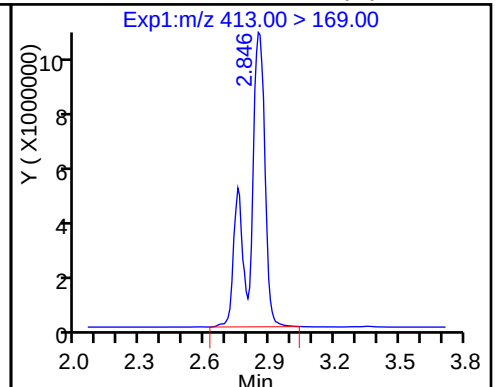
D 14 13C4 PFOA



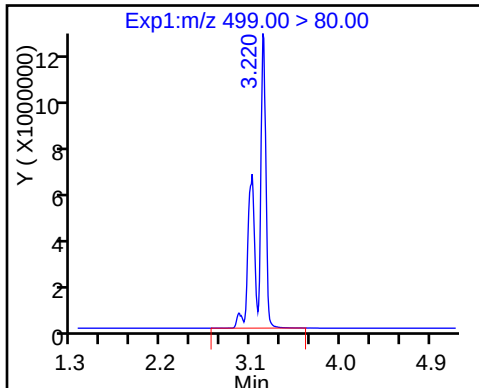
15 Perfluorooctanoic acid (M)



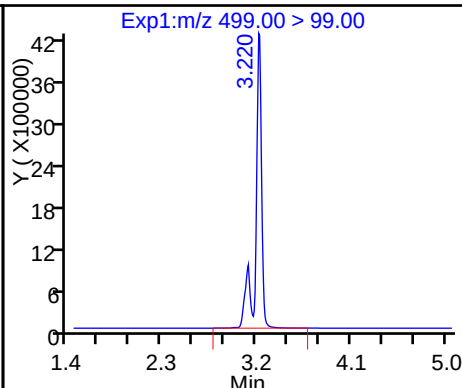
15 Perfluorooctanoic acid (M)



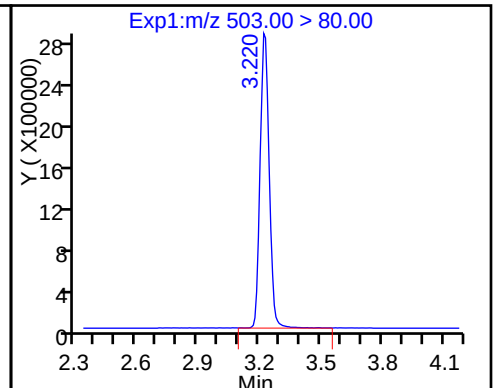
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



## TestAmerica Sacramento

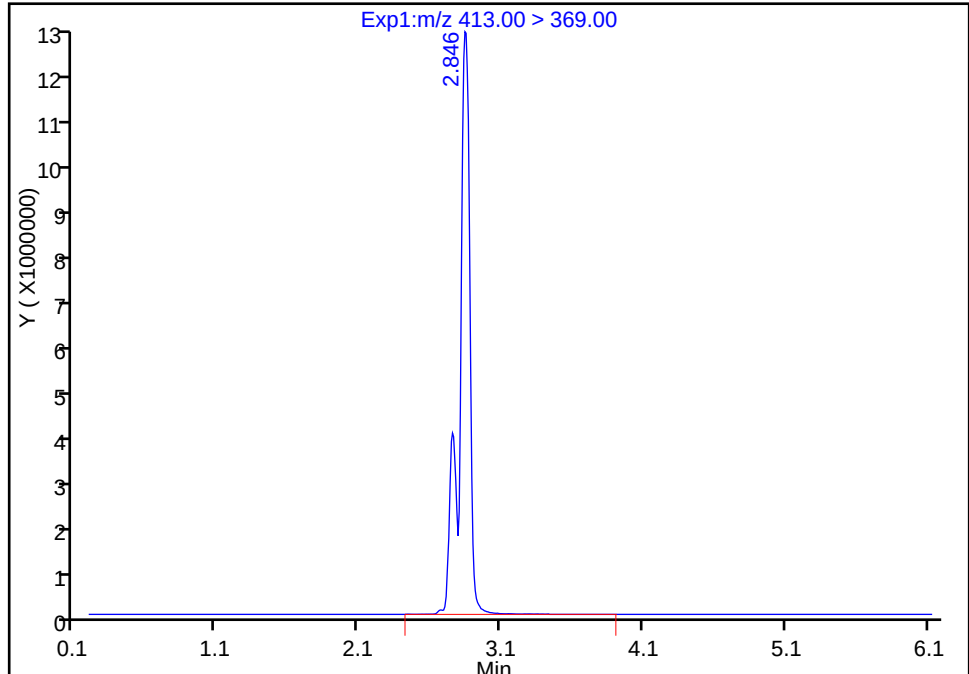
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016B_005.d |                |                 |                |    |
| Injection Date: | 03-Dec-2016 16:33:42                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-4-A                                                       | Lab Sample ID: | 320-23783-4     |                |    |
| Client ID:      | DPT-16-35-GW-31-35                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 36              | Worklist Smp#: | 26 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

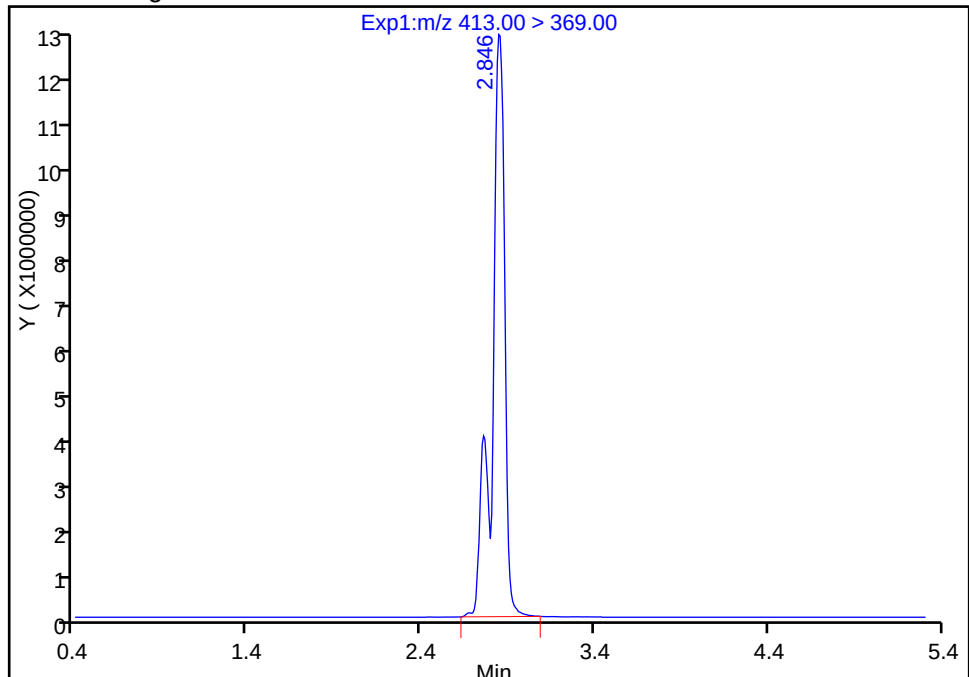
RT: 2.85  
Area: 66001828  
Amount: 535.7093  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.85  
Area: 65382761  
Amount: 530.6846  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:34:03

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

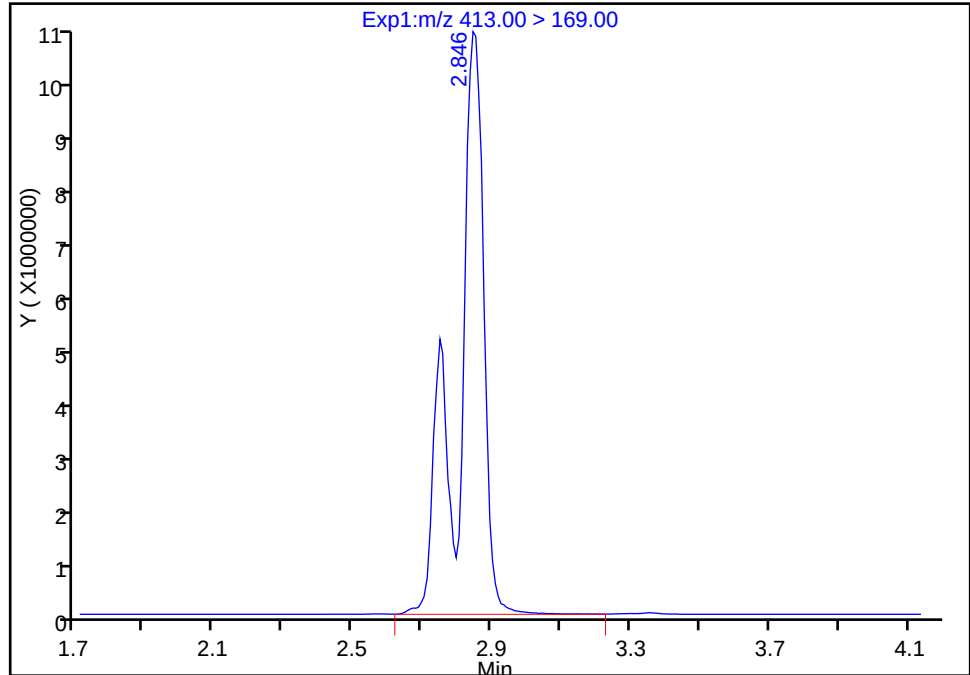
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_005.d  
Injection Date: 03-Dec-2016 16:33:42 Instrument ID: A8\_N  
Lims ID: 320-23783-A-4-A Lab Sample ID: 320-23783-4  
Client ID: DPT-16-35-GW-31-35  
Operator ID: A8-PCVA8 ALS Bottle#: 36 Worklist Smp#: 26  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 2

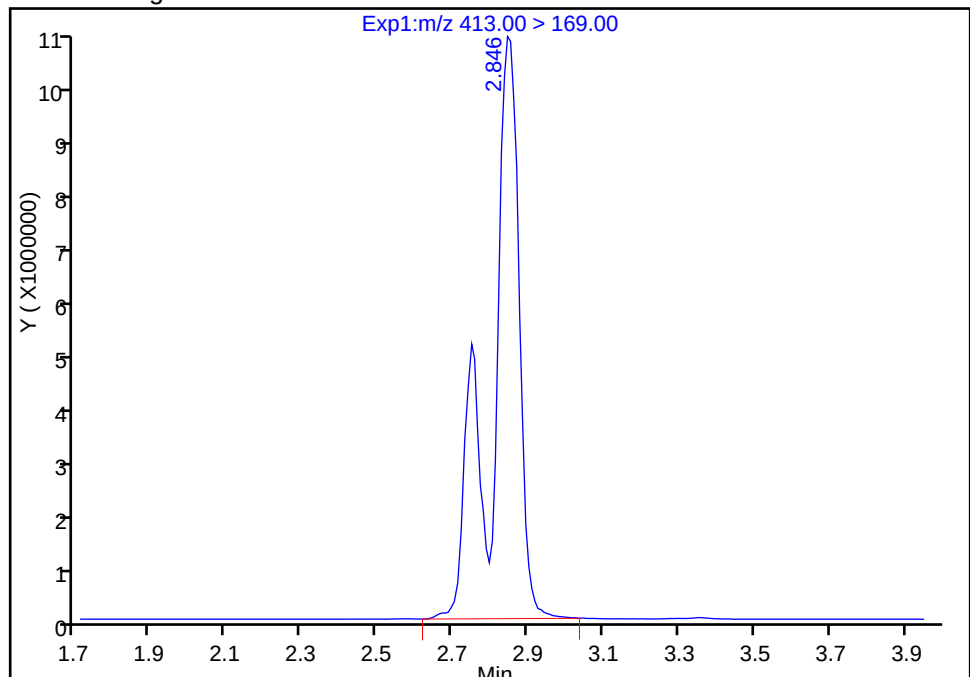
RT: 2.85  
Area: 52579475  
Amount: 535.7093  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.85  
Area: 52263596  
Amount: 530.6846  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:34:03

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                                |                                              |
|------------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>        | Job No.: <u>320-23783-1</u>                  |
| SDG No.: _____                                 |                                              |
| Client Sample ID: <u>DPT-16-35-GW-31-35 DL</u> | Lab Sample ID: <u>320-23783-4 DL</u>         |
| Matrix: <u>Water</u>                           | Lab File ID: <u>07DEC2016B_007.d</u>         |
| Analysis Method: <u>537 (Modified)</u>         | Date Collected: <u>11/22/2016 10:30</u>      |
| Extraction Method: <u>3535</u>                 | Date Extracted: <u>11/28/2016 16:55</u>      |
| Sample wt/vol: <u>249.6(mL)</u>                | Date Analyzed: <u>12/07/2016 17:18</u>       |
| Con. Extract Vol.: <u>0.5(mL)</u>              | Dilution Factor: <u>10</u>                   |
| Injection Volume: <u>2(uL)</u>                 | GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u> |
| % Moisture: _____                              | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>141062</u>              | Units: <u>ug/L</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL    | MDL    |
|-----------|-------------------------------------|--------|---|-------|--------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 1.4    | D | 0.025 | 0.0075 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 0.80   | D | 0.040 | 0.013  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.38   | D | 0.025 | 0.0092 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 78   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 91   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 73   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_007.d  
 Lims ID: 320-23783-A-4-A  
 Client ID: DPT-16-35-GW-31-35  
 Sample Type: Client  
 Inject. Date: 07-Dec-2016 17:18:25 ALS Bottle#: 20 Worklist Smp#: 7  
 Injection Vol: 2.0 ul Dil. Factor: 10.0000  
 Sample Info: 320-23783-a-4-a 10X  
 Misc. Info.: Plate: 1 Rack: 3  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 08-Dec-2016 09:41:54 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 08-Dec-2016 08:55:07

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |        |       |
| 298.90 > 80.00                   | 1.848 | 1.848     | 0.0       | 1.000     | 6973833  | 19.1            |                 |      |        |       |
| 298.90 > 99.00                   | 1.848 | 1.848     | 0.0       | 1.000     | 3038662  |                 | 2.30(0.00-0.00) |      |        |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |        |       |
| 403.00 > 84.00                   | 2.455 | 2.460     | -0.005    |           | 1083716  | 3.47            |                 | 7.3  | 88167  |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 413.00 > 369.00                  | 2.804 | 2.802     | 0.002     | 1.000     | 13051856 | 71.3            |                 |      | 290557 |       |
| 413.00 > 169.00                  | 2.804 | 2.802     | 0.002     | 1.000     | 8917503  |                 | 1.46(0.90-1.10) |      | 215086 |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |        |       |
| 417.00 > 372.00                  | 2.804 | 2.802     | 0.002     |           | 853859   | 3.89            |                 | 7.8  | 100091 |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 499.00 > 80.00                   | 3.179 | 3.061     | 0.118     | 1.000     | 9766998  | 40.1            |                 |      | 458205 |       |
| 499.00 > 99.00                   | 3.171 | 3.061     | 0.110     | 0.997     | 1917058  |                 | 5.09(0.90-1.10) |      | 144974 |       |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |        |       |
| 503.00 > 80.00                   | 3.171 | 3.169     | 0.002     |           | 1073837  | 4.37            |                 | 9.1  | 40552  |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_007.d

Injection Date: 07-Dec-2016 17:18:25

Instrument ID: A8\_N

Lims ID: 320-23783-A-4-A

Lab Sample ID: 320-23783-4

Client ID: DPT-16-35-GW-31-35

Operator ID: A8-PC\A8

ALS Bottle#: 20

Worklist Smp#: 7

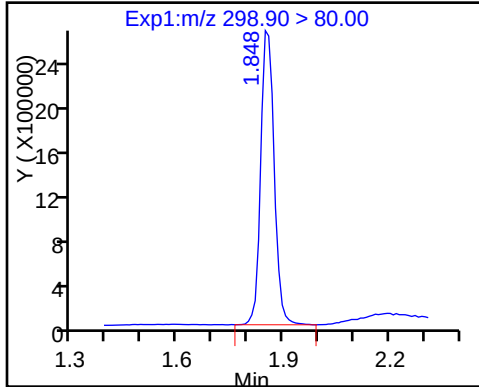
Injection Vol: 2.0 ul

Dil. Factor: 10.0000

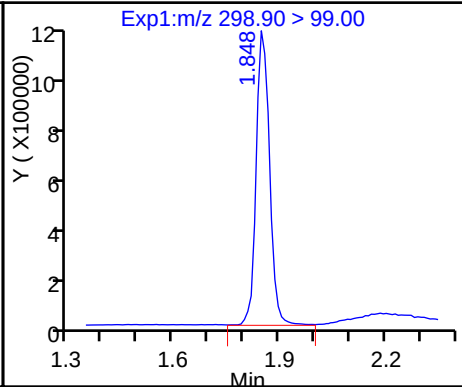
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

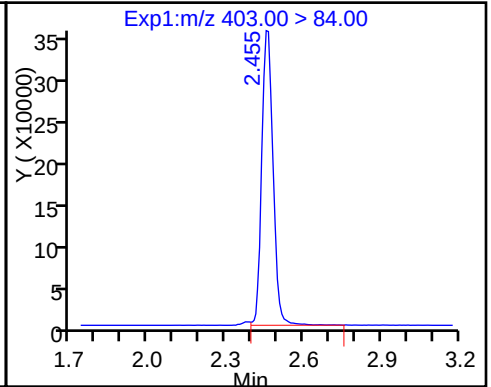
5 Perfluorobutanesulfonic acid



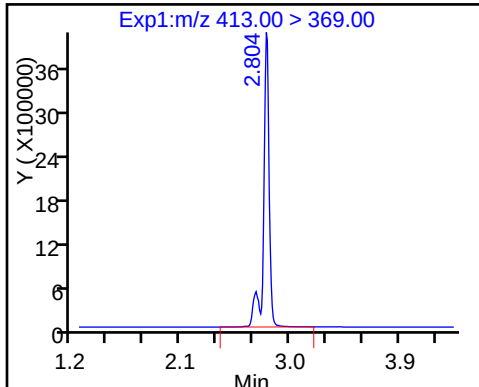
5 Perfluorobutanesulfonic acid



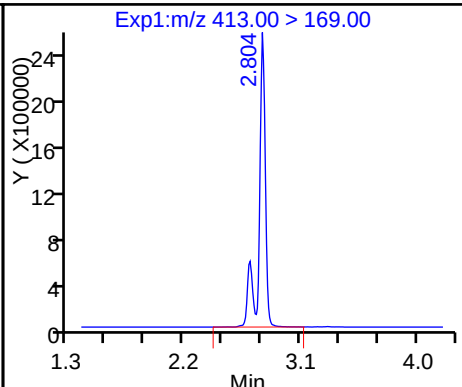
D 10 18O2 PFHxS



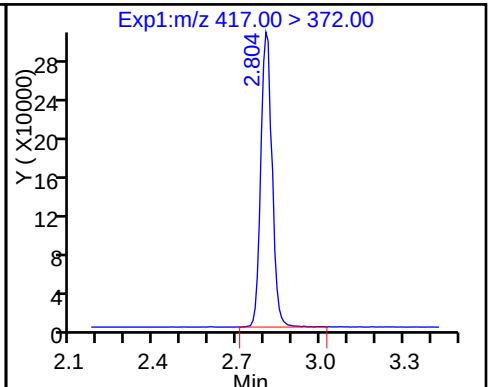
15 Perfluorooctanoic acid



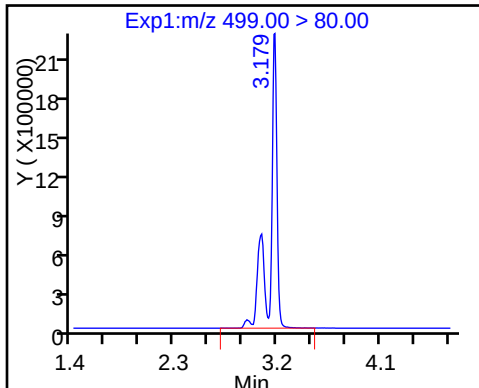
15 Perfluorooctanoic acid



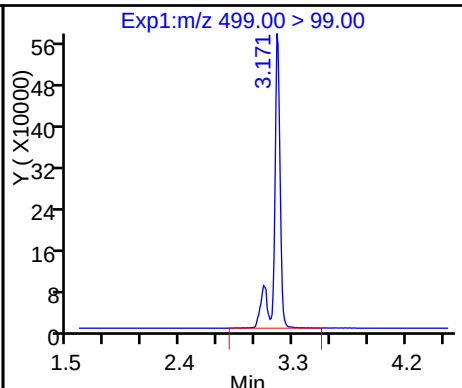
D 14 13C4 PFOA



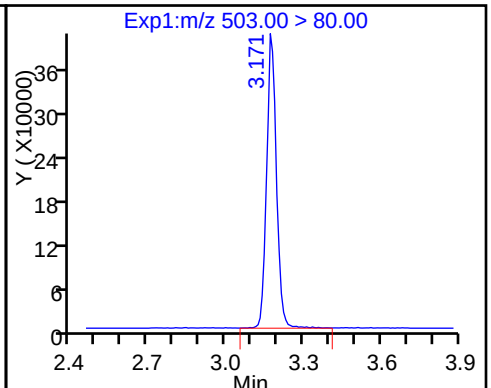
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                             |                                               |
|---------------------------------------------|-----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>     | Job No.: <u>320-23783-1</u>                   |
| SDG No.: _____                              |                                               |
| Client Sample ID: <u>DPT-16-19-SO-00-01</u> | Lab Sample ID: <u>320-23783-5</u>             |
| Matrix: <u>Solid</u>                        | Lab File ID: <u>02DEC2016C_010.d</u>          |
| Analysis Method: <u>537 (Modified)</u>      | Date Collected: <u>11/22/2016 11:20</u>       |
| Extraction Method: <u>SHAKE</u>             | Date Extracted: <u>11/28/2016 11:03</u>       |
| Sample wt/vol: <u>5.02(g)</u>               | Date Analyzed: <u>12/02/2016 16:07</u>        |
| Con. Extract Vol.: <u>1.00 (mL)</u>         | Dilution Factor: <u>1</u>                     |
| Injection Volume: <u>2 (uL)</u>             | GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u> |
| % Moisture: <u>13.3</u>                     | GPC Cleanup: (Y/N) <u>N</u>                   |
| Analysis Batch No.: <u>140429</u>           | Units: <u>ug/Kg</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q   | RL   | MDL  |
|-----------|-------------------------------------|--------|-----|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 3.8    |     | 0.57 | 0.12 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 130    | M E | 0.57 | 0.14 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.18   | J   | 0.46 | 0.12 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 96   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 54   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 85   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_010.d  
 Lims ID: 320-23783-A-5-A  
 Client ID: DPT-16-19-SO-00-01  
 Sample Type: Client  
 Inject. Date: 02-Dec-2016 16:07:10 ALS Bottle#: 10 Worklist Smp#: 14  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-5-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:25:25 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:25:16

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 5 Perfluorobutanesulfonic acid   |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                   | 1.900 | 1.907  | -0.007 | 1.000  | 322239   | 0.7750       |                 |      |         |       |
| 298.90 > 99.00                   | 1.900 | 1.907  | -0.007 | 1.000  | 154730   |              | 2.08(0.00-0.00) |      |         |       |
| D 10 18O2 PFHxS                  |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                   | 2.528 | 2.534  | -0.006 |        | 12188867 | 40.3         |                 | 85.2 | 600398  |       |
| D 14 13C4 PFOA                   |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                  | 2.887 | 2.886  | 0.0    |        | 10568981 | 48.2         |                 | 96.3 | 1059712 |       |
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                  | 2.887 | 2.894  | -0.008 | 1.000  | 3598653  | 16.7         |                 |      | 37425   |       |
| 413.00 > 169.00                  | 2.887 | 2.894  | -0.008 | 1.000  | 2481983  |              | 1.45(0.90-1.10) |      | 115185  |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 499.00 > 80.00                   | 3.268 | 3.267  | 0.001  | 1.000  | 82856204 | 581.8        |                 |      | 366942  | EM    |
| 499.00 > 99.00                   | 3.268 | 3.267  | 0.001  | 1.000  | 22573580 |              | 3.67(0.90-1.10) |      | 245829  | M     |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |         |       |
| 503.00 > 80.00                   | 3.261 | 3.267  | -0.006 |        | 6260717  | 25.6         |                 | 53.5 | 208105  |       |

**QC Flag Legend**

## Processing Flags

E - Exceeded Maximum Amount

## Review Flags

M - Manually Integrated



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_010.d

Injection Date: 02-Dec-2016 16:07:10

Instrument ID: A8\_N

Lims ID: 320-23783-A-5-A

Lab Sample ID: 320-23783-5

Client ID: DPT-16-19-SO-00-01

Operator ID: A8-PC\A8

ALS Bottle#: 10

Worklist Smp#: 14

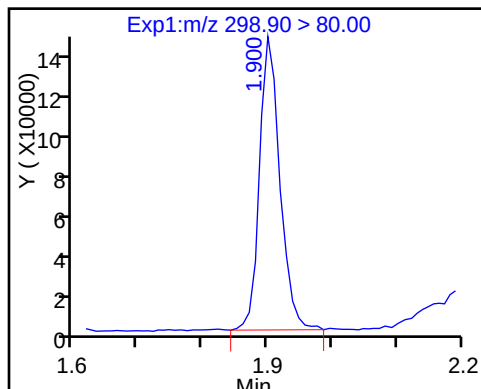
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

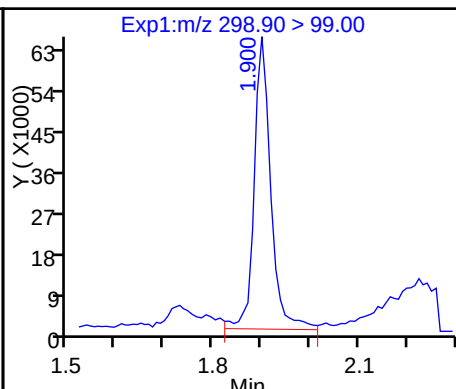
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

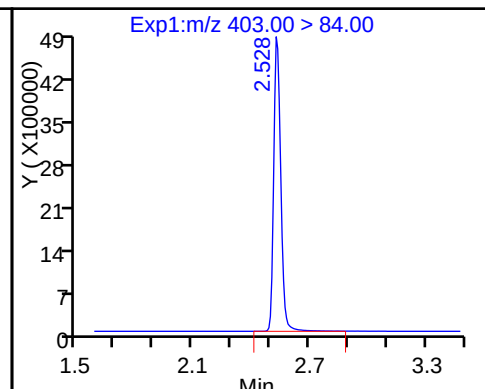
5 Perfluorobutanesulfonic acid



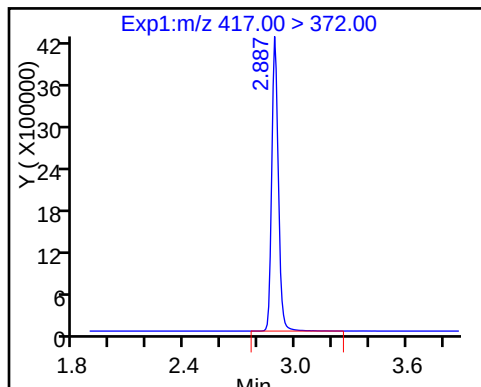
5 Perfluorobutanesulfonic acid



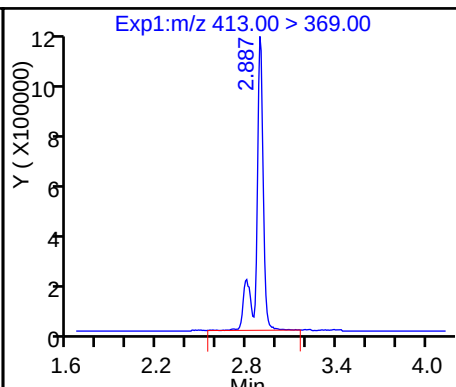
D 10 18O2 PFHxS



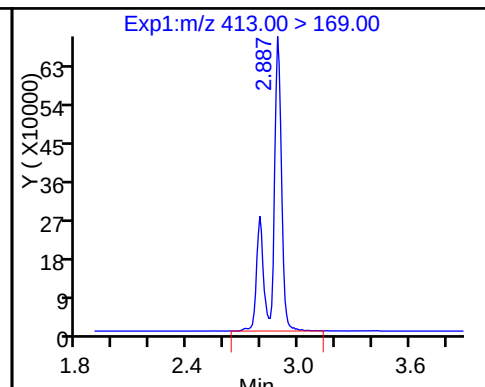
D 14 13C4 PFOA



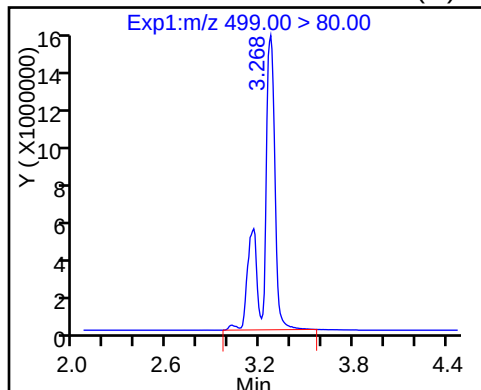
15 Perfluorooctanoic acid



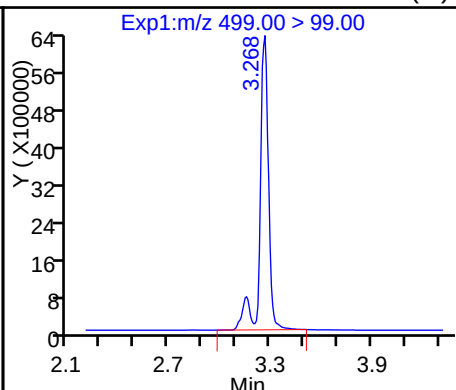
15 Perfluorooctanoic acid



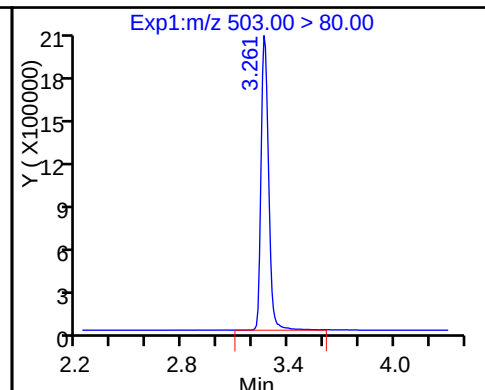
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



## TestAmerica Sacramento

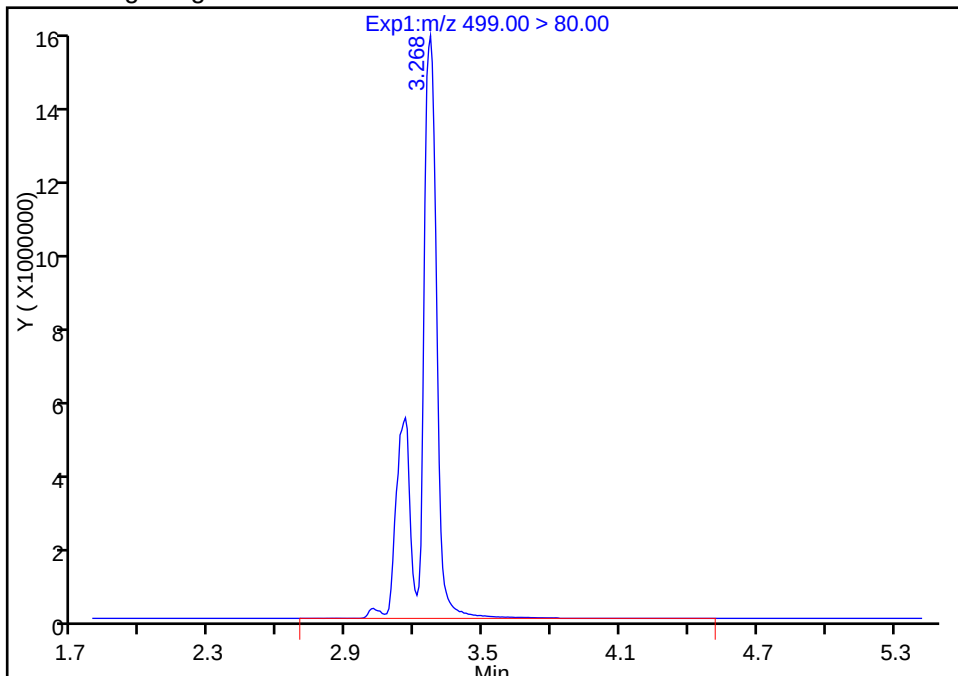
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_010.d |                |                 |                |    |
| Injection Date: | 02-Dec-2016 16:07:10                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-5-A                                                       | Lab Sample ID: | 320-23783-5     |                |    |
| Client ID:      | DPT-16-19-SO-00-01                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 10              | Worklist Smp#: | 14 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

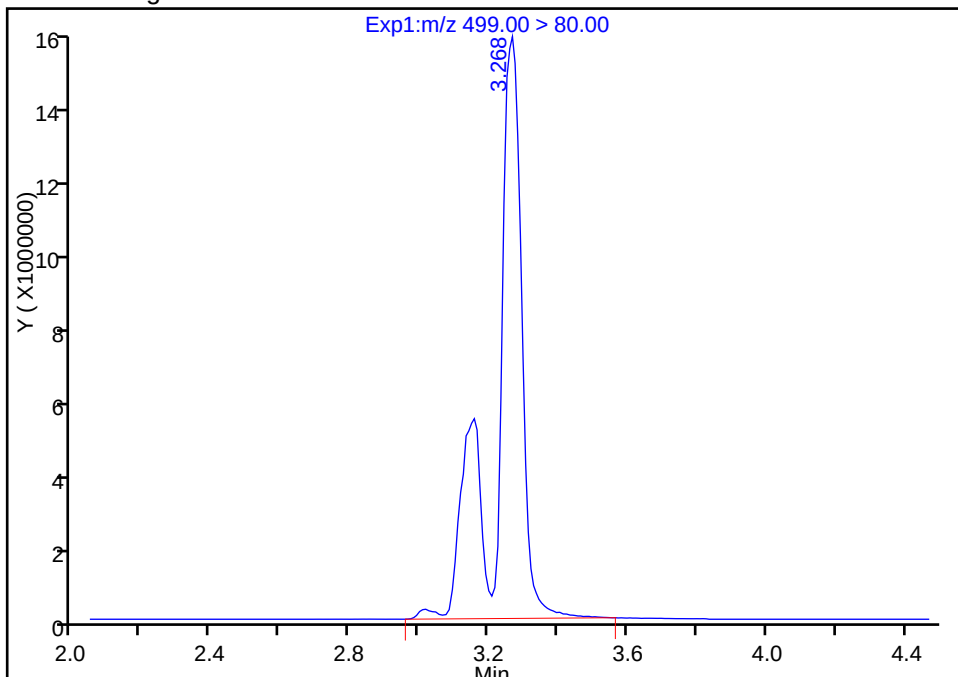
RT: 3.27  
Area: 84017279  
Amount: 589.9377  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.27  
Area: 82856204  
Amount: 581.7851  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:25:16

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

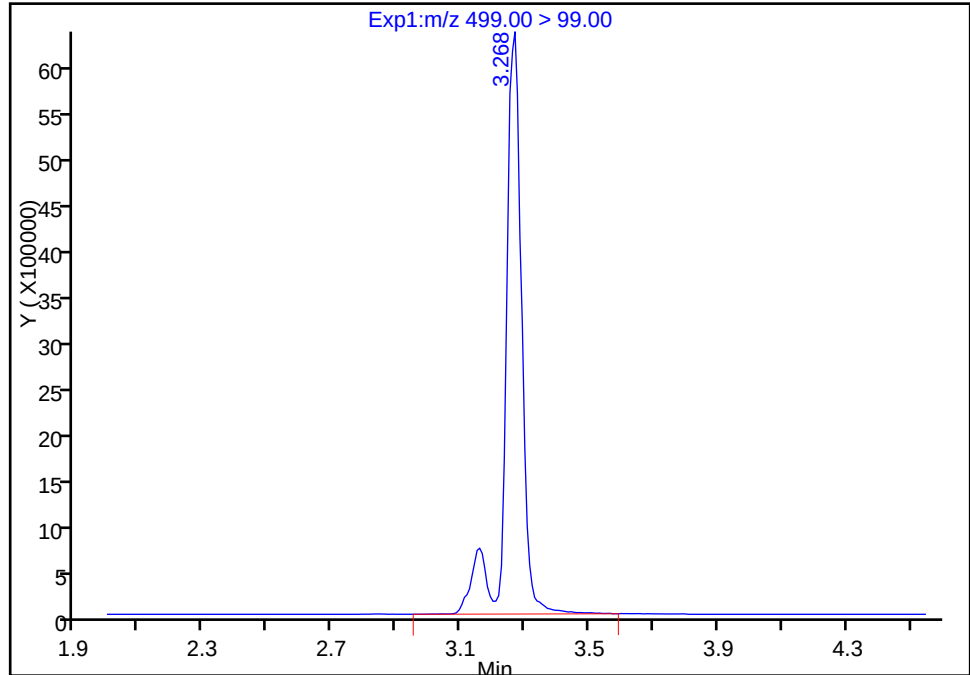
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_010.d  
Injection Date: 02-Dec-2016 16:07:10 Instrument ID: A8\_N  
Lims ID: 320-23783-A-5-A Lab Sample ID: 320-23783-5  
Client ID: DPT-16-19-SO-00-01  
Operator ID: A8-PCVA8 ALS Bottle#: 10 Worklist Smp#: 14  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

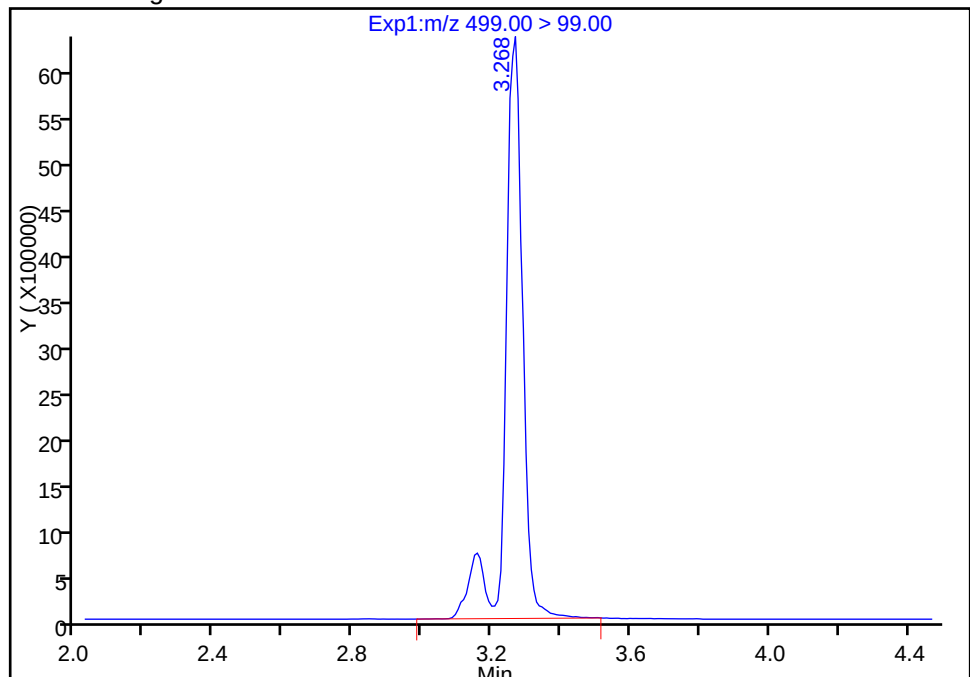
RT: 3.27  
Area: 22733991  
Amount: 589.9377  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.27  
Area: 22573580  
Amount: 581.7851  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:25:16

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                                |                                               |
|------------------------------------------------|-----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>        | Job No.: <u>320-23783-1</u>                   |
| SDG No.: _____                                 |                                               |
| Client Sample ID: <u>DPT-16-19-SO-00-01 DL</u> | Lab Sample ID: <u>320-23783-5 DL</u>          |
| Matrix: <u>Solid</u>                           | Lab File ID: <u>07DEC2016B_009.d</u>          |
| Analysis Method: <u>537 (Modified)</u>         | Date Collected: <u>11/22/2016 11:20</u>       |
| Extraction Method: <u>SHAKE</u>                | Date Extracted: <u>11/28/2016 11:03</u>       |
| Sample wt/vol: <u>5.02(g)</u>                  | Date Analyzed: <u>12/07/2016 17:33</u>        |
| Con. Extract Vol.: <u>1.00 (mL)</u>            | Dilution Factor: <u>10</u>                    |
| Injection Volume: <u>2 (uL)</u>                | GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u> |
| % Moisture: <u>13.3</u>                        | GPC Cleanup: (Y/N) <u>N</u>                   |
| Analysis Batch No.: <u>141062</u>              | Units: <u>ug/Kg</u>                           |

| CAS NO.   | COMPOUND NAME                              | RESULT | Q     | RL  | MDL |
|-----------|--------------------------------------------|--------|-------|-----|-----|
| 335-67-1  | <i>Perfluorooctanoic acid (PFOA)</i>       | 3.5    | J D M | 5.7 | 1.2 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)           | 170    | D     | 5.7 | 1.4 |
| 375-73-5  | <i>Perfluorobutanesulfonic acid (PFBS)</i> | 3.4    | U     | 4.6 | 1.2 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 136  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 90   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 106  |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_009.d  
 Lims ID: 320-23783-A-5-A  
 Client ID: DPT-16-19-SO-00-01  
 Sample Type: Client  
 Inject. Date: 07-Dec-2016 17:33:26 ALS Bottle#: 22 Worklist Smp#: 9  
 Injection Vol: 2.0 ul Dil. Factor: 10.0000  
 Sample Info: 320-23783-a-5-a 10X  
 Misc. Info.: Plate: 1 Rack: 3  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 08-Dec-2016 09:41:54 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 08-Dec-2016 08:55:45

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|

5 Perfluorobutanesulfonic acid  
 298.90 > 80.00 1.849 1.848 0.001 1.000 36343 0.0690  
 298.90 > 99.00 1.839 1.848 -0.009 0.995 14796 2.46(0.00-0.00)

D 10 18O2 PFHxS  
 403.00 > 84.00 2.448 2.460 -0.012 1561968 5.00 10.6 195821

15 Perfluorooctanoic acid  
 413.00 > 369.00 2.800 2.802 -0.002 1.000 487830 1.53 4567 M  
 413.00 > 169.00 2.776 2.802 -0.026 0.991 333150 1.46(0.90-1.10) 5791 M

D 14 13C4 PFOA  
 417.00 > 372.00 2.800 2.802 -0.002 1490656 6.80 13.6 147470

18 Perfluorooctane sulfonic acid  
 499.00 > 80.00 3.169 3.061 0.108 1.000 17658015 73.6 19687  
 499.00 > 99.00 3.169 3.061 0.108 1.000 3944310 4.48(0.90-1.10) 337659

D 17 13C4 PFOS  
 503.00 > 80.00 3.169 3.169 0.0 1056967 4.30 9.0 64846

**QC Flag Legend**

Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_009.d

Injection Date: 07-Dec-2016 17:33:26

Instrument ID: A8\_N

Lims ID: 320-23783-A-5-A

Lab Sample ID: 320-23783-5

Client ID: DPT-16-19-SO-00-01

Operator ID: A8-PC\A8

ALS Bottle#: 22

Worklist Smp#: 9

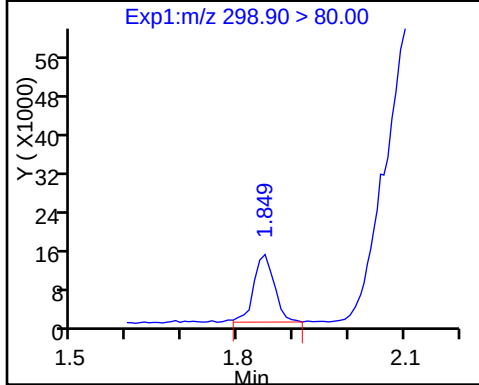
Injection Vol: 2.0 ul

Dil. Factor: 10.0000

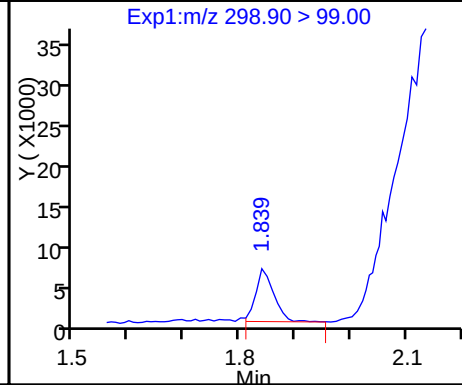
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

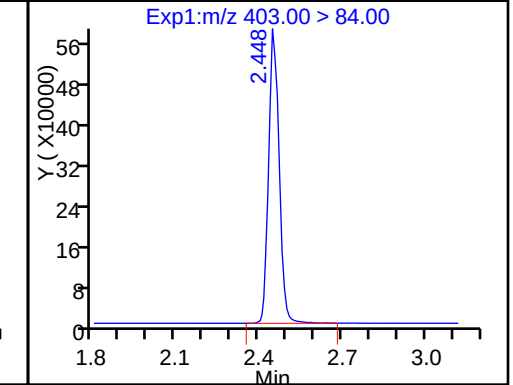
5 Perfluorobutanesulfonic acid



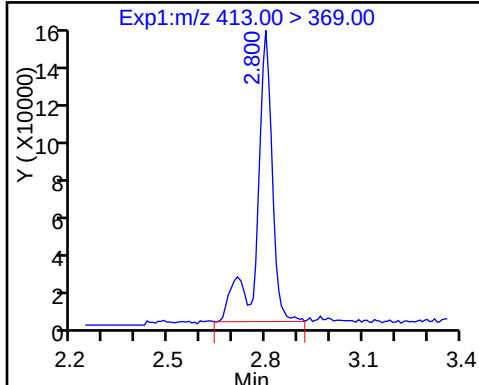
5 Perfluorobutanesulfonic acid



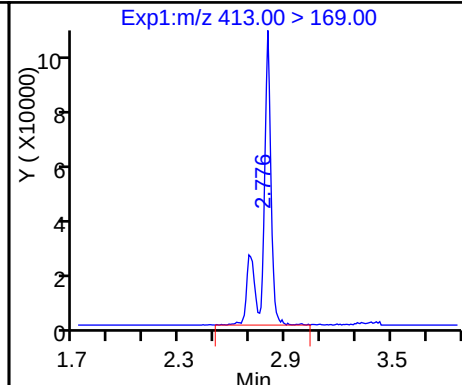
D 10 18O2 PFHxS



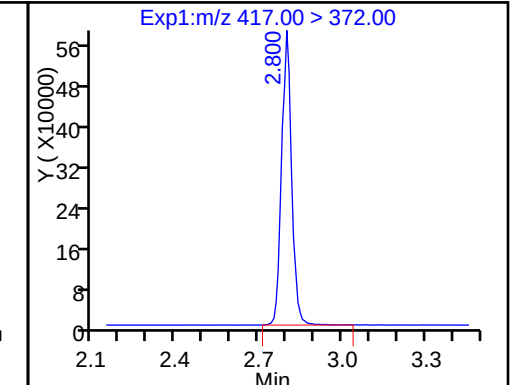
15 Perfluorooctanoic acid (M)



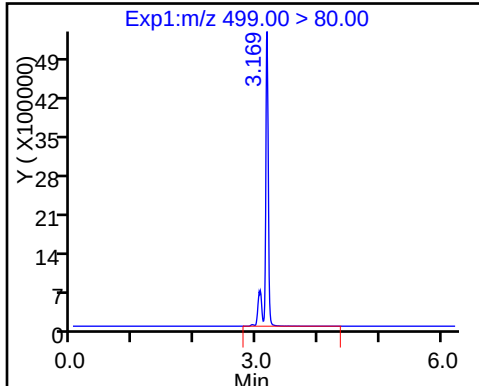
15 Perfluorooctanoic acid



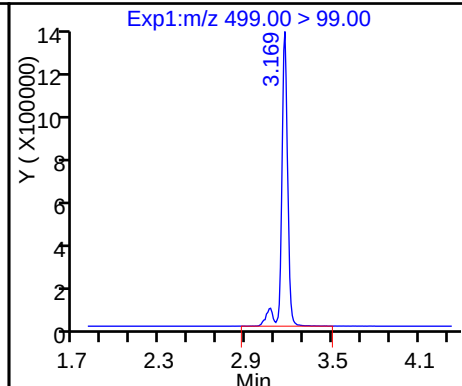
D 14 13C4 PFOA



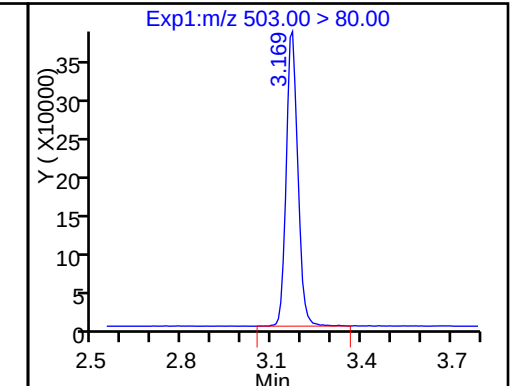
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



## TestAmerica Sacramento

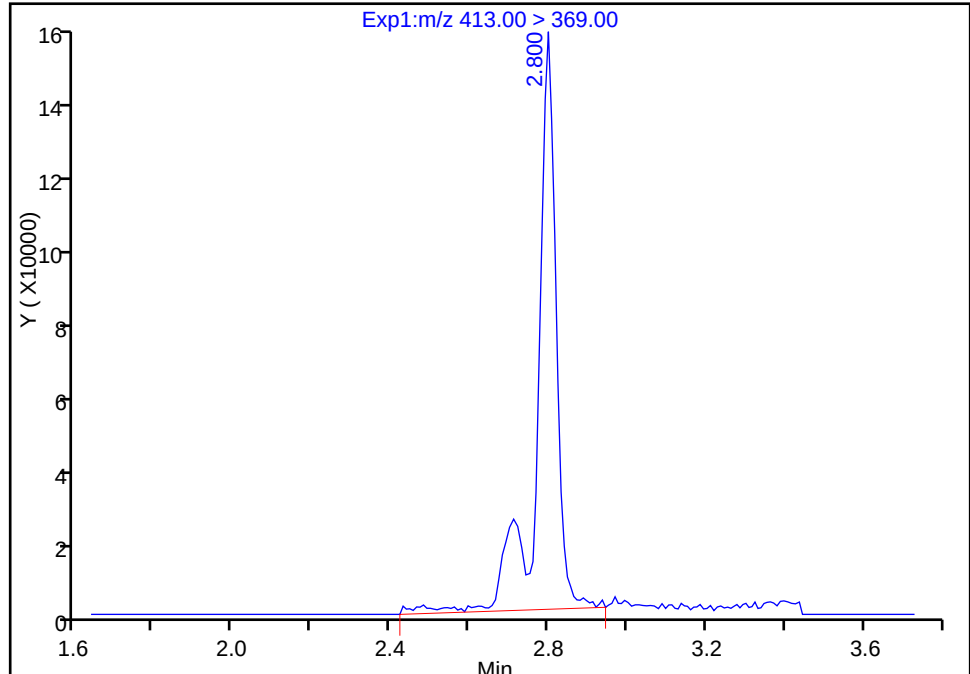
|                 |                                                                       |                |                 |                |   |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|---|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161207-37602.b\07DEC2016B_009.d |                |                 |                |   |
| Injection Date: | 07-Dec-2016 17:33:26                                                  | Instrument ID: | A8_N            |                |   |
| Lims ID:        | 320-23783-A-5-A                                                       | Lab Sample ID: | 320-23783-5     |                |   |
| Client ID:      | DPT-16-19-SO-00-01                                                    |                |                 |                |   |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 22              | Worklist Smp#: | 9 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 10.0000         |                |   |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |   |
| Column:         |                                                                       | Detector       | EXP1            |                |   |

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

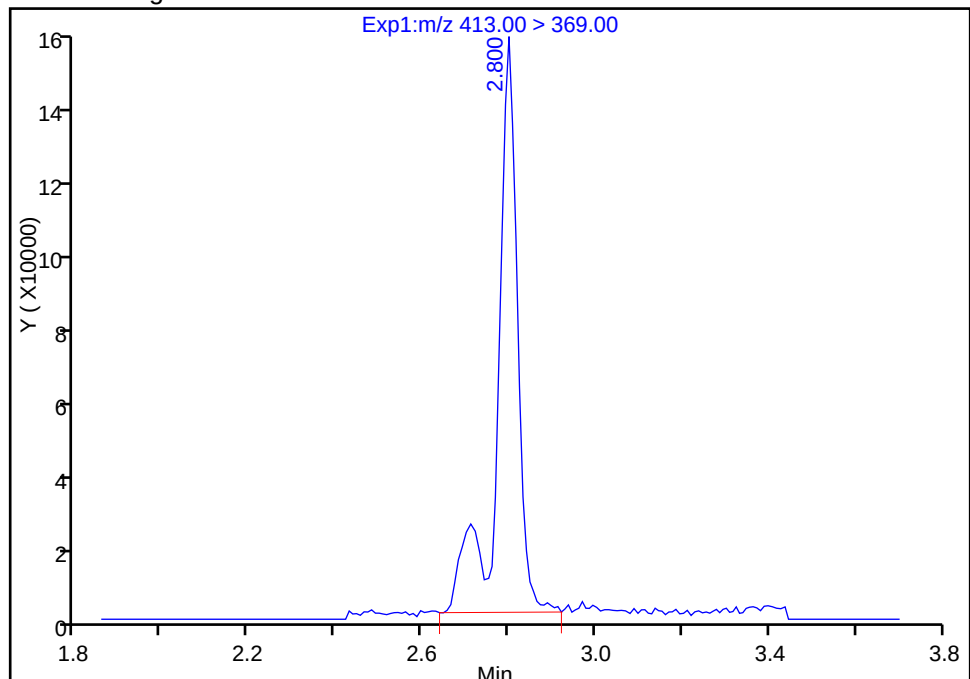
RT: 2.80  
Area: 514676  
Amount: 1.610520  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.80  
Area: 487830  
Amount: 1.526514  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: westendorfc, 08-Dec-2016 08:55:45

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                             |                                               |
|---------------------------------------------|-----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>     | Job No.: <u>320-23783-1</u>                   |
| SDG No.: _____                              |                                               |
| Client Sample ID: <u>DPT-16-19-SO-17-18</u> | Lab Sample ID: <u>320-23783-6</u>             |
| Matrix: <u>Solid</u>                        | Lab File ID: <u>02DEC2016C_015.d</u>          |
| Analysis Method: <u>537 (Modified)</u>      | Date Collected: <u>11/22/2016 11:30</u>       |
| Extraction Method: <u>SHAKE</u>             | Date Extracted: <u>11/28/2016 11:03</u>       |
| Sample wt/vol: <u>5.06(g)</u>               | Date Analyzed: <u>12/02/2016 16:44</u>        |
| Con. Extract Vol.: <u>1.00 (mL)</u>         | Dilution Factor: <u>1</u>                     |
| Injection Volume: <u>2 (uL)</u>             | GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u> |
| % Moisture: <u>20.3</u>                     | GPC Cleanup: (Y/N) <u>N</u>                   |
| Analysis Batch No.: <u>140429</u>           | Units: <u>ug/Kg</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.37   | J | 0.62 | 0.13 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 6.5    | M | 0.62 | 0.16 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.37   | U | 0.50 | 0.13 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 69   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 64   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 73   |   | 25-150 |



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_015.d  
 Lims ID: 320-23783-A-6-A  
 Client ID: DPT-16-19-SO-17-18  
 Sample Type: Client  
 Inject. Date: 02-Dec-2016 16:44:43 ALS Bottle#: 11 Worklist Smp#: 19  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-6-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:32:28 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:27:06

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                   | 1.900 | 1.907     | -0.007    | 1.000     | 37817    | 0.1060          |                 |      |         |       |
| 298.90 > 99.00                   | 1.890 | 1.907     | -0.017    | 0.995     | 17034    |                 | 2.22(0.00-0.00) |      |         |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                   | 2.529 | 2.534     | -0.005    |           | 10457609 | 34.6            |                 | 73.1 | 1389657 |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                  | 2.878 | 2.886     | -0.008    |           | 7593353  | 34.6            |                 | 69.2 | 606548  |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 413.00 > 369.00                  | 2.886 | 2.894     | -0.008    | 1.000     | 233612   | 1.51            |                 |      | 3299    |       |
| 413.00 > 169.00                  | 2.886 | 2.894     | -0.008    | 1.000     | 151520   |                 | 1.54(0.90-1.10) |      | 6224    |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 499.00 > 80.00                   | 3.259 | 3.267     | -0.008    | 1.000     | 4405095  | 26.1            |                 |      | 1503701 | M     |
| 499.00 > 99.00                   | 3.259 | 3.267     | -0.008    | 1.000     | 989788   |                 | 4.45(0.90-1.10) |      | 13953   | M     |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |         |       |
| 503.00 > 80.00                   | 3.259 | 3.267     | -0.008    |           | 7431648  | 30.4            |                 | 63.6 | 309964  |       |

**QC Flag Legend**

Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_015.d

Injection Date: 02-Dec-2016 16:44:43

Instrument ID: A8\_N

Lims ID: 320-23783-A-6-A

Lab Sample ID: 320-23783-6

Client ID: DPT-16-19-SO-17-18

Operator ID: A8-PC\A8

ALS Bottle#: 11

Worklist Smp#: 19

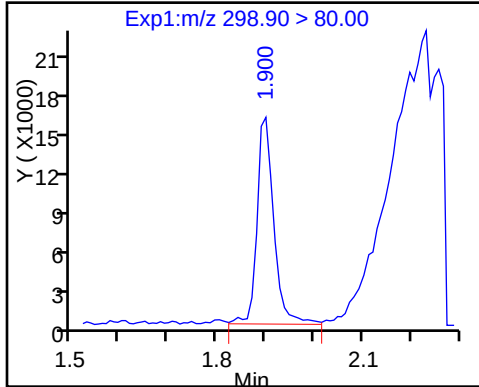
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

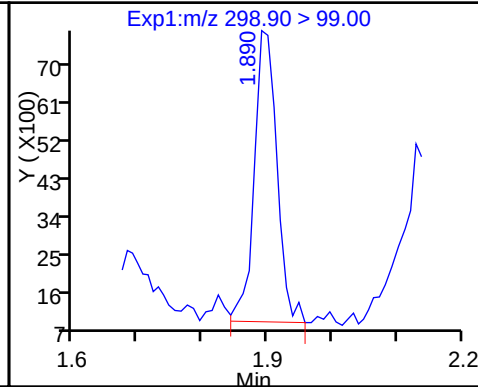
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

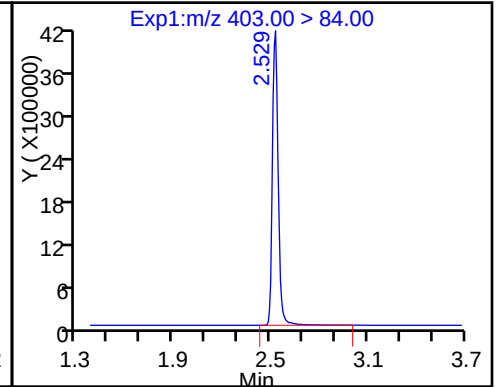
5 Perfluorobutanesulfonic acid



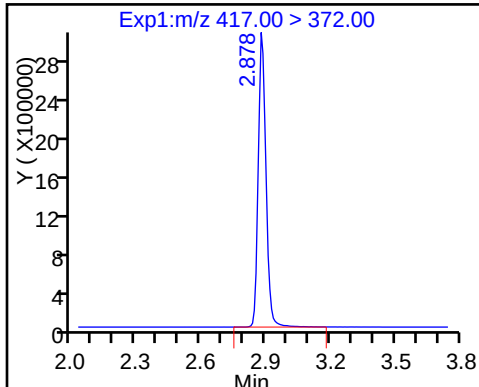
5 Perfluorobutanesulfonic acid



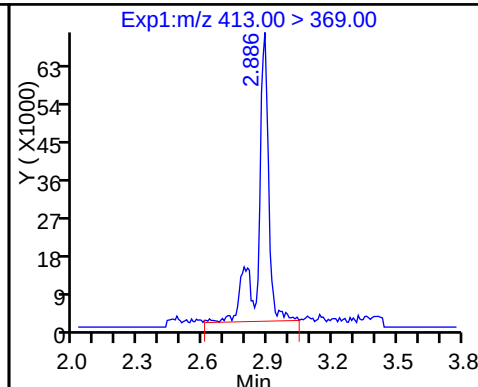
D 10 18O2 PFHxS



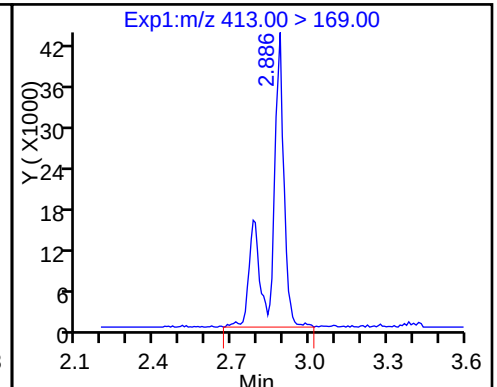
D 14 13C4 PFOA



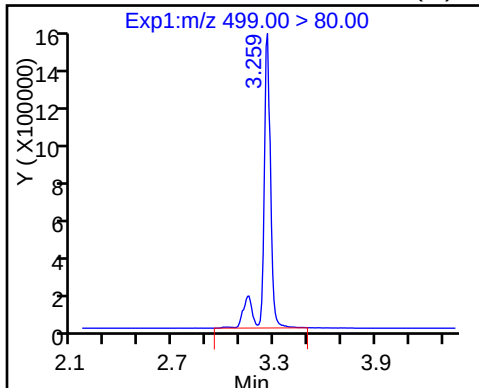
15 Perfluorooctanoic acid



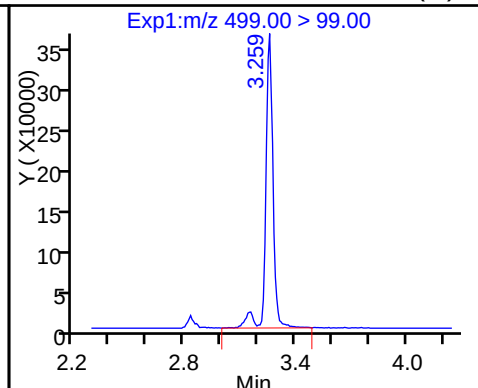
15 Perfluorooctanoic acid



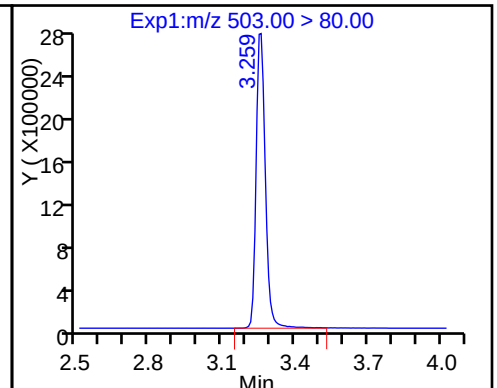
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



## TestAmerica Sacramento

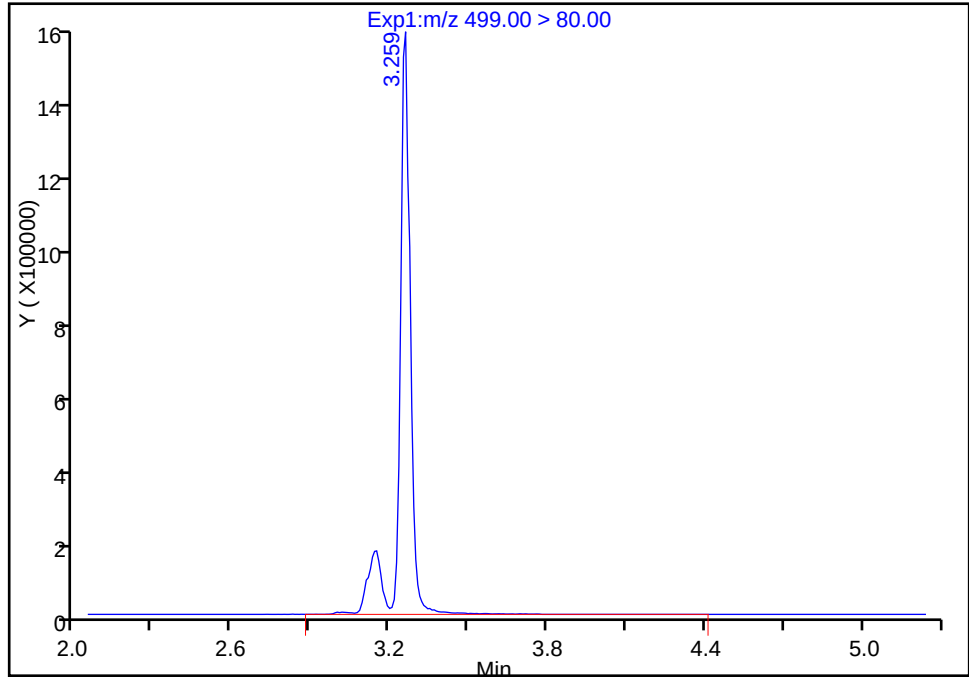
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_015.d |                |                 |                |    |
| Injection Date: | 02-Dec-2016 16:44:43                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-6-A                                                       | Lab Sample ID: | 320-23783-6     |                |    |
| Client ID:      | DPT-16-19-SO-17-18                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 11              | Worklist Smp#: | 19 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

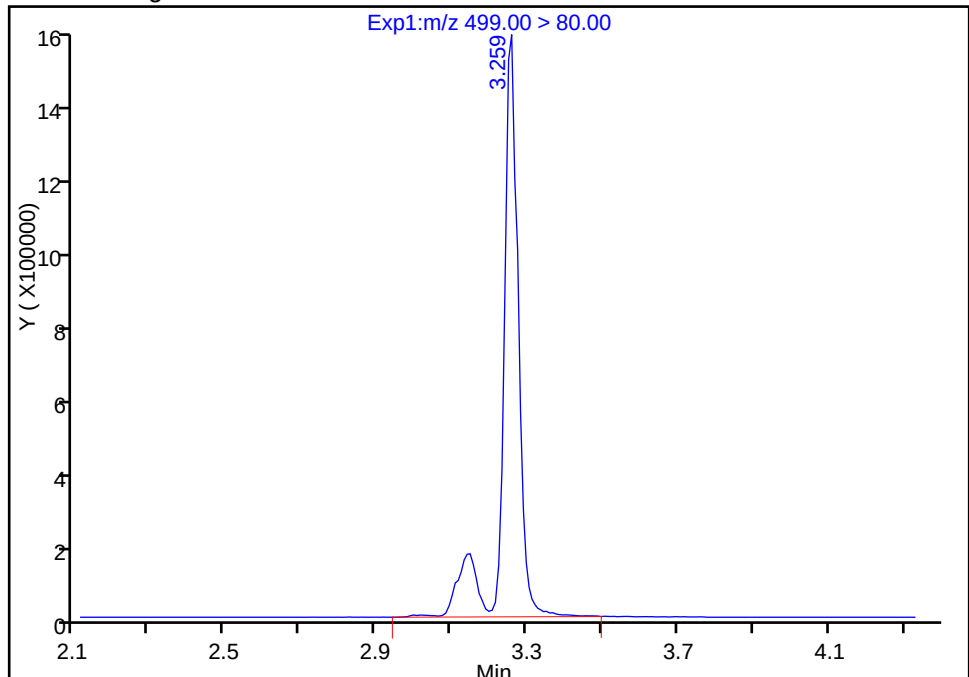
RT: 3.26  
Area: 4460025  
Amount: 26.382369  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 4405095  
Amount: 26.057442  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:27:06

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

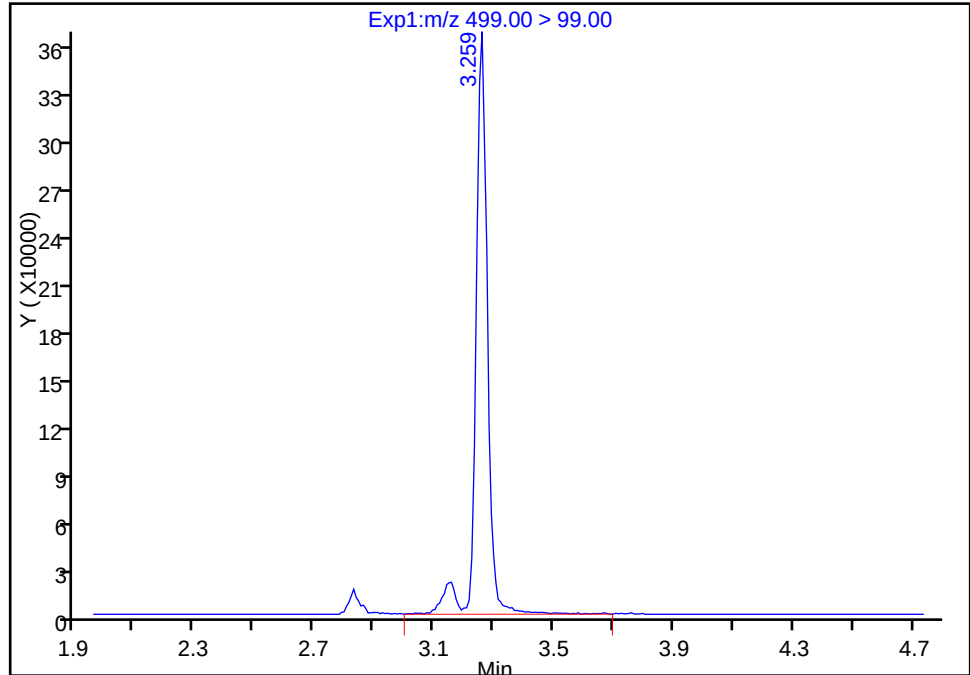
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_015.d  
Injection Date: 02-Dec-2016 16:44:43 Instrument ID: A8\_N  
Lims ID: 320-23783-A-6-A Lab Sample ID: 320-23783-6  
Client ID: DPT-16-19-SO-17-18  
Operator ID: A8-PCVA8 ALS Bottle#: 11 Worklist Smp#: 19  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

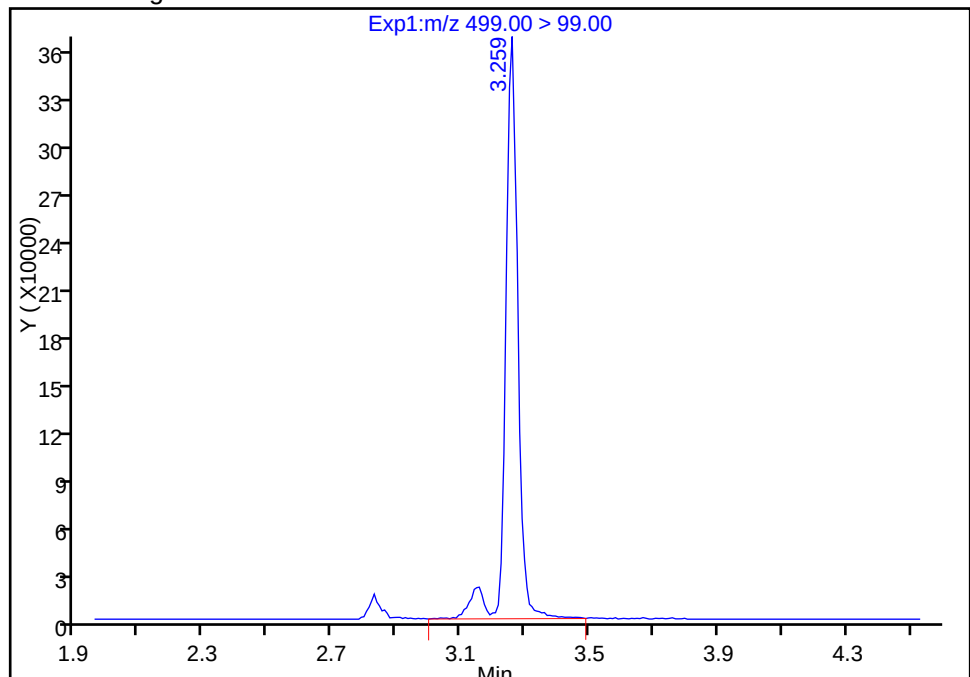
RT: 3.26  
Area: 1001013  
Amount: 26.382369  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 989788  
Amount: 26.057442  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:27:06

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: DPT-16-32-SO-14-15 Lab Sample ID: 320-23783-7  
 Matrix: Solid Lab File ID: 02DEC2016C\_016.d  
 Analysis Method: 537 (Modified) Date Collected: 11/21/2016 09:36  
 Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03  
 Sample wt/vol: 5.03(g) Date Analyzed: 12/02/2016 16:52  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: 17.7 GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 140429 Units: ug/Kg

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 1.1    |   | 0.60 | 0.12 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 46     | M | 0.60 | 0.15 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.36   | U | 0.48 | 0.12 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 96   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 62   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 70   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_016.d  
 Lims ID: 320-23783-A-7-A  
 Client ID: DPT-16-32-SO-14-15  
 Sample Type: Client  
 Inject. Date: 02-Dec-2016 16:52:14 ALS Bottle#: 12 Worklist Smp#: 20  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-7-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:28:23 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:28:23

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                   | 1.897 | 1.907     | -0.010    | 1.000     | 112764   | 0.3307          |                 |      |         |       |
| 298.90 > 99.00                   | 1.897 | 1.907     | -0.010    | 1.000     | 49175    |                 | 2.29(0.00-0.00) |      |         |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                   | 2.523 | 2.534     | -0.012    |           | 9995081  | 33.0            |                 | 69.9 | 312906  |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                  | 2.879 | 2.886     | -0.007    |           | 10547358 | 48.1            |                 | 96.1 | 1344938 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 413.00 > 369.00                  | 2.879 | 2.894     | -0.015    | 1.000     | 968867   | 4.50            |                 |      | 18515   |       |
| 413.00 > 169.00                  | 2.879 | 2.894     | -0.015    | 1.000     | 619103   |                 | 1.56(0.90-1.10) |      | 36207   |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 499.00 > 80.00                   | 3.254 | 3.267     | -0.013    | 1.000     | 31467926 | 190.2           |                 |      | 148739  | M     |
| 499.00 > 99.00                   | 3.262 | 3.267     | -0.005    | 1.003     | 8099323  |                 | 3.89(0.90-1.10) |      | 115582  | M     |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |         |       |
| 503.00 > 80.00                   | 3.262 | 3.267     | -0.005    |           | 7274549  | 29.7            |                 | 62.2 | 237038  |       |

**QC Flag Legend**

Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_016.d

Injection Date: 02-Dec-2016 16:52:14

Instrument ID: A8\_N

Lims ID: 320-23783-A-7-A

Lab Sample ID: 320-23783-7

Client ID: DPT-16-32-SO-14-15

Operator ID: A8-PC\A8

ALS Bottle#: 12

Worklist Smp#: 20

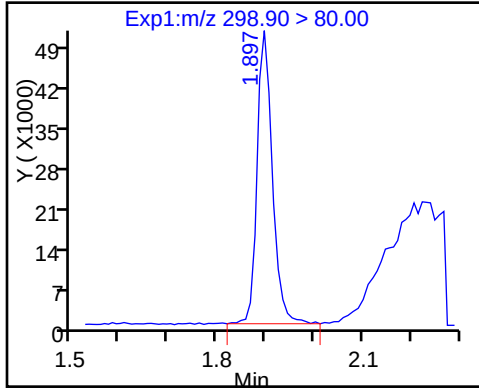
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

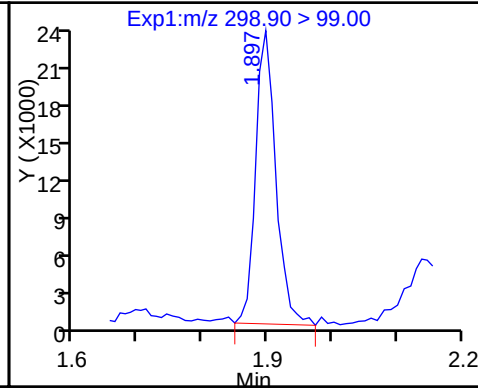
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

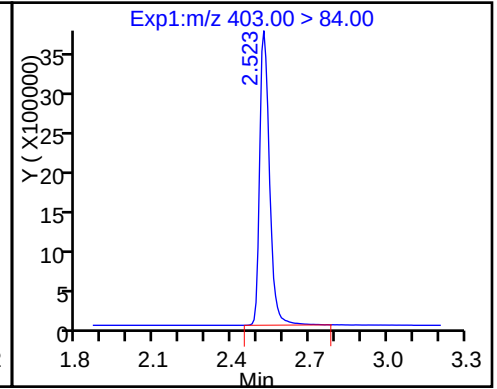
5 Perfluorobutanesulfonic acid



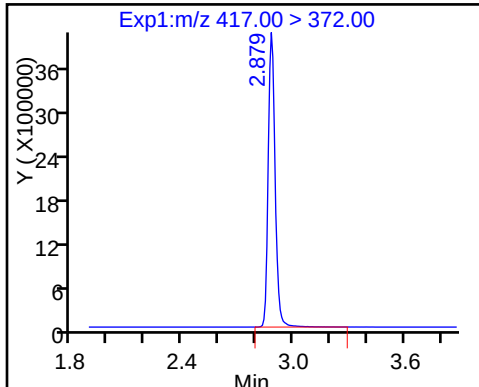
5 Perfluorobutanesulfonic acid



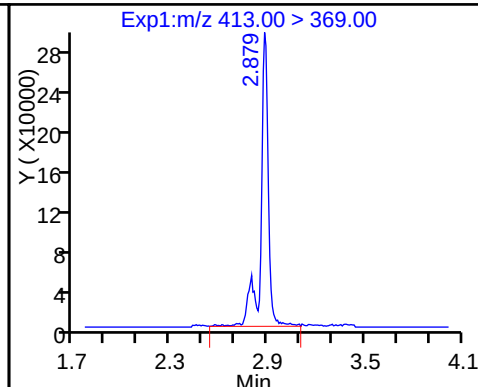
D 10 18O2 PFHxS



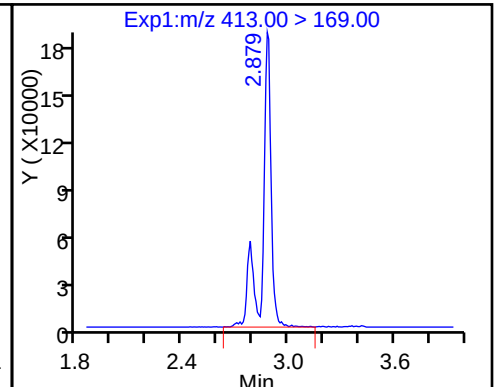
D 14 13C4 PFOA



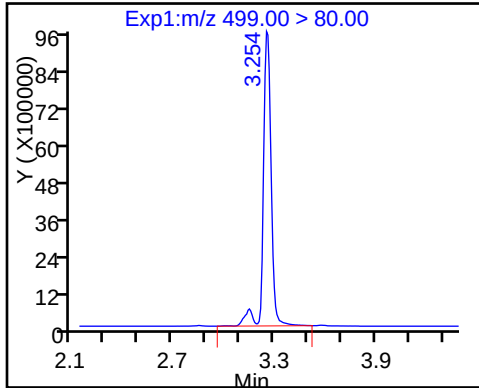
15 Perfluorooctanoic acid



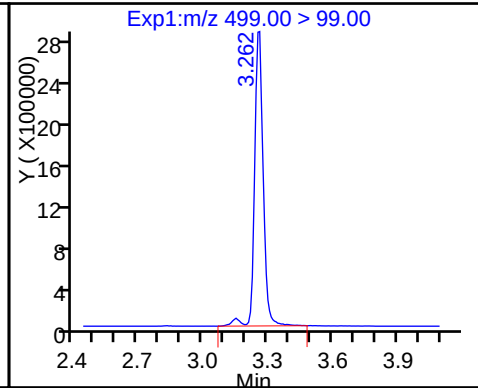
15 Perfluorooctanoic acid



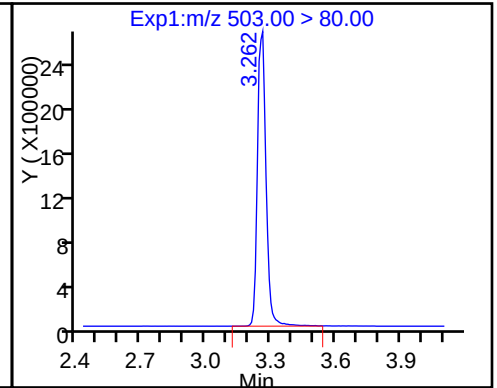
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



## TestAmerica Sacramento

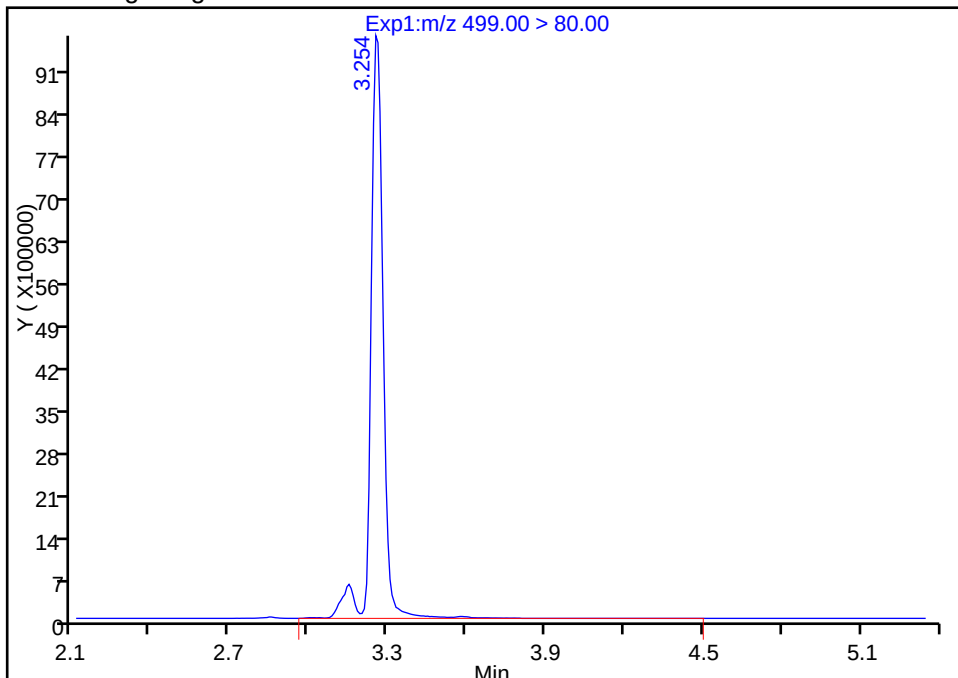
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_016.d  
Injection Date: 02-Dec-2016 16:52:14 Instrument ID: A8\_N  
Lims ID: 320-23783-A-7-A Lab Sample ID: 320-23783-7  
Client ID: DPT-16-32-SO-14-15  
Operator ID: A8-PC\A8 ALS Bottle#: 12 Worklist Smp#: 20  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

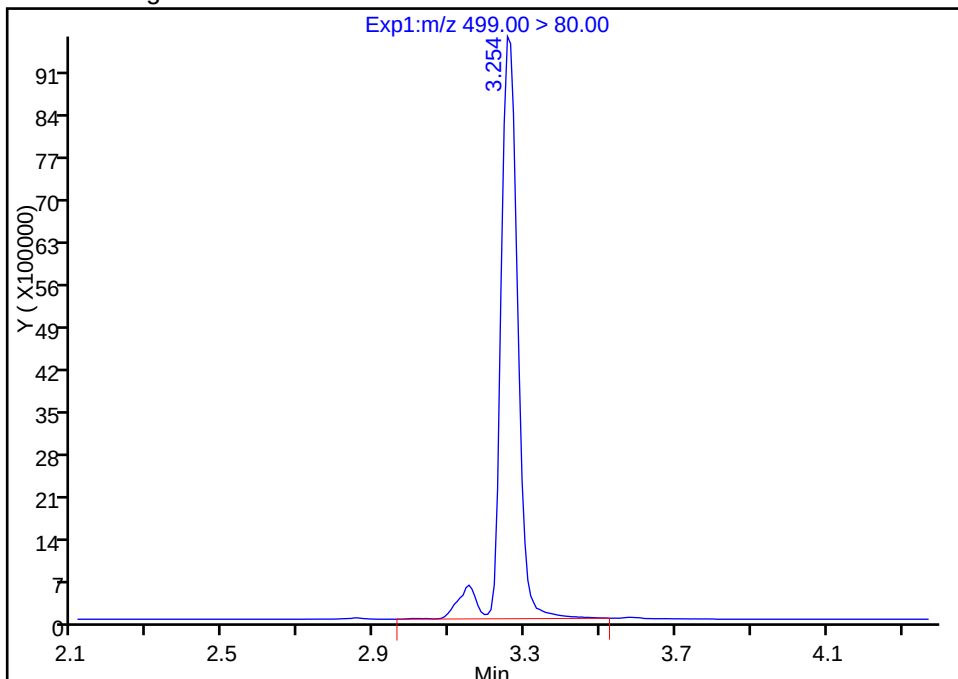
RT: 3.25  
Area: 31952647  
Amount: 193.0912  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.25  
Area: 31467926  
Amount: 190.1620  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:28:23

Audit Action: Manually Integrated

Audit Reason: Baseline



## TestAmerica Sacramento

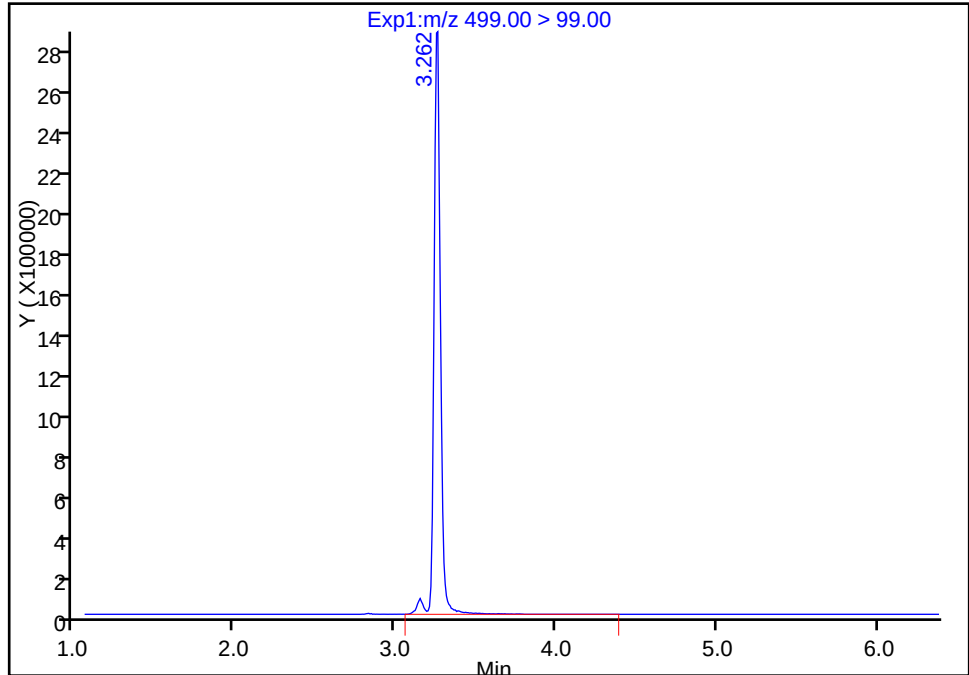
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_016.d  
Injection Date: 02-Dec-2016 16:52:14 Instrument ID: A8\_N  
Lims ID: 320-23783-A-7-A Lab Sample ID: 320-23783-7  
Client ID: DPT-16-32-SO-14-15  
Operator ID: A8-PCVA8 ALS Bottle#: 12 Worklist Smp#: 20  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

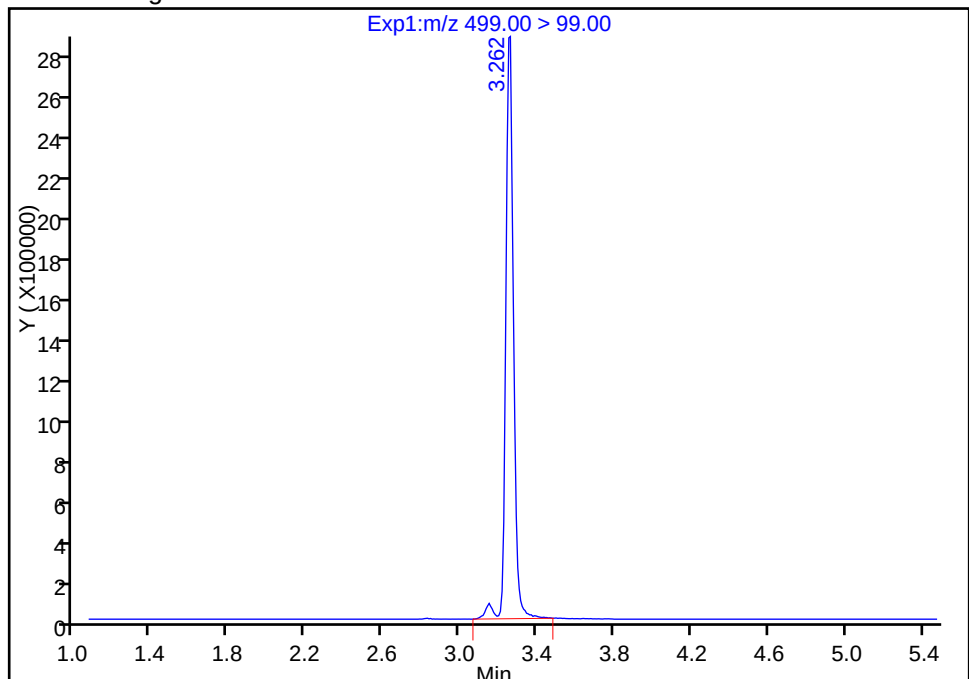
RT: 3.26  
Area: 8210883  
Amount: 193.0912  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 8099323  
Amount: 190.1620  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:28:23

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
SDG No.: \_\_\_\_\_  
Client Sample ID: DPT-16-31-SO-14-15 Lab Sample ID: 320-23783-8  
Matrix: Solid Lab File ID: 02DEC2016C\_017.d  
Analysis Method: 537 (Modified) Date Collected: 11/21/2016 10:12  
Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03  
Sample wt/vol: 5.00(g) Date Analyzed: 12/02/2016 16:59  
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)  
% Moisture: 16.2 GPC Cleanup: (Y/N) N  
Analysis Batch No.: 140429 Units: ug/Kg

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.27   | J | 0.60 | 0.12 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 11     | M | 0.60 | 0.15 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.36   | U | 0.48 | 0.12 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 108  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 82   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 93   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_017.d  
 Lims ID: 320-23783-A-8-A  
 Client ID: DPT-16-31-SO-14-15  
 Sample Type: Client  
 Inject. Date: 02-Dec-2016 16:59:44 ALS Bottle#: 13 Worklist Smp#: 21  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-8-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:29:01 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:29:01

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                   | 1.906 | 1.907     | -0.001    | 1.000     | 12175    | 0.0270          |                 |      |         |       |
| 298.90 > 99.00                   | 1.906 | 1.907     | -0.001    | 1.000     | 6063     |                 | 2.01(0.00-0.00) |      |         |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                   | 2.529 | 2.534     | -0.005    |           | 13238095 | 43.8            |                 | 92.5 | 640197  |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                  | 2.886 | 2.886     | 0.0       |           | 11860760 | 54.1            |                 | 108  | 1429539 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 413.00 > 369.00                  | 2.886 | 2.894     | -0.008    | 1.000     | 273450   | 1.13            |                 |      | 3347    |       |
| 413.00 > 169.00                  | 2.886 | 2.894     | -0.008    | 1.000     | 180855   |                 | 1.51(0.90-1.10) |      | 9027    |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 499.00 > 80.00                   | 3.259 | 3.267     | -0.008    | 1.000     | 10232948 | 46.9            |                 |      | 149415  | M     |
| 499.00 > 99.00                   | 3.259 | 3.267     | -0.008    | 1.000     | 2262395  |                 | 4.52(0.90-1.10) |      | 70060   | M     |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |         |       |
| 503.00 > 80.00                   | 3.259 | 3.267     | -0.008    |           | 9582384  | 39.2            |                 | 82.0 | 477814  |       |

**QC Flag Legend**

Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_017.d

Injection Date: 02-Dec-2016 16:59:44

Instrument ID: A8\_N

Lims ID: 320-23783-A-8-A

Lab Sample ID: 320-23783-8

Client ID: DPT-16-31-SO-14-15

Operator ID: A8-PC\A8

ALS Bottle#: 13

Worklist Smp#: 21

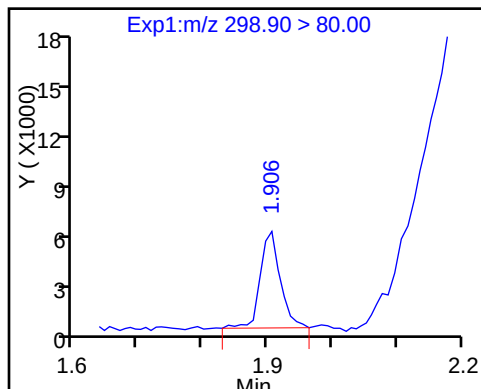
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

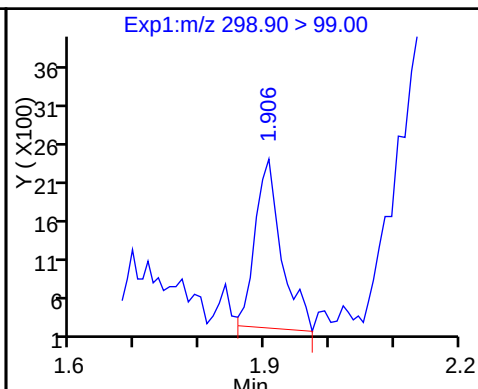
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

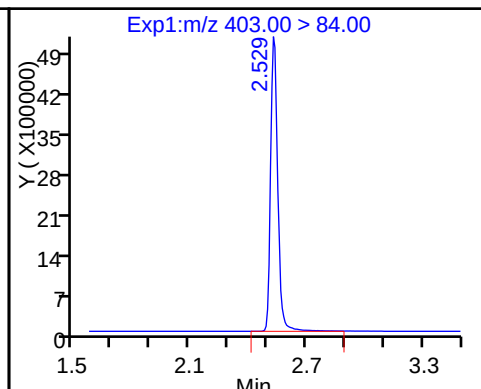
5 Perfluorobutanesulfonic acid



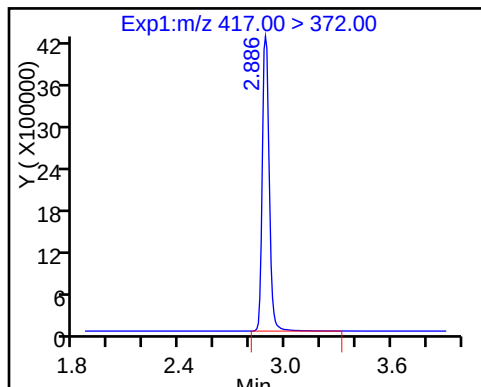
5 Perfluorobutanesulfonic acid



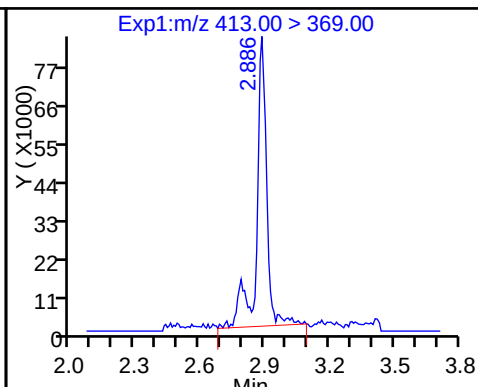
D 10 18O2 PFHxS



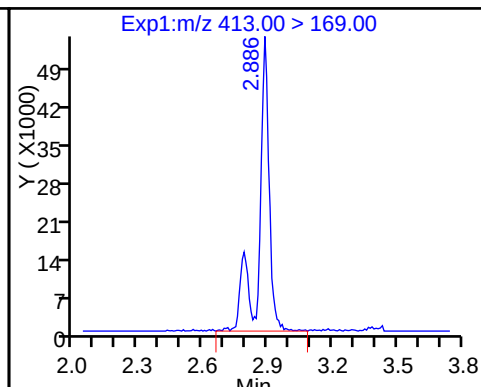
D 14 13C4 PFOA



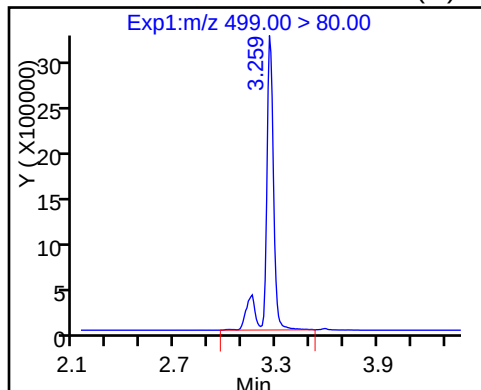
15 Perfluorooctanoic acid



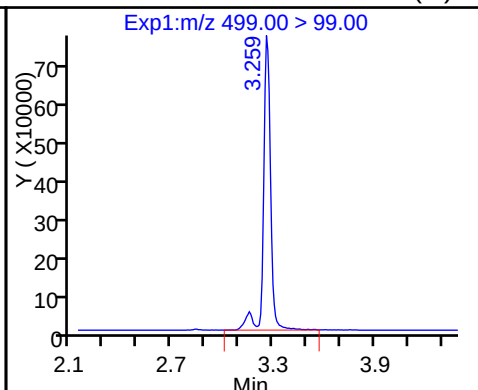
15 Perfluorooctanoic acid



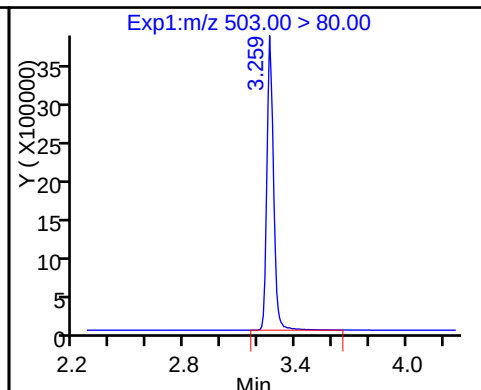
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



## TestAmerica Sacramento

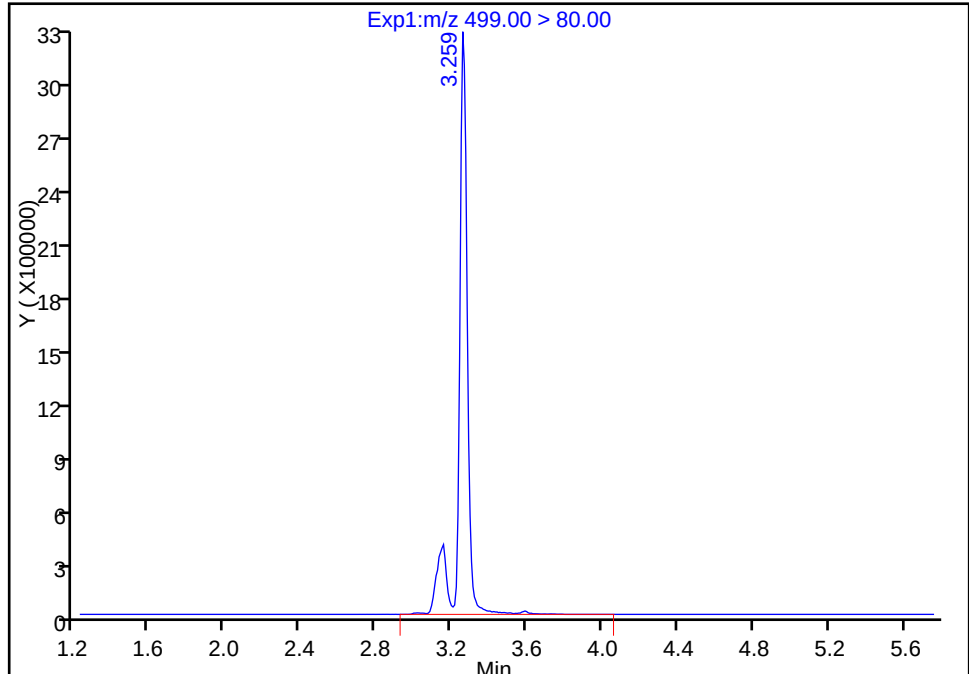
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_017.d |                |                 |                |    |
| Injection Date: | 02-Dec-2016 16:59:44                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-8-A                                                       | Lab Sample ID: | 320-23783-8     |                |    |
| Client ID:      | DPT-16-31-SO-14-15                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 13              | Worklist Smp#: | 21 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

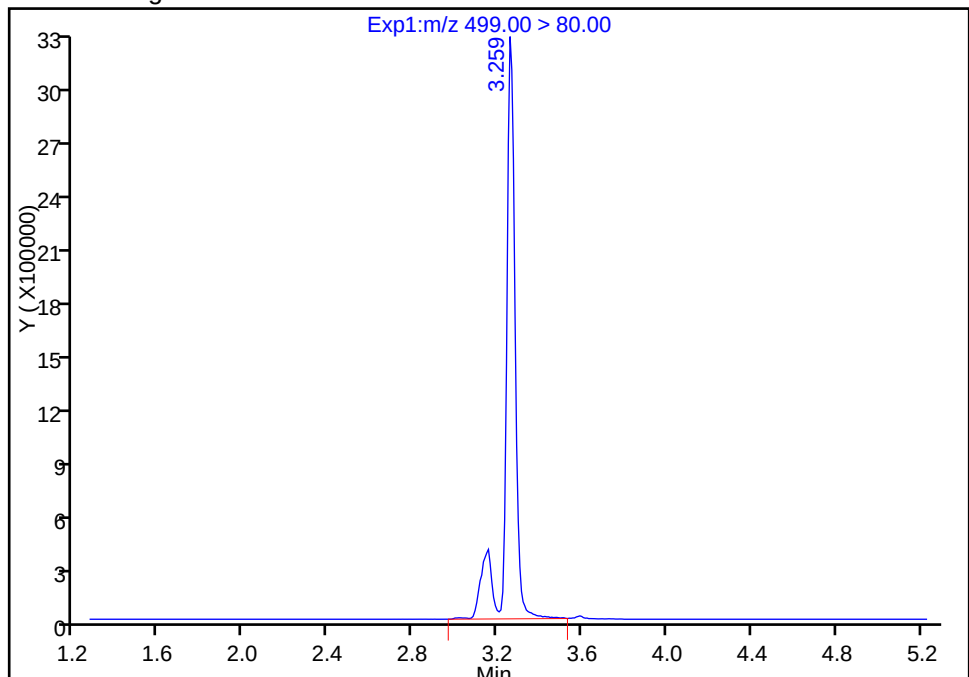
RT: 3.26  
Area: 10384466  
Amount: 47.640052  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 10232948  
Amount: 46.944944  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:29:01

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

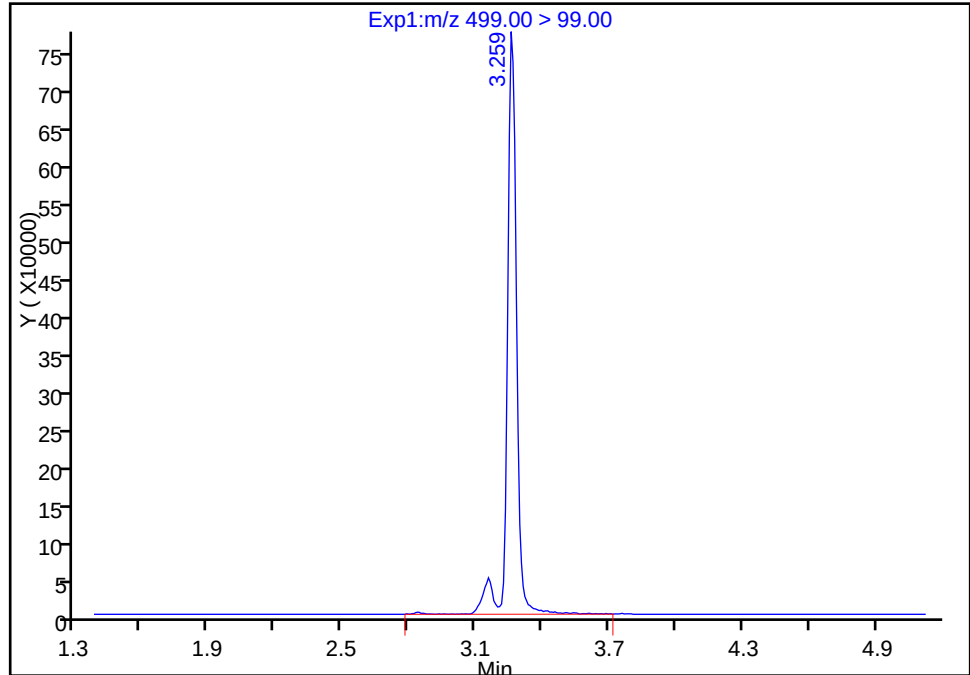
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_017.d  
Injection Date: 02-Dec-2016 16:59:44 Instrument ID: A8\_N  
Lims ID: 320-23783-A-8-A Lab Sample ID: 320-23783-8  
Client ID: DPT-16-31-SO-14-15  
Operator ID: A8-PCVA8 ALS Bottle#: 13 Worklist Smp#: 21  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

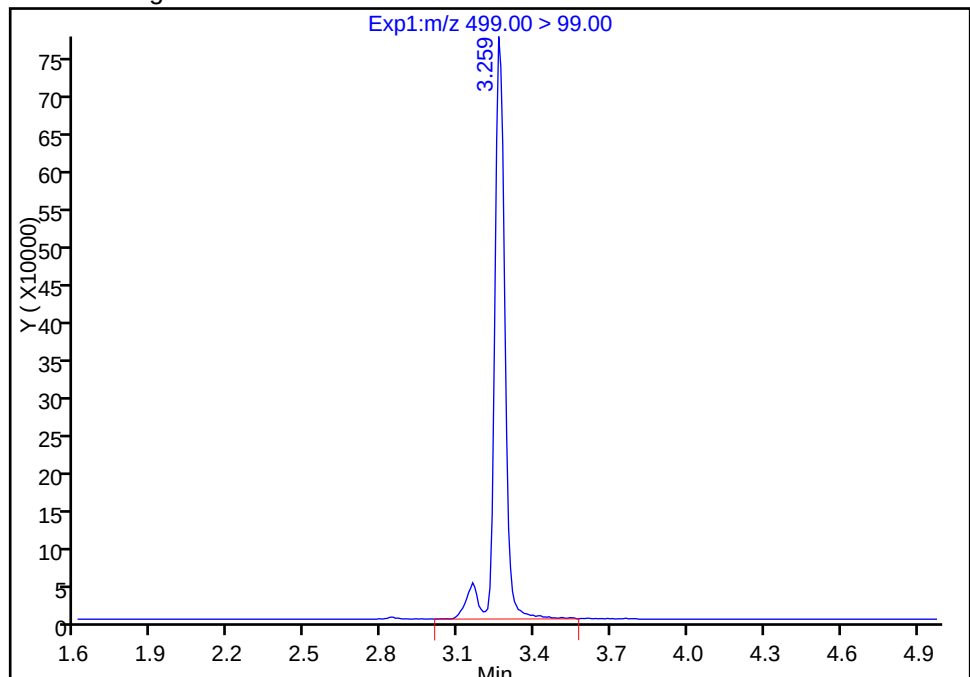
RT: 3.26  
Area: 2281253  
Amount: 47.640052  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 2262395  
Amount: 46.944944  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:29:01

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: DPT-16-30-SO-14-15 Lab Sample ID: 320-23783-9  
 Matrix: Solid Lab File ID: 02DEC2016C\_018.d  
 Analysis Method: 537 (Modified) Date Collected: 11/21/2016 10:46  
 Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03  
 Sample wt/vol: 5.02(g) Date Analyzed: 12/02/2016 17:07  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: 16.2 GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 140429 Units: ug/Kg

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 5.5    |   | 0.59 | 0.12 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 57     | M | 0.59 | 0.15 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.36   | U | 0.48 | 0.12 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 101  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 63   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 90   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_018.d  
 Lims ID: 320-23783-A-9-A  
 Client ID: DPT-16-30-SO-14-15  
 Sample Type: Client  
 Inject. Date: 02-Dec-2016 17:07:17 ALS Bottle#: 14 Worklist Smp#: 22  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-9-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:29:56 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:29:56

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                   | 1.906 | 1.907     | -0.001    | 1.000     | 83824    | 0.1911          |                 |      |         |       |
| 298.90 > 99.00                   | 1.906 | 1.907     | -0.001    | 1.000     | 39255    |                 | 2.14(0.00-0.00) |      |         |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                   | 2.531 | 2.534     | -0.003    |           | 12857523 | 42.5            |                 | 89.9 | 435506  |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                  | 2.888 | 2.886     | 0.002     |           | 11077577 | 50.5            |                 | 101  | 1065418 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 413.00 > 369.00                  | 2.888 | 2.894     | -0.006    | 1.000     | 5268737  | 23.3            |                 |      | 80849   |       |
| 413.00 > 169.00                  | 2.888 | 2.894     | -0.006    | 1.000     | 3495011  |                 | 1.51(0.90-1.10) |      | 139772  |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 499.00 > 80.00                   | 3.262 | 3.267     | -0.005    | 1.000     | 40173597 | 240.8           |                 |      | 358921  | M     |
| 499.00 > 99.00                   | 3.262 | 3.267     | -0.005    | 1.000     | 8876431  |                 | 4.53(0.90-1.10) |      | 281528  | M     |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |         |       |
| 503.00 > 80.00                   | 3.262 | 3.267     | -0.005    |           | 7333704  | 30.0            |                 | 62.7 | 567209  |       |

**QC Flag Legend**

Review Flags

M - Manually Integrated



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_018.d

Injection Date: 02-Dec-2016 17:07:17

Instrument ID: A8\_N

Lims ID: 320-23783-A-9-A

Lab Sample ID: 320-23783-9

Client ID: DPT-16-30-SO-14-15

Operator ID: A8-PC\A8

ALS Bottle#: 14

Worklist Smp#: 22

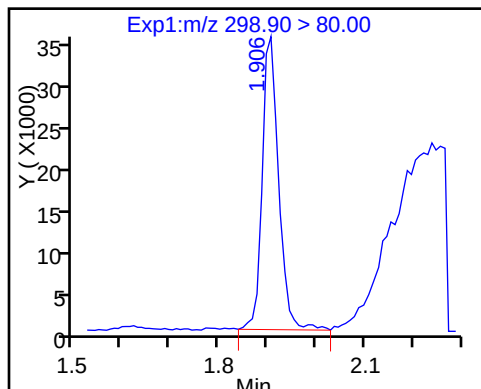
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

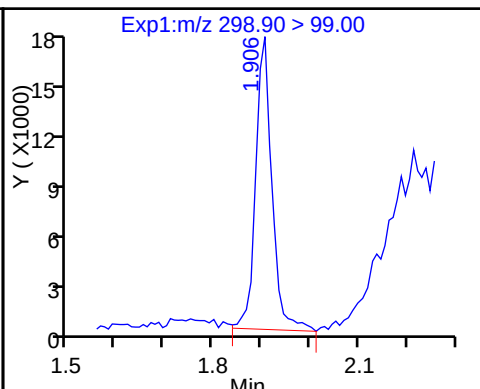
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

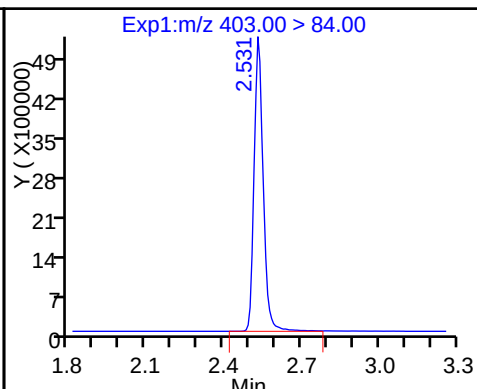
5 Perfluorobutanesulfonic acid



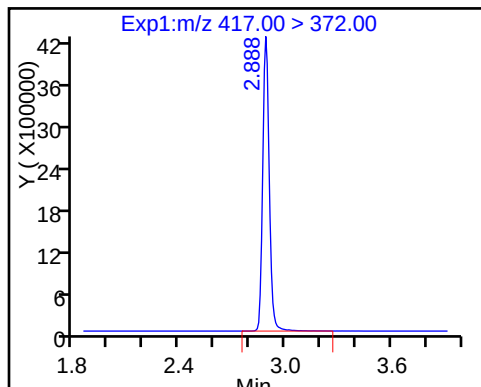
5 Perfluorobutanesulfonic acid



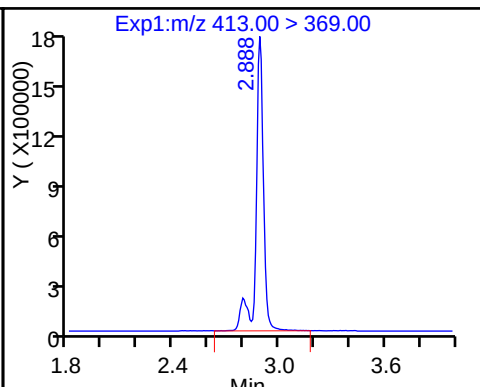
D 10 18O2 PFHxS



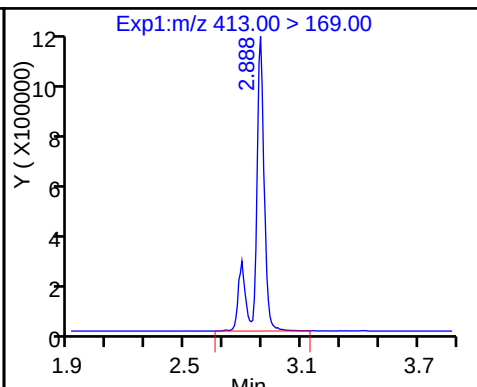
D 14 13C4 PFOA



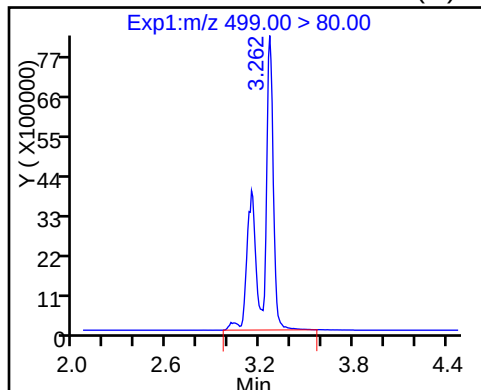
15 Perfluorooctanoic acid



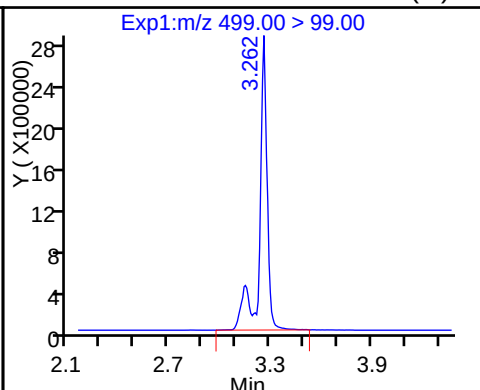
15 Perfluorooctanoic acid



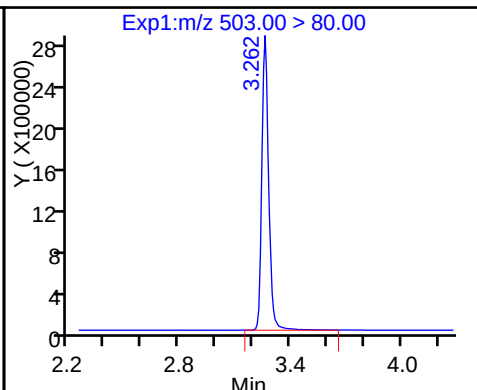
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



## TestAmerica Sacramento

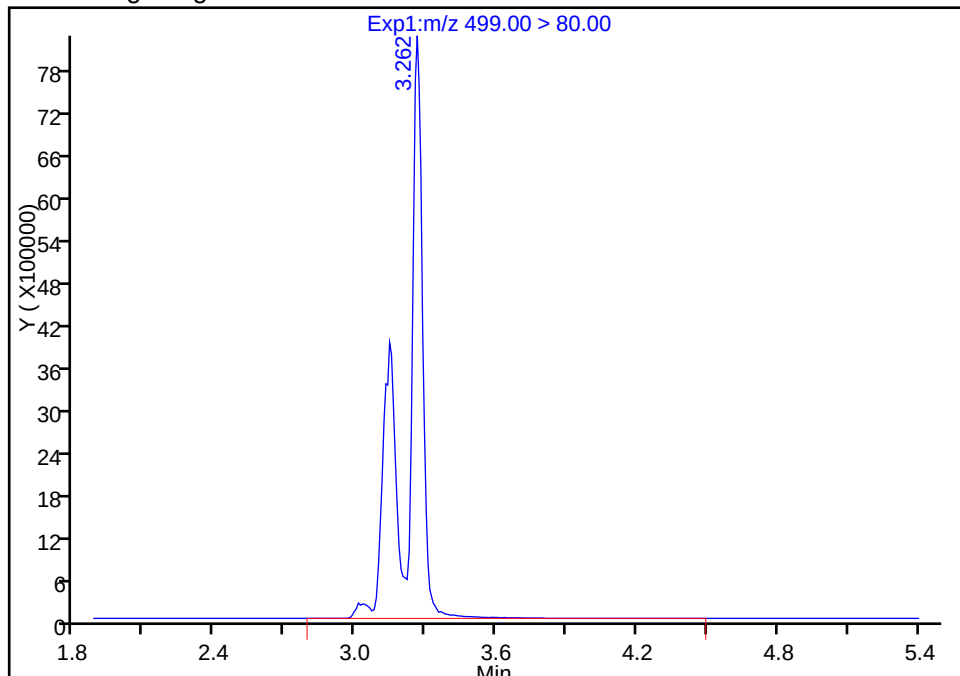
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_018.d |                |                 |                |    |
| Injection Date: | 02-Dec-2016 17:07:17                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-9-A                                                       | Lab Sample ID: | 320-23783-9     |                |    |
| Client ID:      | DPT-16-30-SO-14-15                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 14              | Worklist Smp#: | 22 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

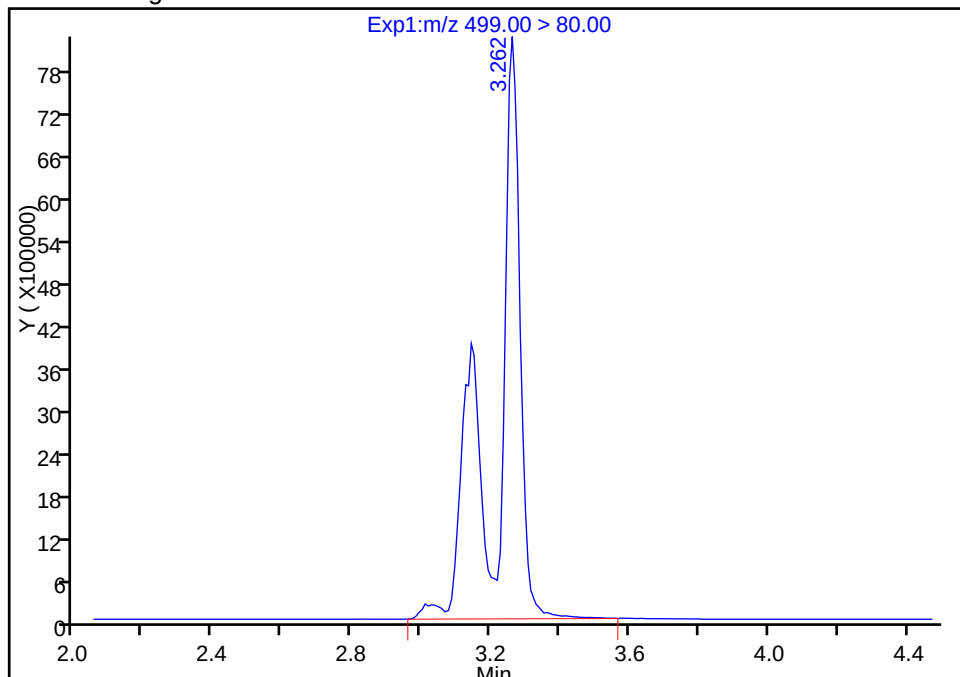
RT: 3.26  
Area: 40507569  
Amount: 242.8144  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 40173597  
Amount: 240.8125  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:29:56

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

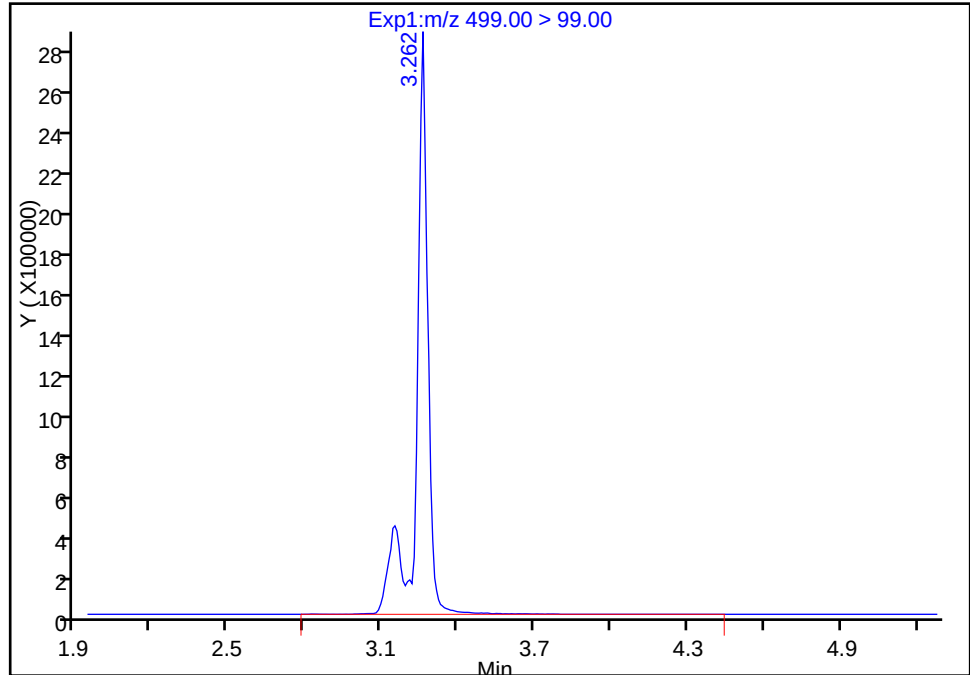
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_018.d  
Injection Date: 02-Dec-2016 17:07:17 Instrument ID: A8\_N  
Lims ID: 320-23783-A-9-A Lab Sample ID: 320-23783-9  
Client ID: DPT-16-30-SO-14-15  
Operator ID: A8-PCVA8 ALS Bottle#: 14 Worklist Smp#: 22  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

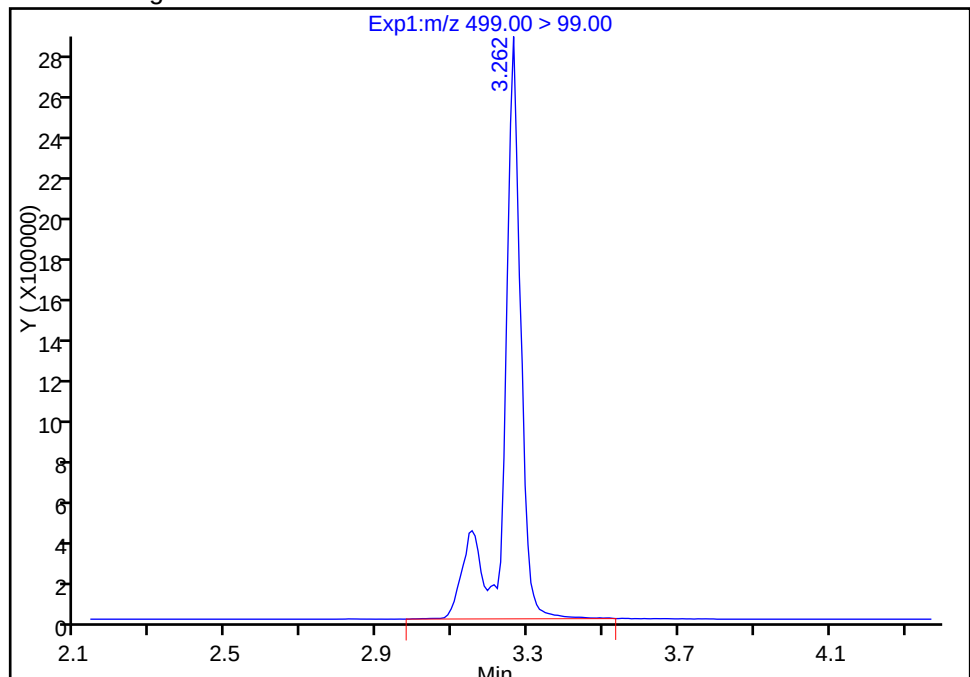
RT: 3.26  
Area: 8968373  
Amount: 242.8144  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 8876431  
Amount: 240.8125  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:29:56

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                             |                                               |
|---------------------------------------------|-----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>     | Job No.: <u>320-23783-1</u>                   |
| SDG No.: _____                              |                                               |
| Client Sample ID: <u>DPT-16-28-SO-14-15</u> | Lab Sample ID: <u>320-23783-10</u>            |
| Matrix: <u>Solid</u>                        | Lab File ID: <u>02DEC2016C_019.d</u>          |
| Analysis Method: <u>537 (Modified)</u>      | Date Collected: <u>11/21/2016 11:54</u>       |
| Extraction Method: <u>SHAKE</u>             | Date Extracted: <u>11/28/2016 11:03</u>       |
| Sample wt/vol: <u>5.03(g)</u>               | Date Analyzed: <u>12/02/2016 17:14</u>        |
| Con. Extract Vol.: <u>1.00 (mL)</u>         | Dilution Factor: <u>1</u>                     |
| Injection Volume: <u>2 (uL)</u>             | GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u> |
| % Moisture: <u>14.8</u>                     | GPC Cleanup: (Y/N) <u>N</u>                   |
| Analysis Batch No.: <u>140429</u>           | Units: <u>ug/Kg</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.45   | J | 0.58 | 0.12 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 10     | M | 0.58 | 0.15 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.35   | U | 0.47 | 0.12 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 105  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 61   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 89   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_019.d  
 Lims ID: 320-23783-A-10-A  
 Client ID: DPT-16-28-SO-14-15  
 Sample Type: Client  
 Inject. Date: 02-Dec-2016 17:14:47 ALS Bottle#: 15 Worklist Smp#: 23  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-10-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:30:24 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:30:24

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |        |       |
| 298.90 > 80.00                   | 1.897 | 1.907     | -0.010    | 1.000     | 35638    | 0.0818          |                 |      |        |       |
| 298.90 > 99.00                   | 1.897 | 1.907     | -0.010    | 1.000     | 18199    |                 | 1.96(0.00-0.00) |      |        |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |        |       |
| 403.00 > 84.00                   | 2.522 | 2.534     | -0.012    |           | 12769908 | 42.2            |                 | 89.3 | 822686 |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |        |       |
| 417.00 > 372.00                  | 2.879 | 2.886     | -0.007    |           | 11510268 | 52.5            |                 | 105  | 884090 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 413.00 > 369.00                  | 2.879 | 2.894     | -0.015    | 1.000     | 453417   | 1.93            |                 |      | 7493   |       |
| 413.00 > 169.00                  | 2.888 | 2.894     | -0.006    | 1.003     | 277329   |                 | 1.63(0.90-1.10) |      | 14351  |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 499.00 > 80.00                   | 3.262 | 3.267     | -0.005    | 1.000     | 7177023  | 44.4            |                 |      | 141636 | M     |
| 499.00 > 99.00                   | 3.262 | 3.267     | -0.005    | 1.000     | 1486211  |                 | 4.83(0.90-1.10) |      | 54507  | M     |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |        |       |
| 503.00 > 80.00                   | 3.262 | 3.267     | -0.005    |           | 7102884  | 29.0            |                 | 60.7 | 332839 |       |

**QC Flag Legend**

Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_019.d

Injection Date: 02-Dec-2016 17:14:47

Instrument ID: A8\_N

Lims ID: 320-23783-A-10-A

Lab Sample ID: 320-23783-10

Client ID: DPT-16-28-SO-14-15

Operator ID: A8-PC\A8

ALS Bottle#: 15

Worklist Smp#: 23

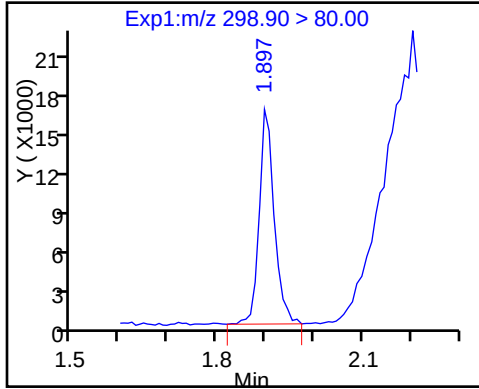
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

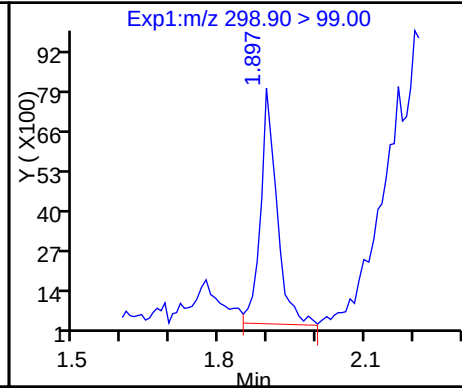
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

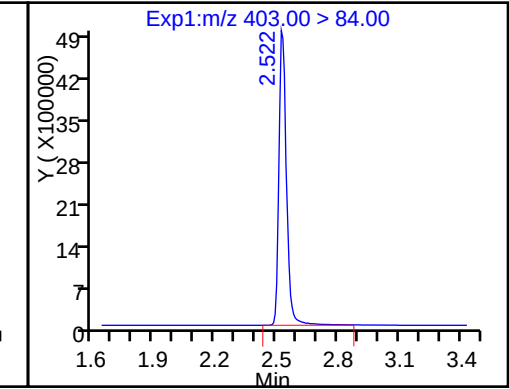
5 Perfluorobutanesulfonic acid



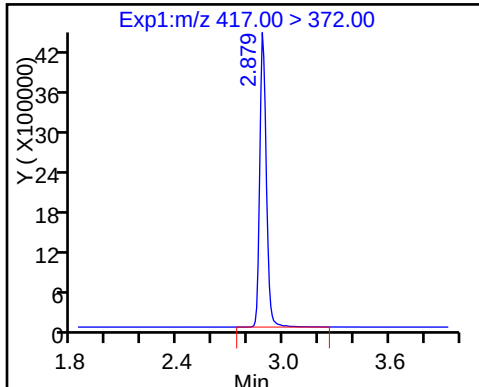
5 Perfluorobutanesulfonic acid



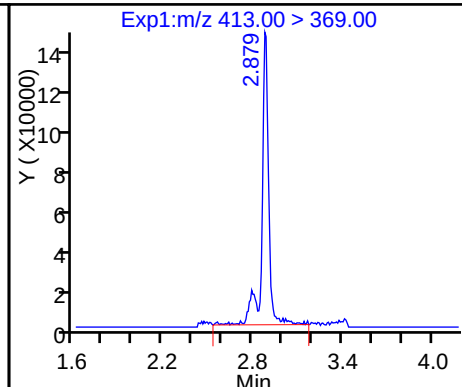
D 10 18O2 PFHxS



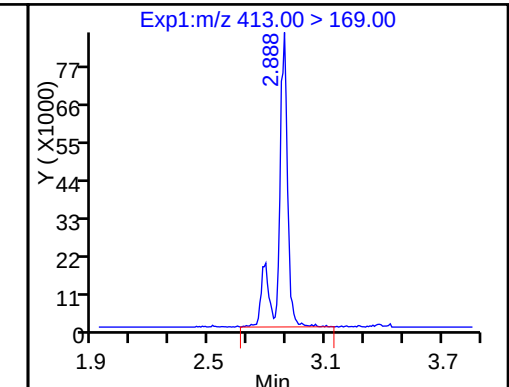
D 14 13C4 PFOA



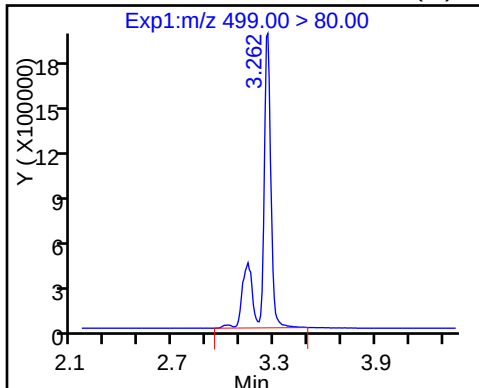
15 Perfluorooctanoic acid



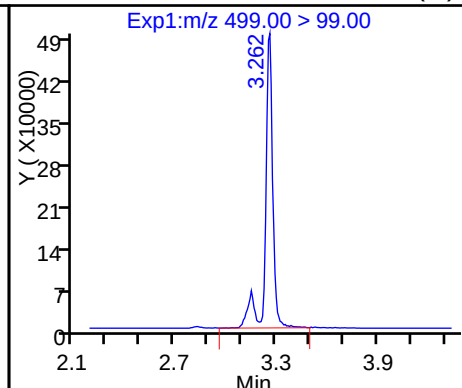
15 Perfluorooctanoic acid



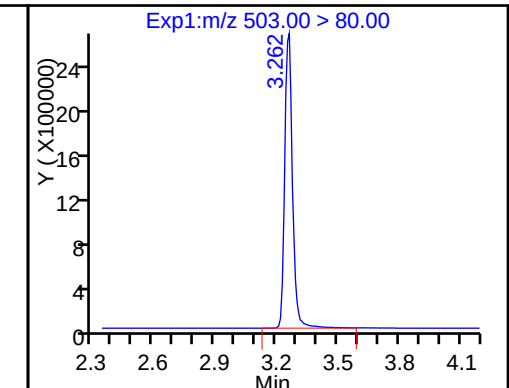
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



## TestAmerica Sacramento

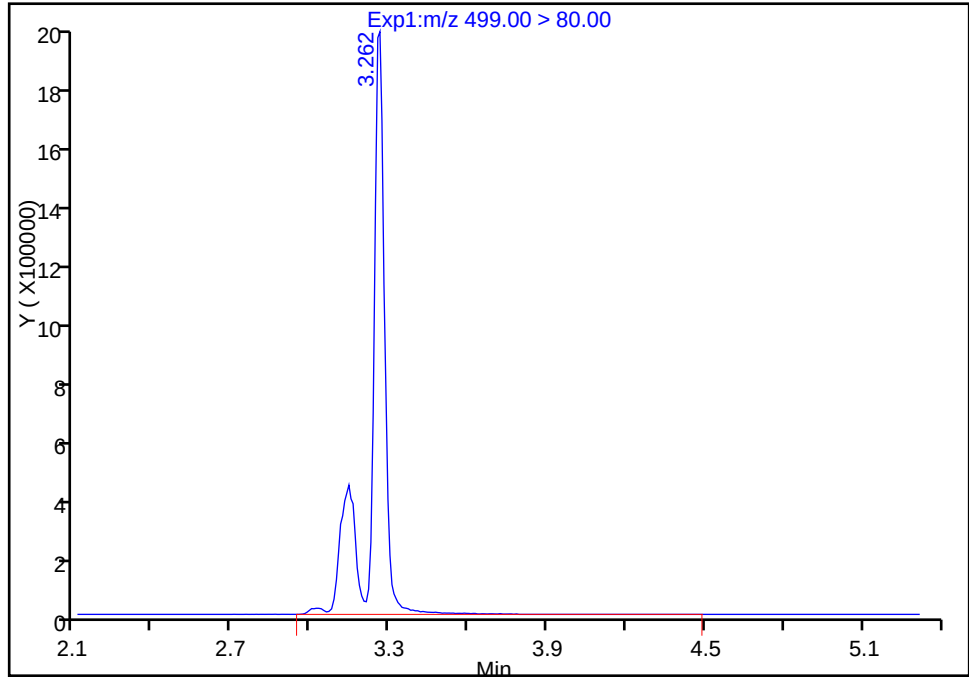
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_019.d |                |                 |                |    |
| Injection Date: | 02-Dec-2016 17:14:47                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-10-A                                                      | Lab Sample ID: | 320-23783-10    |                |    |
| Client ID:      | DPT-16-28-SO-14-15                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 15              | Worklist Smp#: | 23 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

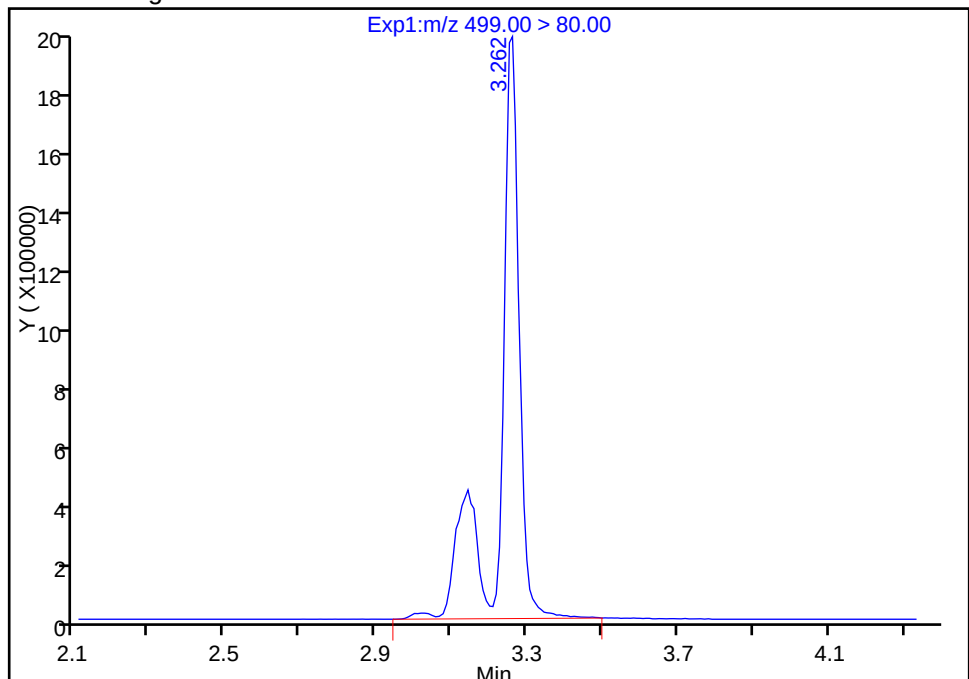
RT: 3.26  
Area: 7288147  
Amount: 45.107009  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 7177023  
Amount: 44.419252  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:30:24

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

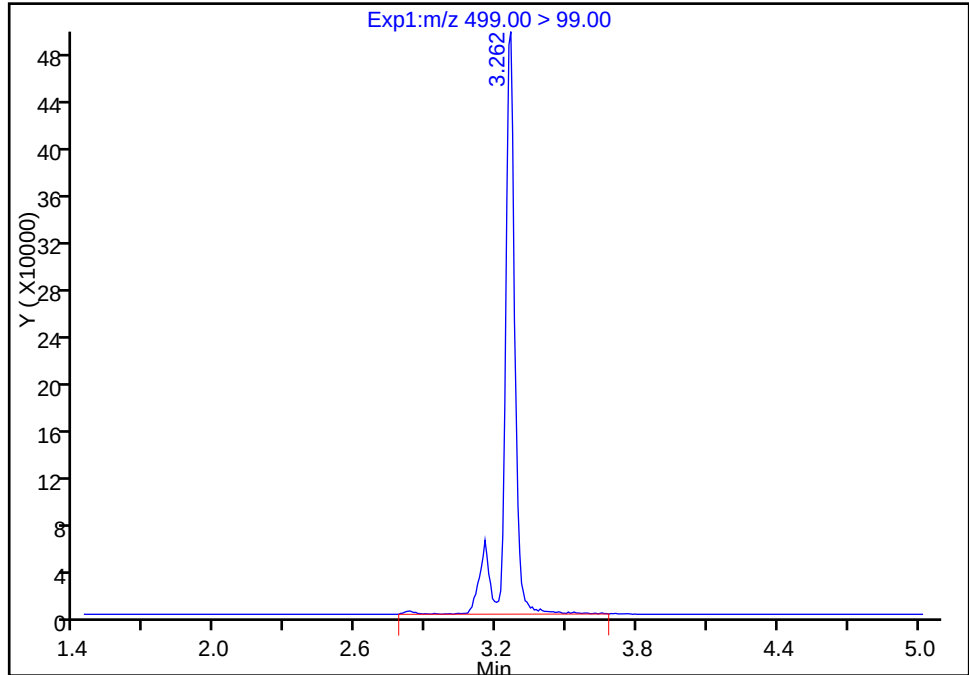
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_019.d  
Injection Date: 02-Dec-2016 17:14:47 Instrument ID: A8\_N  
Lims ID: 320-23783-A-10-A Lab Sample ID: 320-23783-10  
Client ID: DPT-16-28-SO-14-15  
Operator ID: A8-PCVA8 ALS Bottle#: 15 Worklist Smp#: 23  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

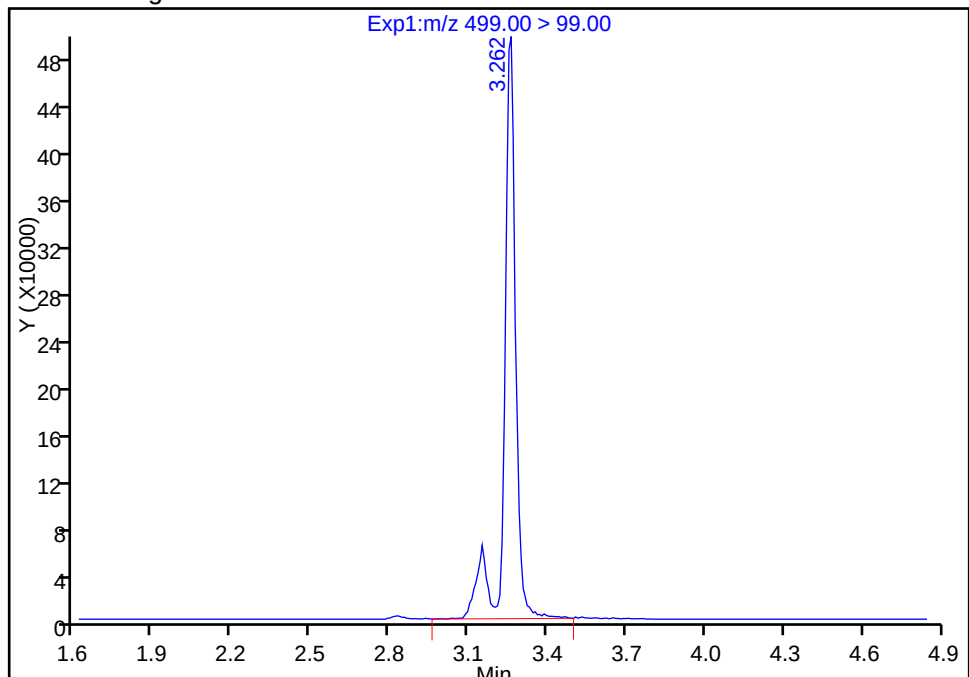
RT: 3.26  
Area: 1513264  
Amount: 45.107009  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 1486211  
Amount: 44.419252  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:30:24

Audit Action: Manually Integrated

Audit Reason: Baseline



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                             |                                               |
|---------------------------------------------|-----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>     | Job No.: <u>320-23783-1</u>                   |
| SDG No.: _____                              |                                               |
| Client Sample ID: <u>DPT-16-15-SO-14-15</u> | Lab Sample ID: <u>320-23783-11</u>            |
| Matrix: <u>Solid</u>                        | Lab File ID: <u>02DEC2016C_020.d</u>          |
| Analysis Method: <u>537 (Modified)</u>      | Date Collected: <u>11/21/2016 12:50</u>       |
| Extraction Method: <u>SHAKE</u>             | Date Extracted: <u>11/28/2016 11:03</u>       |
| Sample wt/vol: <u>5.05(g)</u>               | Date Analyzed: <u>12/02/2016 17:22</u>        |
| Con. Extract Vol.: <u>1.00 (mL)</u>         | Dilution Factor: <u>1</u>                     |
| Injection Volume: <u>2 (uL)</u>             | GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u> |
| % Moisture: <u>19.4</u>                     | GPC Cleanup: (Y/N) <u>N</u>                   |
| Analysis Batch No.: <u>140429</u>           | Units: <u>ug/Kg</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.51   | J | 0.61 | 0.13 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 11     | M | 0.61 | 0.15 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.37   | U | 0.49 | 0.13 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 101  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 66   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 89   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_020.d  
 Lims ID: 320-23783-A-11-A  
 Client ID: DPT-16-15-SO-14-15  
 Sample Type: Client  
 Inject. Date: 02-Dec-2016 17:22:19 ALS Bottle#: 16 Worklist Smp#: 24  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-11-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:31:06 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:31:06

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                   | 1.906 | 1.907     | -0.001    | 1.000     | 66604    | 0.1533          |                 |      |         |       |
| 298.90 > 99.00                   | 1.897 | 1.907     | -0.010    | 0.995     | 29112    |                 | 2.29(0.00-0.00) |      |         |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                   | 2.531 | 2.534     | -0.003    |           | 12739222 | 42.1            |                 | 89.0 | 636115  |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                  | 2.888 | 2.886     | 0.002     |           | 11061350 | 50.4            |                 | 101  | 1057568 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 413.00 > 369.00                  | 2.880 | 2.894     | -0.014    | 1.000     | 465088   | 2.06            |                 |      | 7440    |       |
| 413.00 > 169.00                  | 2.880 | 2.894     | -0.014    | 1.000     | 288775   |                 | 1.61(0.90-1.10) |      | 14333   |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 499.00 > 80.00                   | 3.262 | 3.267     | -0.005    | 1.000     | 7622896  | 43.1            |                 |      | 269368  | M     |
| 499.00 > 99.00                   | 3.262 | 3.267     | -0.005    | 1.000     | 1717205  |                 | 4.44(0.90-1.10) |      | 67501   | M     |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |         |       |
| 503.00 > 80.00                   | 3.262 | 3.267     | -0.005    |           | 7772512  | 31.8            |                 | 66.5 | 373209  |       |

**QC Flag Legend**

Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_020.d

Injection Date: 02-Dec-2016 17:22:19

Instrument ID: A8\_N

Lims ID: 320-23783-A-11-A

Lab Sample ID: 320-23783-11

Client ID: DPT-16-15-SO-14-15

Operator ID: A8-PC\A8

ALS Bottle#: 16

Worklist Smp#: 24

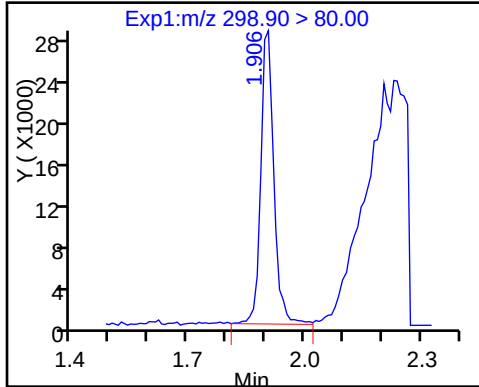
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

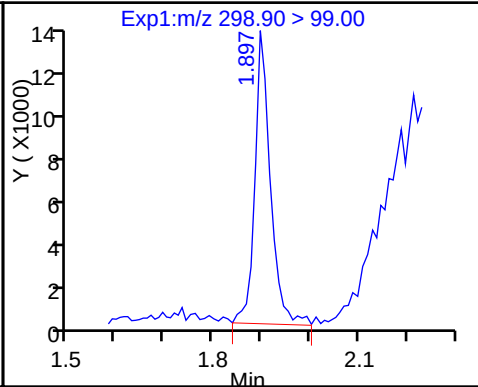
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

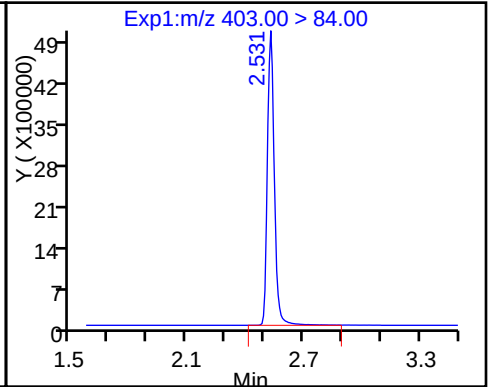
5 Perfluorobutanesulfonic acid



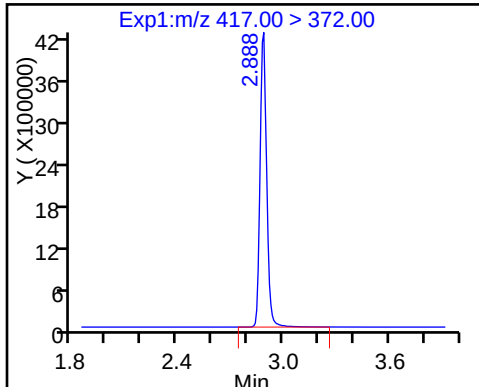
5 Perfluorobutanesulfonic acid



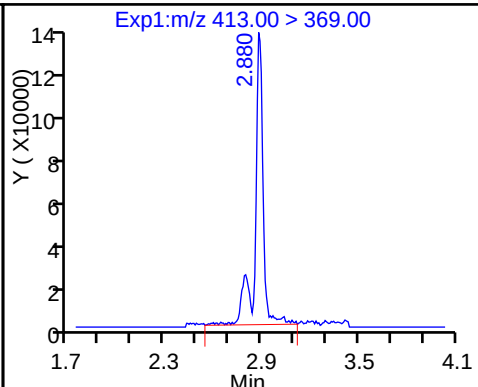
D 10 18O2 PFHxS



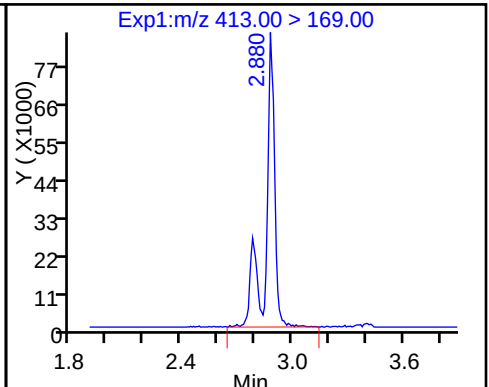
D 14 13C4 PFOA



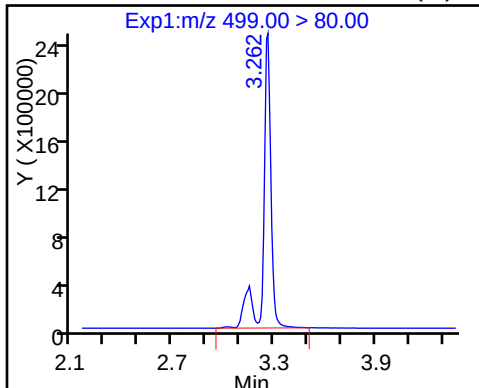
15 Perfluorooctanoic acid



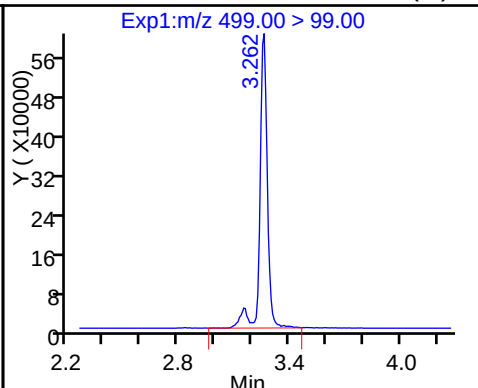
15 Perfluorooctanoic acid



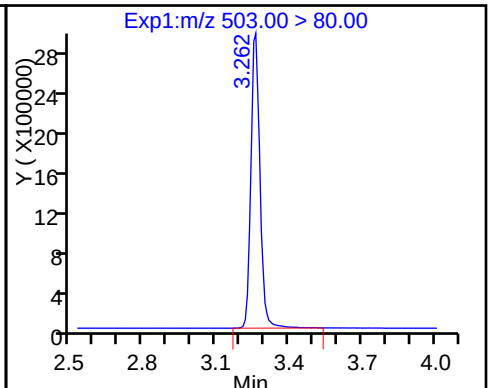
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



## TestAmerica Sacramento

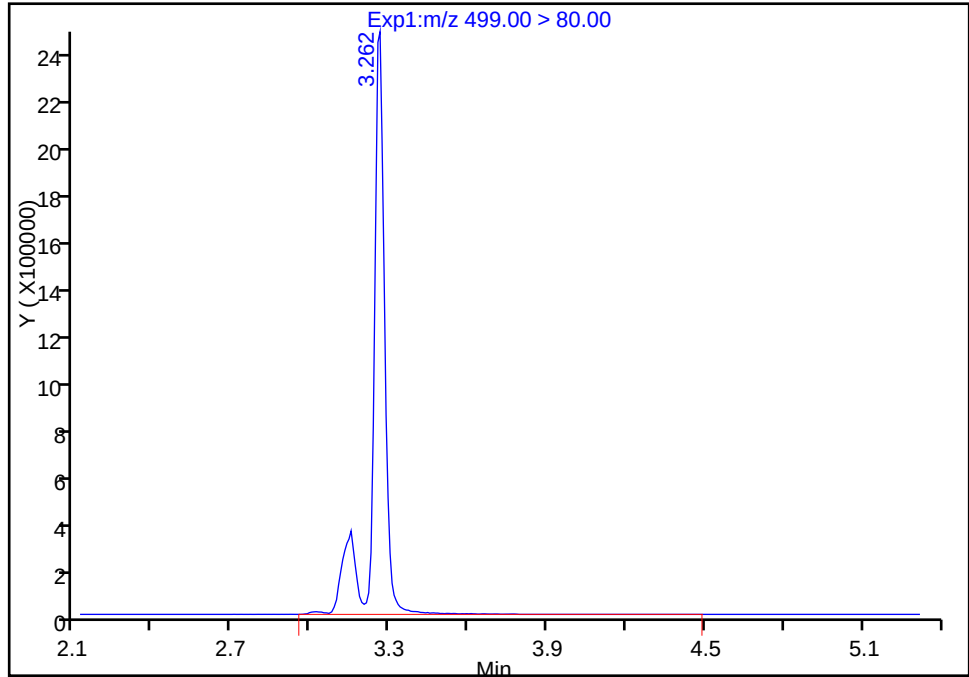
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_020.d |                |                 |                |    |
| Injection Date: | 02-Dec-2016 17:22:19                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-11-A                                                      | Lab Sample ID: | 320-23783-11    |                |    |
| Client ID:      | DPT-16-15-SO-14-15                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 16              | Worklist Smp#: | 24 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

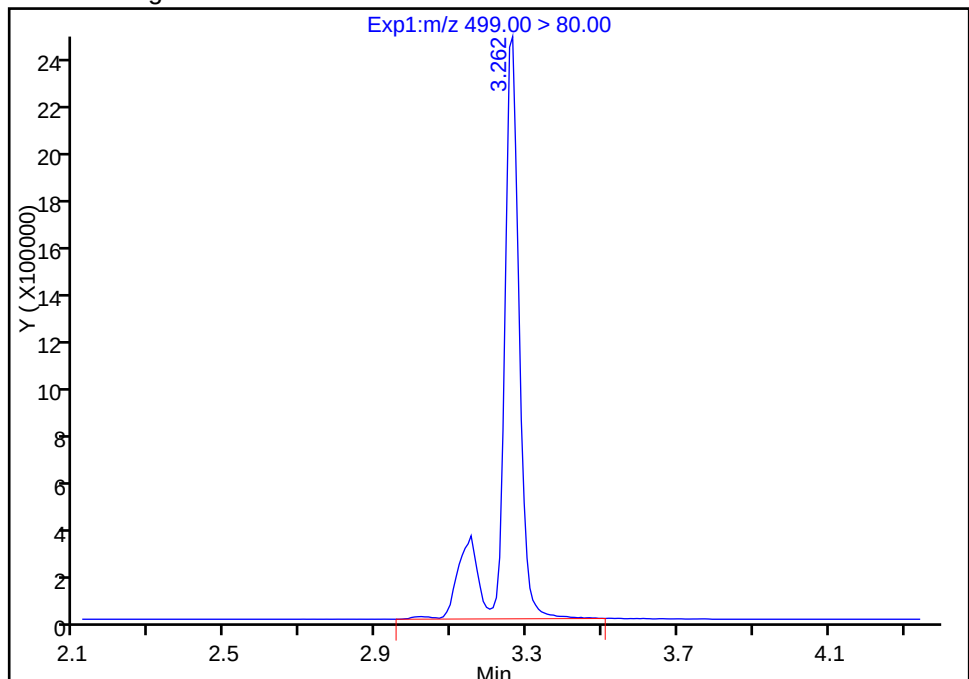
RT: 3.26  
Area: 7709603  
Amount: 43.604593  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 7622896  
Amount: 43.114189  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:31:06

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

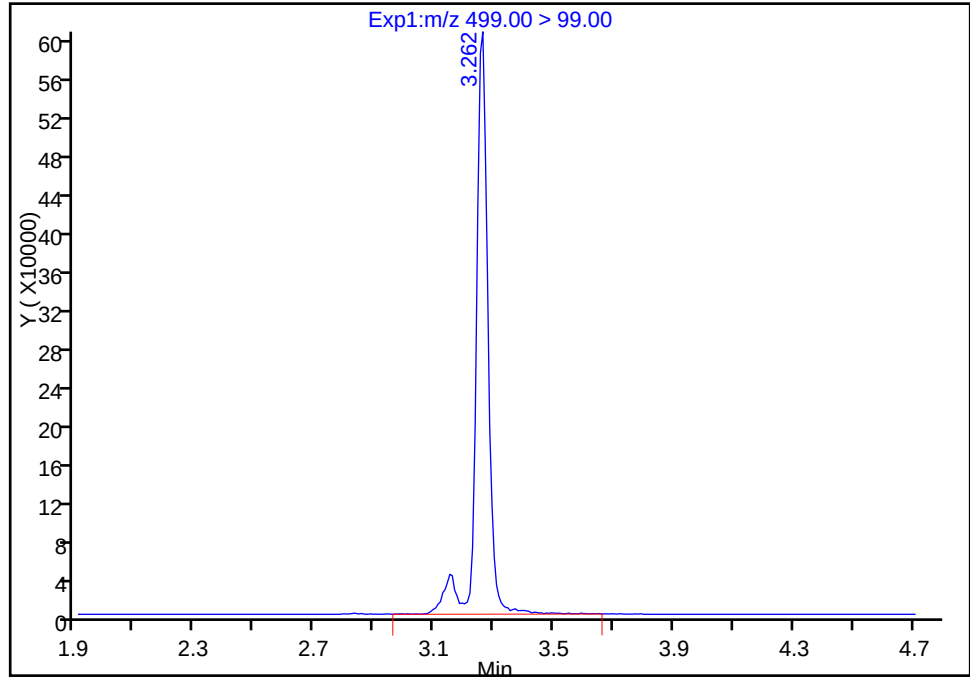
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_020.d  
Injection Date: 02-Dec-2016 17:22:19 Instrument ID: A8\_N  
Lims ID: 320-23783-A-11-A Lab Sample ID: 320-23783-11  
Client ID: DPT-16-15-SO-14-15  
Operator ID: A8-PCVA8 ALS Bottle#: 16 Worklist Smp#: 24  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

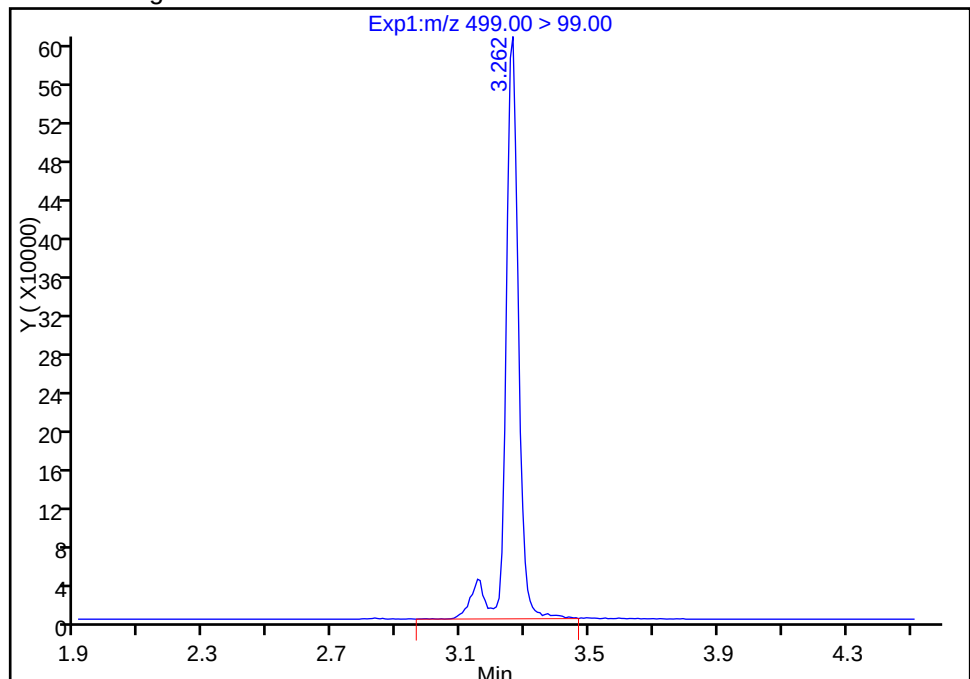
RT: 3.26  
Area: 1729991  
Amount: 43.604593  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.26  
Area: 1717205  
Amount: 43.114189  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 04-Dec-2016 18:31:06

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                             |                                              |
|---------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>     | Job No.: <u>320-23783-1</u>                  |
| SDG No.: _____                              |                                              |
| Client Sample ID: <u>DPT-16-15-GW-18-22</u> | Lab Sample ID: <u>320-23783-12</u>           |
| Matrix: <u>Water</u>                        | Lab File ID: <u>03DEC2016B_006.d</u>         |
| Analysis Method: <u>537 (Modified)</u>      | Date Collected: <u>11/21/2016 13:30</u>      |
| Extraction Method: <u>3535</u>              | Date Extracted: <u>11/28/2016 16:55</u>      |
| Sample wt/vol: <u>249.7(mL)</u>             | Date Analyzed: <u>12/03/2016 16:41</u>       |
| Con. Extract Vol.: <u>0.5(mL)</u>           | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2(uL)</u>              | GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u> |
| % Moisture: _____                           | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>140564</u>           | Units: <u>ug/L</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q   | RL     | MDL     |
|-----------|-------------------------------------|--------|-----|--------|---------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 5.8    | E M | 0.0025 | 0.00075 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 6.5    | E M | 0.0040 | 0.0013  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 1.2    | E   | 0.0025 | 0.00092 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 23   | Q | 25-150 |
| STL00991 | 13C4 PFOS        | 29   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 21   | Q | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_006.d  
 Lims ID: 320-23783-A-12-A  
 Client ID: DPT-16-15-GW-18-22  
 Sample Type: Client  
 Inject. Date: 03-Dec-2016 16:41:11 ALS Bottle#: 37 Worklist Smp#: 27  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-12-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:35:31 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 10:35:31

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response  | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|-----------|--------------|-----------------|------|--------|-------|
| 5 Perfluorobutanesulfonic acid   |       |        |        |        |           |              |                 |      |        | E     |
| 298.90 > 80.00                   | 1.868 | 1.900  | -0.032 | 1.000  | 63043653  | 598.1        |                 |      |        | E     |
| 298.90 > 99.00                   | 1.878 | 1.900  | -0.022 | 1.005  | 38170744  |              | 1.65(0.00-0.00) |      |        |       |
| D 10 18O2 PFHxS                  |       |        |        |        |           |              |                 |      |        |       |
| 403.00 > 84.00                   | 2.489 | 2.531  | -0.042 |        | 3123671   | 10.0         |                 | 21.1 | 34160  |       |
| D 14 13C4 PFOA                   |       |        |        |        |           |              |                 |      |        |       |
| 417.00 > 372.00                  | 2.841 | 2.880  | -0.039 |        | 2480157   | 11.3         |                 | 22.6 | 166976 |       |
| 15 Perfluorooctanoic acid        |       |        |        |        |           |              |                 |      |        | EM    |
| 413.00 > 369.00                  | 2.817 | 2.887  | -0.070 | 1.000  | 152985407 | 2877.3       |                 |      | 85801  | EM    |
| 413.00 > 169.00                  | 2.825 | 2.887  | -0.062 | 1.003  | 150895964 |              | 1.01(0.90-1.10) |      | 144575 | M     |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |           |              |                 |      |        | EM    |
| 499.00 > 80.00                   | 3.191 | 3.258  | -0.067 | 1.000  | 255054939 | 3244.2       |                 |      | 125297 | EM    |
| 499.00 > 99.00                   | 3.217 | 3.258  | -0.041 | 1.008  | 89493448  |              | 2.85(0.90-1.10) |      | 438551 | M     |
| D 17 13C4 PFOS                   |       |        |        |        |           |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.217 | 3.259  | -0.042 |        | 3462821   | 14.1         |                 | 29.4 | 43644  |       |

**QC Flag Legend**

## Processing Flags

E - Exceeded Maximum Amount

## Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_006.d

Injection Date: 03-Dec-2016 16:41:11

Instrument ID: A8\_N

Lims ID: 320-23783-A-12-A

Lab Sample ID: 320-23783-12

Client ID: DPT-16-15-GW-18-22

Operator ID: A8-PC\A8

ALS Bottle#: 37

Worklist Smp#: 27

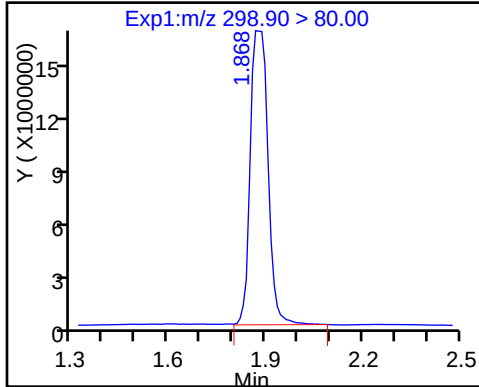
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

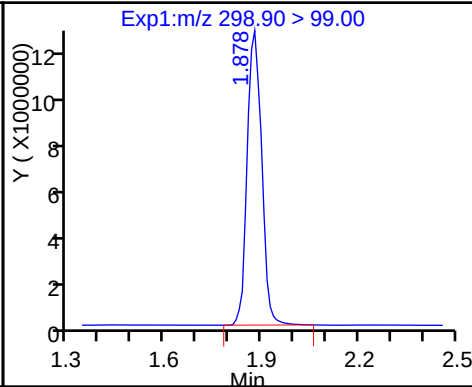
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

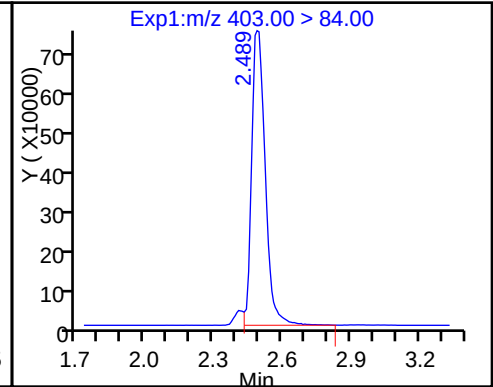
5 Perfluorobutanesulfonic acid



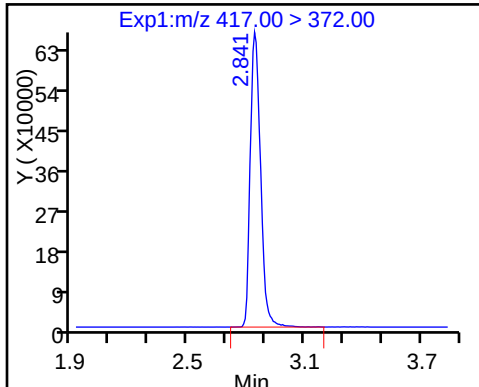
5 Perfluorobutanesulfonic acid



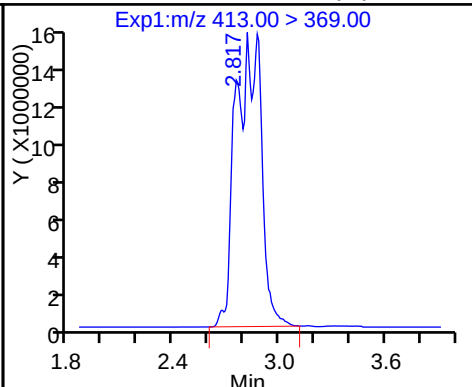
D 10 18O2 PFHxS



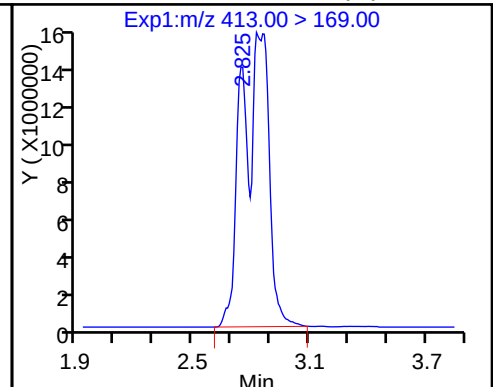
D 14 13C4 PFOA



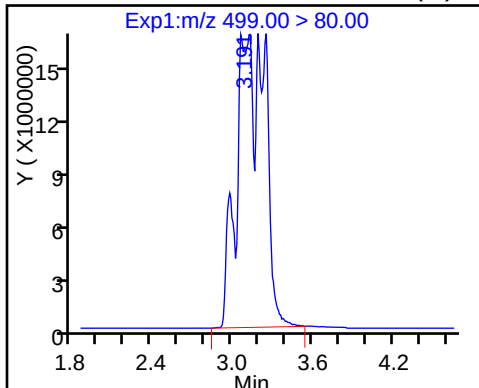
15 Perfluorooctanoic acid (M)



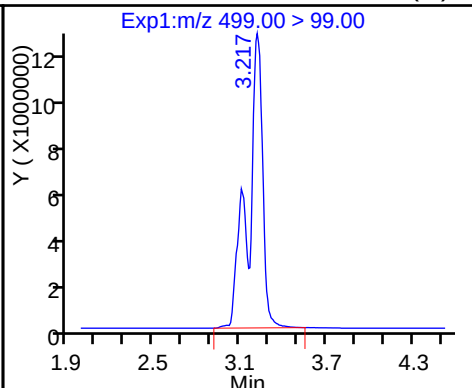
15 Perfluorooctanoic acid (M)



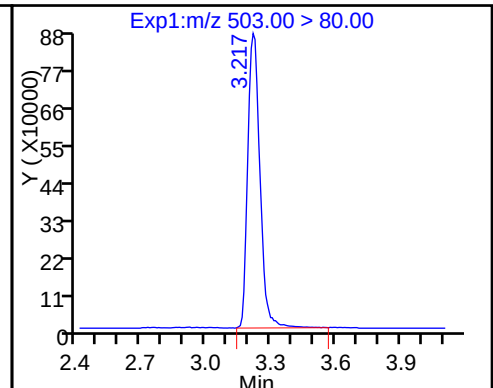
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS





## TestAmerica Sacramento

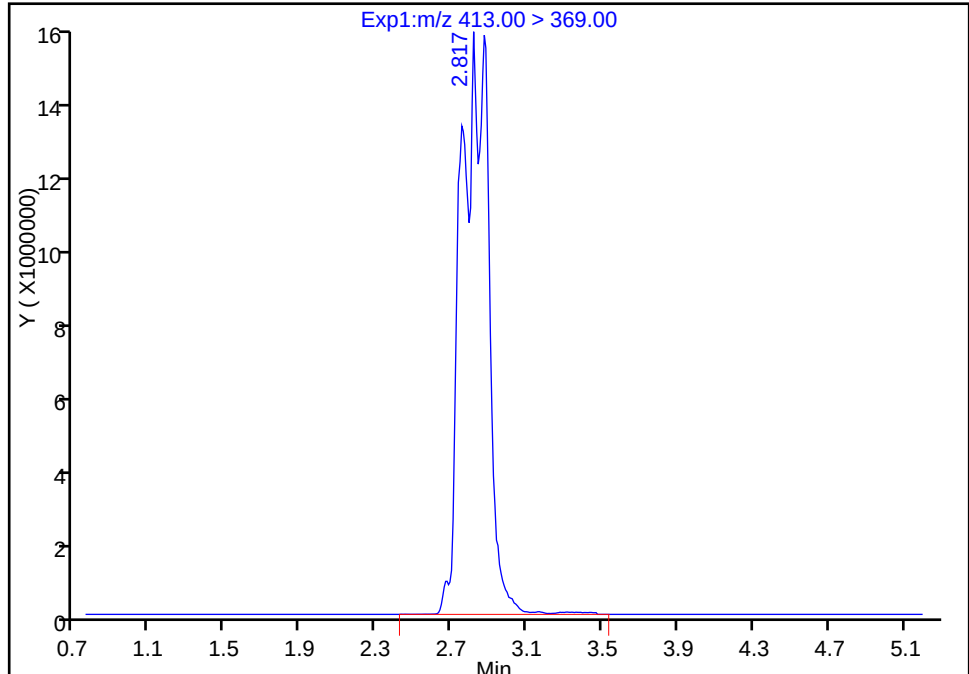
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_006.d  
Injection Date: 03-Dec-2016 16:41:11 Instrument ID: A8\_N  
Lims ID: 320-23783-A-12-A Lab Sample ID: 320-23783-12  
Client ID: DPT-16-15-GW-18-22  
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 27  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

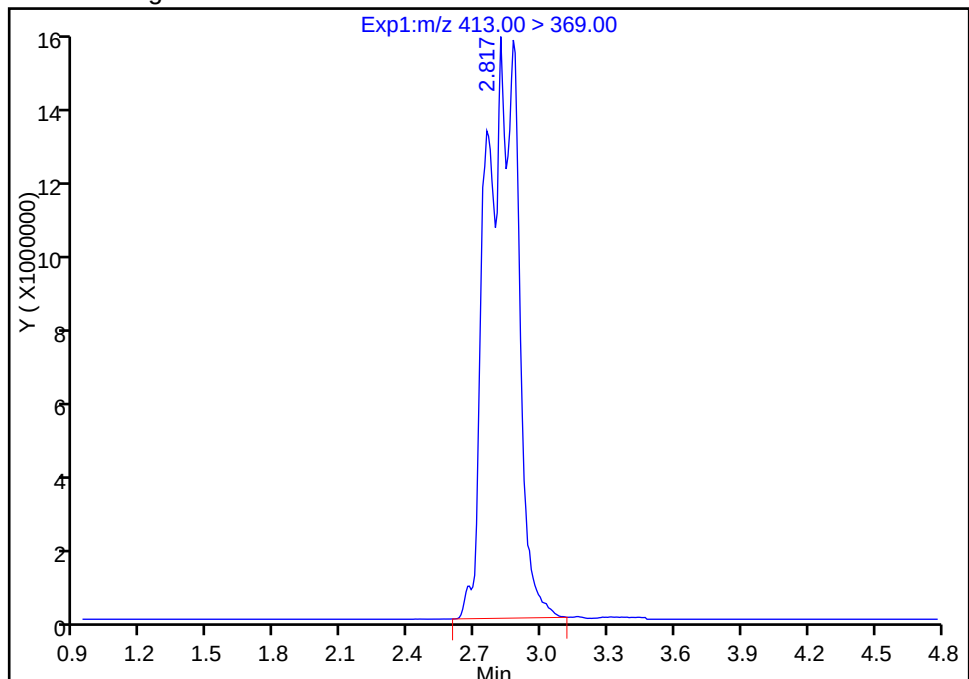
RT: 2.82  
Area: 154922470  
Amount: 2913.7001  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.82  
Area: 152985407  
Amount: 2877.2689  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:35:31

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

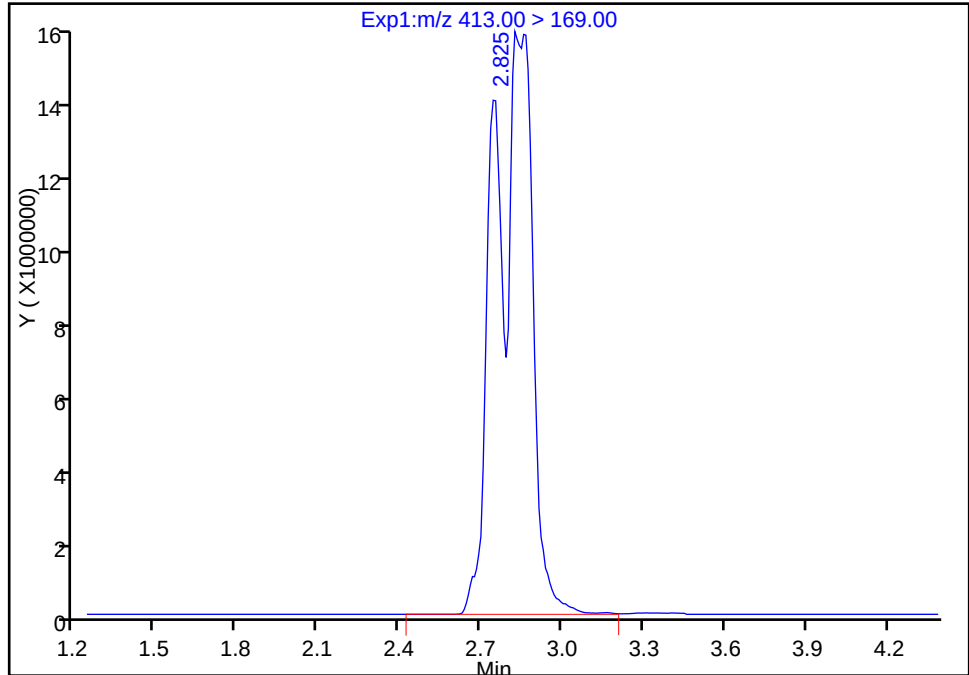
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_006.d  
Injection Date: 03-Dec-2016 16:41:11 Instrument ID: A8\_N  
Lims ID: 320-23783-A-12-A Lab Sample ID: 320-23783-12  
Client ID: DPT-16-15-GW-18-22  
Operator ID: A8-PCVA8 ALS Bottle#: 37 Worklist Smp#: 27  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 2

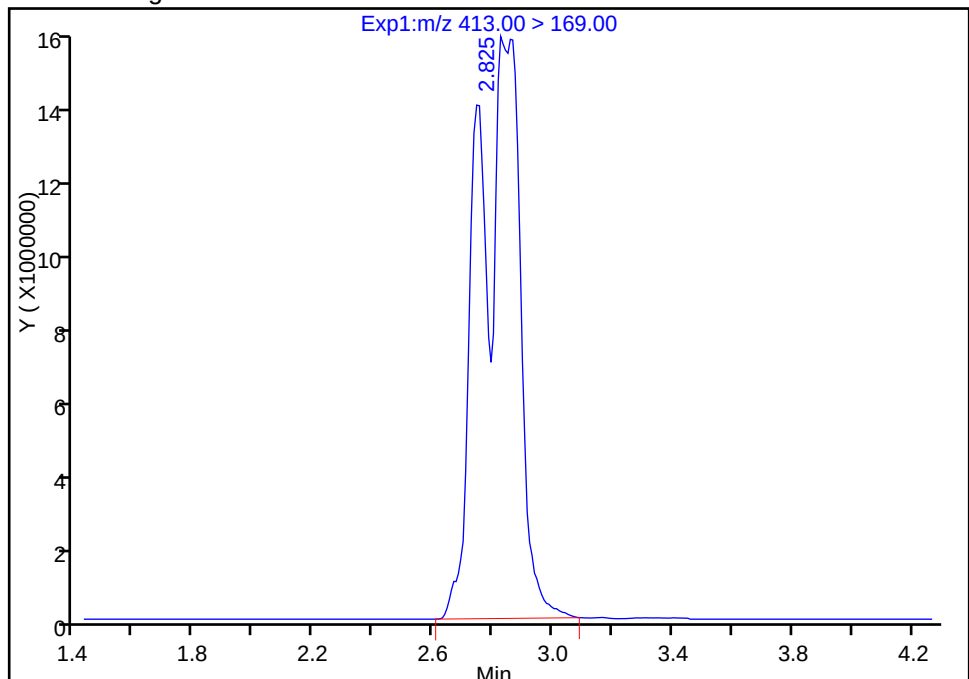
RT: 2.83  
Area: 151742676  
Amount: 2913.7001  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.83  
Area: 150895964  
Amount: 2877.2689  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:35:31

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

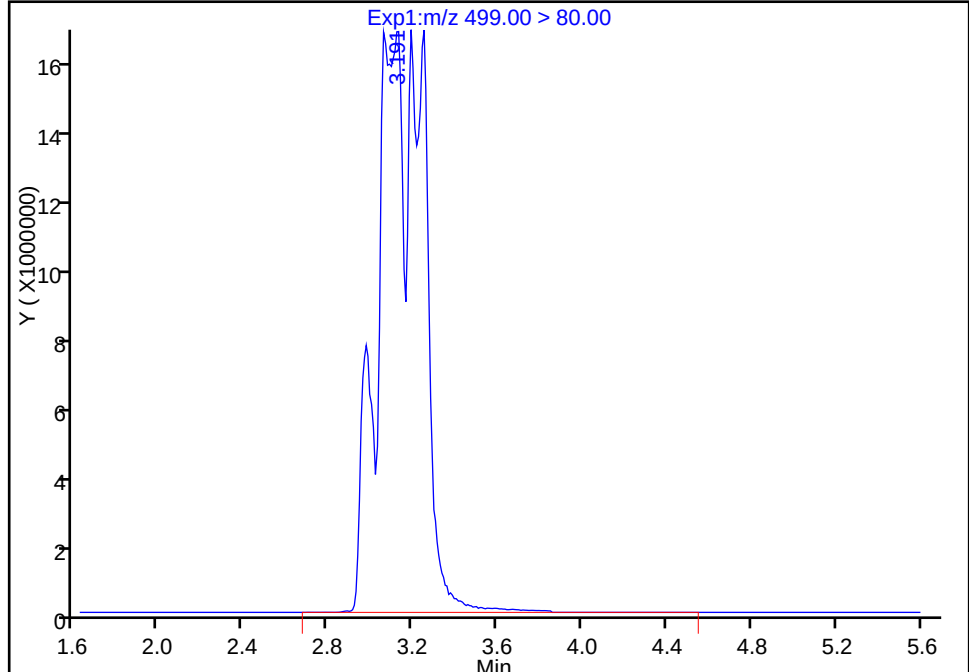
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016B_006.d |                |                 |                |    |
| Injection Date: | 03-Dec-2016 16:41:11                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-12-A                                                      | Lab Sample ID: | 320-23783-12    |                |    |
| Client ID:      | DPT-16-15-GW-18-22                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 37              | Worklist Smp#: | 27 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

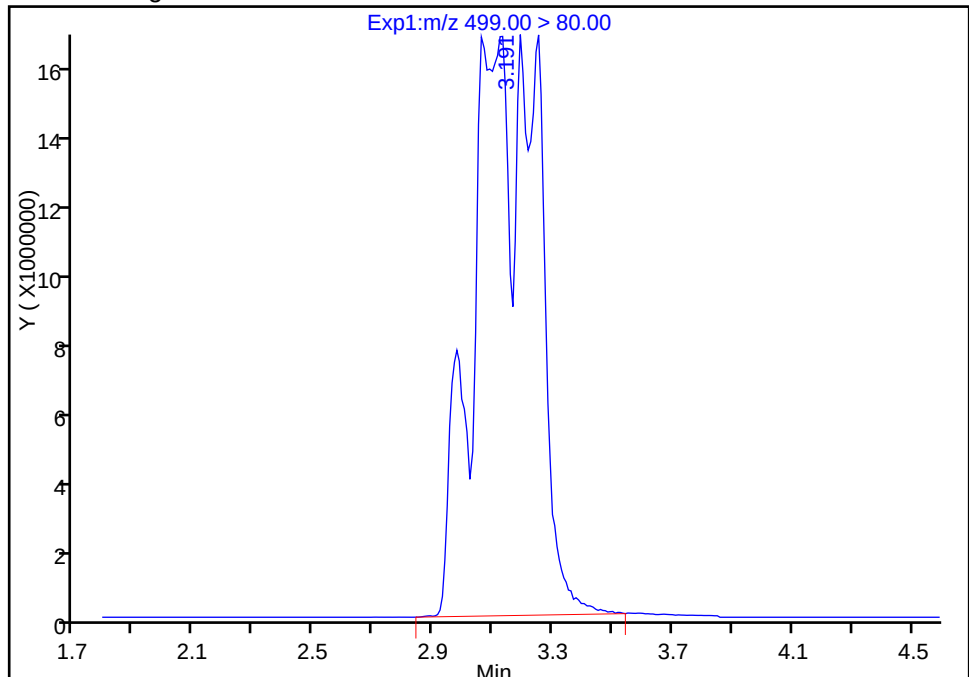
RT: 3.19  
Area: 258759726  
Amount: 3291.3581  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.19  
Area: 255054939  
Amount: 3244.2341  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:35:31

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

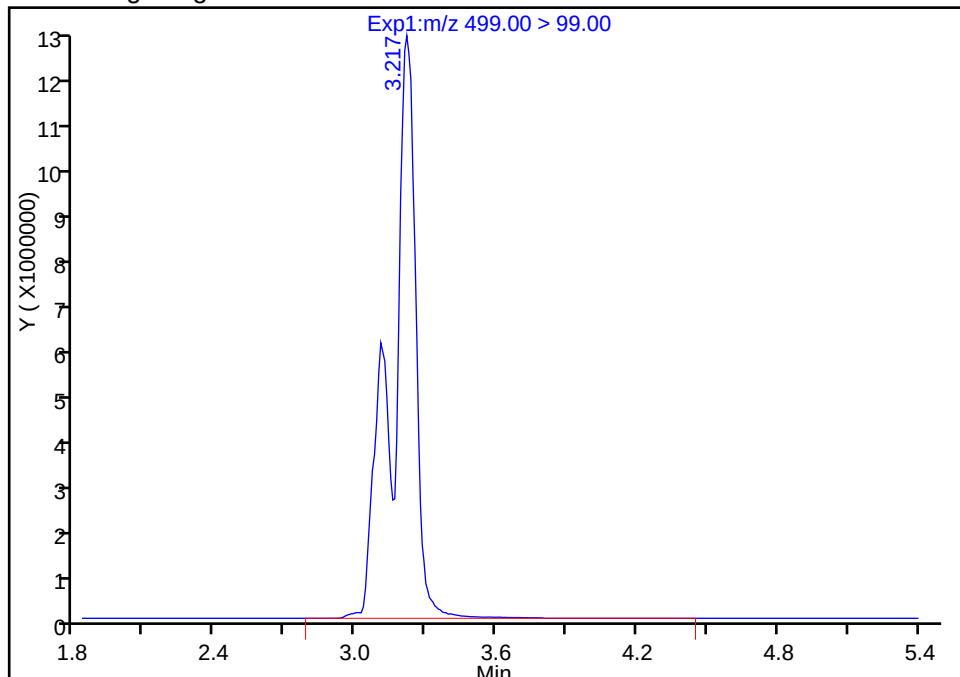
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_006.d  
Injection Date: 03-Dec-2016 16:41:11 Instrument ID: A8\_N  
Lims ID: 320-23783-A-12-A Lab Sample ID: 320-23783-12  
Client ID: DPT-16-15-GW-18-22  
Operator ID: A8-PCVA8 ALS Bottle#: 37 Worklist Smp#: 27  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

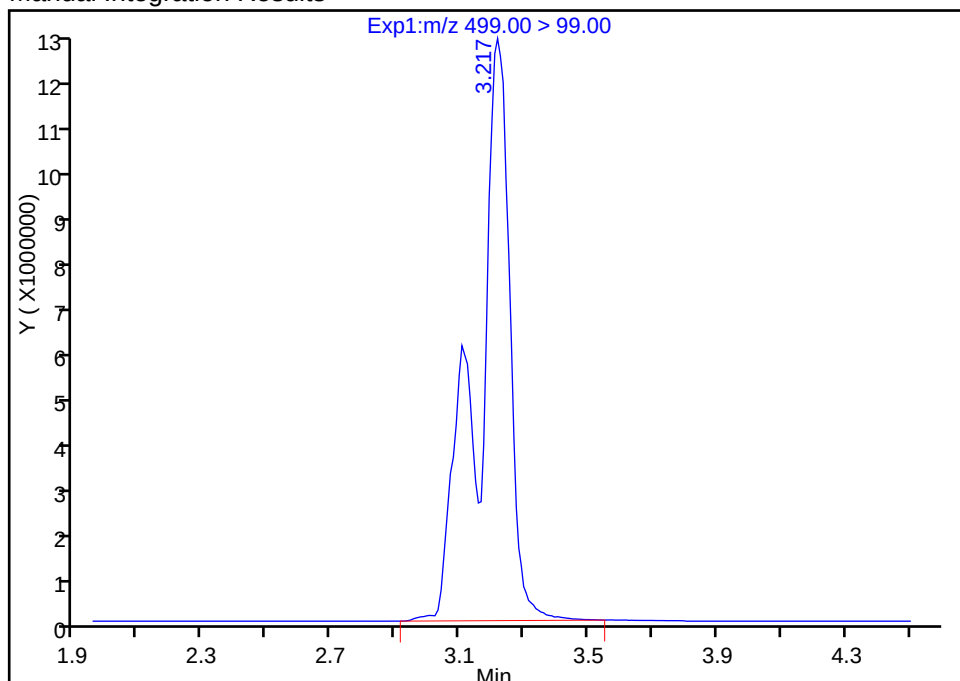
RT: 3.22  
Area: 90233657  
Amount: 3291.3581  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.22  
Area: 89493448  
Amount: 3244.2341  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:35:31

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                                |                                              |
|------------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>        | Job No.: <u>320-23783-1</u>                  |
| SDG No.: _____                                 |                                              |
| Client Sample ID: <u>DPT-16-15-GW-18-22 DL</u> | Lab Sample ID: <u>320-23783-12 DL</u>        |
| Matrix: <u>Water</u>                           | Lab File ID: <u>07DEC2016B_005.d</u>         |
| Analysis Method: <u>537 (Modified)</u>         | Date Collected: <u>11/21/2016 13:30</u>      |
| Extraction Method: <u>3535</u>                 | Date Extracted: <u>11/28/2016 16:55</u>      |
| Sample wt/vol: <u>249.7(mL)</u>                | Date Analyzed: <u>12/07/2016 17:03</u>       |
| Con. Extract Vol.: <u>0.5(mL)</u>              | Dilution Factor: <u>100</u>                  |
| Injection Volume: <u>2(uL)</u>                 | GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u> |
| % Moisture: _____                              | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>141062</u>              | Units: <u>ug/L</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL   |
|-----------|-------------------------------------|--------|---|------|-------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 15     | D | 0.25 | 0.075 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 12     | D | 0.40 | 0.13  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.54   | D | 0.25 | 0.092 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 83   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 94   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 104  |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_005.d  
 Lims ID: 320-23783-A-12-A  
 Client ID: DPT-16-15-GW-18-22  
 Sample Type: Client  
 Inject. Date: 07-Dec-2016 17:03:25 ALS Bottle#: 18 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 100.0000  
 Sample Info: 320-23783-a-12-a 100X  
 Misc. Info.: Plate: 1 Rack: 3  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 08-Dec-2016 09:41:54 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 08-Dec-2016 08:54:48

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |        |       |
| 298.90 > 80.00                   | 1.852 | 1.848     | 0.004     | 1.000     | 1388458  | 2.68            |                 |      |        |       |
| 298.90 > 99.00                   | 1.852 | 1.848     | 0.004     | 1.000     | 589024   |                 | 2.36(0.00-0.00) |      |        |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |        |       |
| 403.00 > 84.00                   | 2.452 | 2.460     | -0.008    |           | 153817   | 0.4925          |                 | 1.0  | 28373  |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 413.00 > 369.00                  | 2.802 | 2.802     | 0.0       | 1.000     | 14553741 | 74.9            |                 |      | 293900 |       |
| 413.00 > 169.00                  | 2.802 | 2.802     | 0.0       | 1.000     | 9910045  |                 | 1.47(0.90-1.10) |      | 410094 |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |        |       |
| 417.00 > 372.00                  | 2.810 | 2.802     | 0.008     |           | 90597    | 0.4132          |                 | 0.8  | 10591  |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 499.00 > 80.00                   | 3.162 | 3.061     | 0.101     | 1.000     | 14701138 | 58.6            |                 |      | 349461 |       |
| 499.00 > 99.00                   | 3.170 | 3.061     | 0.109     | 1.003     | 2913043  |                 | 5.05(0.90-1.10) |      | 226375 |       |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |        |       |
| 503.00 > 80.00                   | 3.170 | 3.169     | 0.001     |           | 110529   | 0.4493          |                 | 0.9  | 10146  |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_005.d

Injection Date: 07-Dec-2016 17:03:25

Instrument ID: A8\_N

Lims ID: 320-23783-A-12-A

Lab Sample ID: 320-23783-12

Client ID: DPT-16-15-GW-18-22

Operator ID: A8-PC\A8

ALS Bottle#: 18

Worklist Smp#: 5

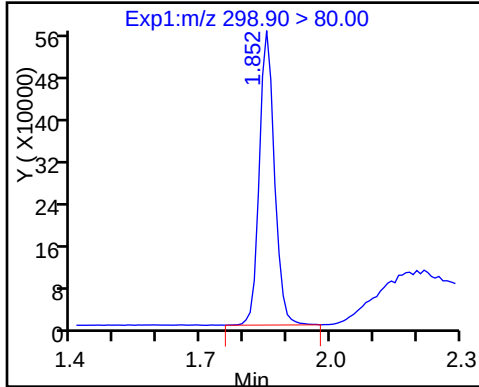
Injection Vol: 2.0 ul

Dil. Factor: 100.0000

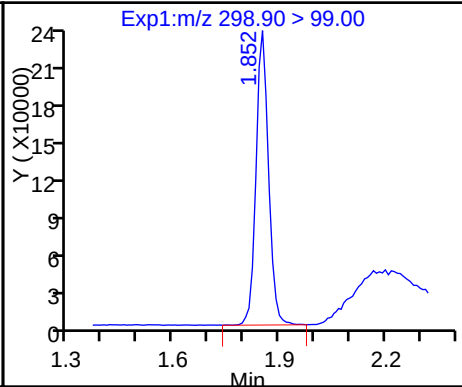
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

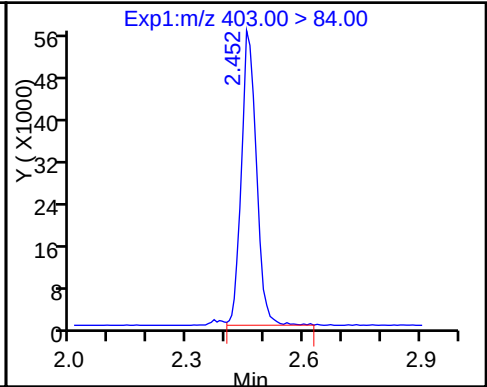
5 Perfluorobutanesulfonic acid



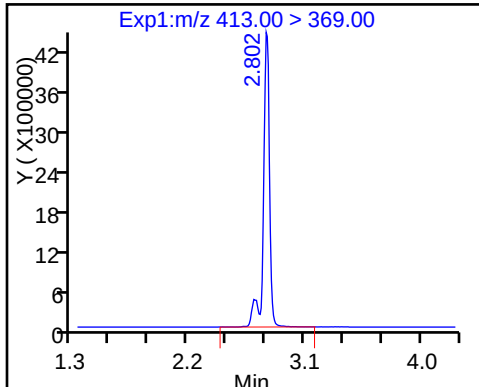
5 Perfluorobutanesulfonic acid



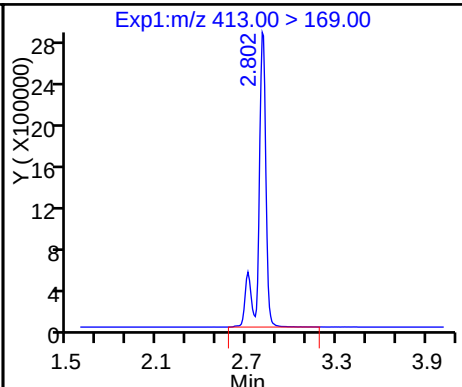
D 10 18O2 PFHxS



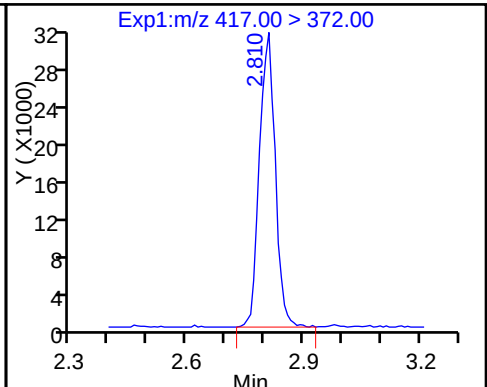
15 Perfluorooctanoic acid



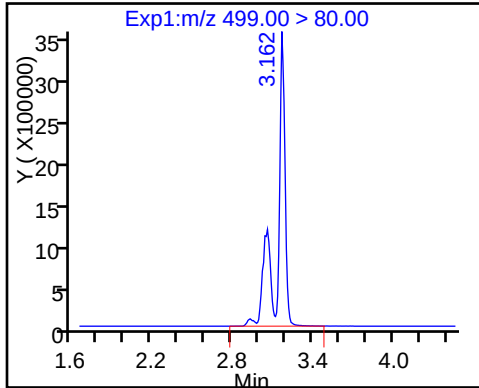
15 Perfluorooctanoic acid



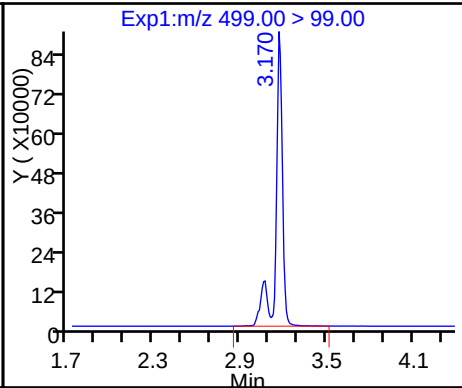
D 14 13C4 PFOA



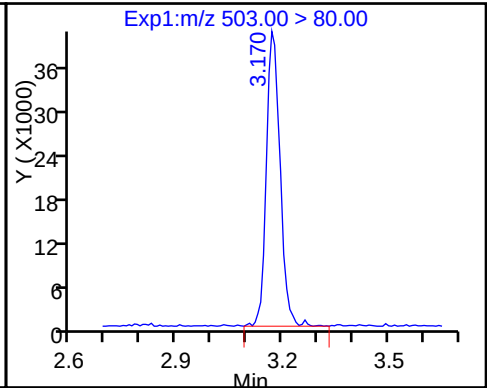
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                             |                                              |
|---------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>     | Job No.: <u>320-23783-1</u>                  |
| SDG No.: _____                              |                                              |
| Client Sample ID: <u>DPT-16-15-GW-31-35</u> | Lab Sample ID: <u>320-23783-13</u>           |
| Matrix: <u>Water</u>                        | Lab File ID: <u>03DEC2016B_007.d</u>         |
| Analysis Method: <u>537 (Modified)</u>      | Date Collected: <u>11/21/2016 14:00</u>      |
| Extraction Method: <u>3535</u>              | Date Extracted: <u>11/28/2016 16:55</u>      |
| Sample wt/vol: <u>245.9(mL)</u>             | Date Analyzed: <u>12/03/2016 16:48</u>       |
| Con. Extract Vol.: <u>0.5(mL)</u>           | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2(uL)</u>              | GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u> |
| % Moisture: _____                           | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>140564</u>           | Units: <u>ug/L</u>                           |

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL     | MDL     |
|-----------|-------------------------------------|--------|---|--------|---------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.27   | M | 0.0025 | 0.00076 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 0.46   | E | 0.0041 | 0.0013  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.048  |   | 0.0025 | 0.00093 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 22   | Q | 25-150 |
| STL00991 | 13C4 PFOS        | 82   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 66   |   | 25-150 |



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_007.d  
 Lims ID: 320-23783-A-13-A  
 Client ID: DPT-16-15-GW-31-35  
 Sample Type: Client  
 Inject. Date: 03-Dec-2016 16:48:42 ALS Bottle#: 38 Worklist Smp#: 28  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-23783-a-13-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:36:41 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 10:36:41

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |        |       |
| 298.90 > 80.00                   | 1.877 | 1.900     | -0.023    | 1.000     | 7767443  | 23.5            |                 |      |        |       |
| 298.90 > 99.00                   | 1.877 | 1.900     | -0.023    | 1.000     | 3342231  |                 | 2.32(0.00-0.00) |      |        |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |        |       |
| 403.00 > 84.00                   | 2.510 | 2.531     | -0.021    |           | 9782375  | 31.3            |                 | 66.2 | 382293 |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |        |       |
| 417.00 > 372.00                  | 2.846 | 2.880     | -0.034    |           | 2458776  | 11.2            |                 | 22.4 | 137087 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 413.00 > 369.00                  | 2.862 | 2.887     | -0.025    | 1.000     | 6930971  | 131.5           |                 |      | 41657  | M     |
| 413.00 > 169.00                  | 2.862 | 2.887     | -0.025    | 1.000     | 4477342  |                 | 1.55(0.90-1.10) |      | 24092  | M     |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 499.00 > 80.00                   | 3.225 | 3.258     | -0.033    | 1.000     | 49255849 | 225.4           |                 |      | 955116 | E     |
| 499.00 > 99.00                   | 3.225 | 3.258     | -0.033    | 1.000     | 11461351 |                 | 4.30(0.90-1.10) |      | 205350 | E     |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |        |       |
| 503.00 > 80.00                   | 3.225 | 3.259     | -0.034    |           | 9623480  | 39.1            |                 | 81.8 | 247467 |       |

**QC Flag Legend**

## Processing Flags

E - Exceeded Maximum Amount

## Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_007.d

Injection Date: 03-Dec-2016 16:48:42

Instrument ID: A8\_N

Lims ID: 320-23783-A-13-A

Lab Sample ID: 320-23783-13

Client ID: DPT-16-15-GW-31-35

Operator ID: A8-PC\A8

ALS Bottle#: 38

Worklist Smp#: 28

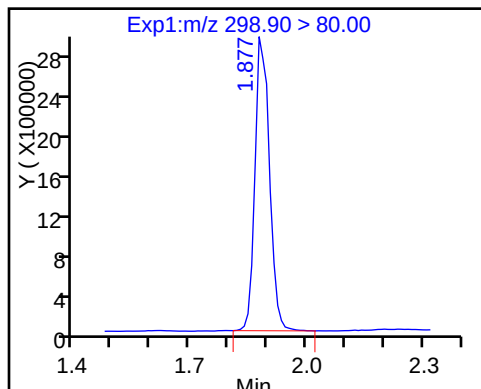
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

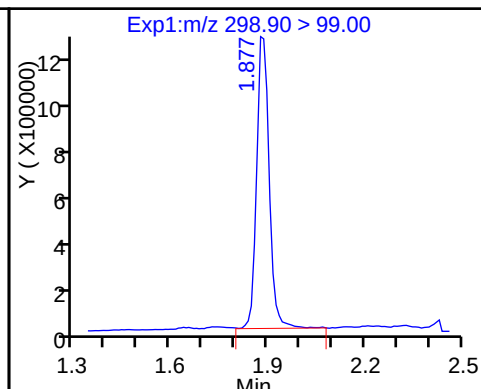
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

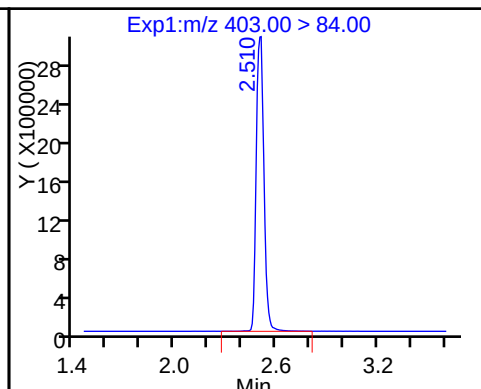
5 Perfluorobutanesulfonic acid



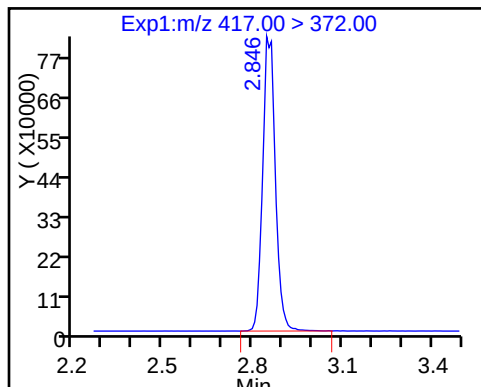
5 Perfluorobutanesulfonic acid



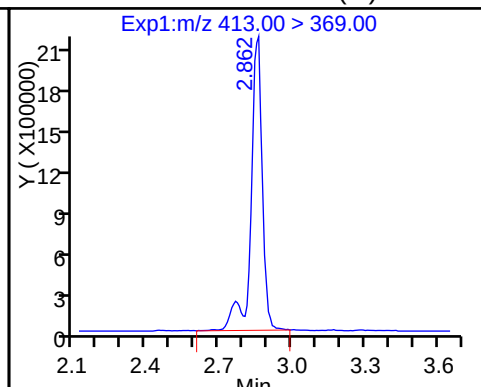
D 10 18O2 PFHxS



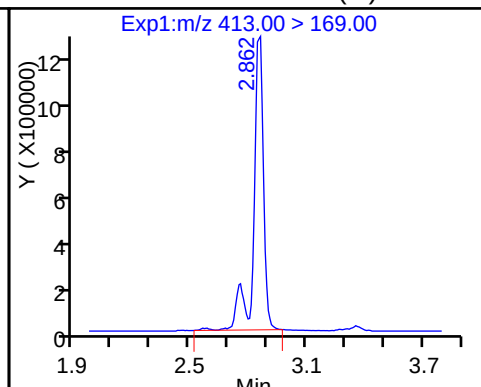
D 14 13C4 PFOA



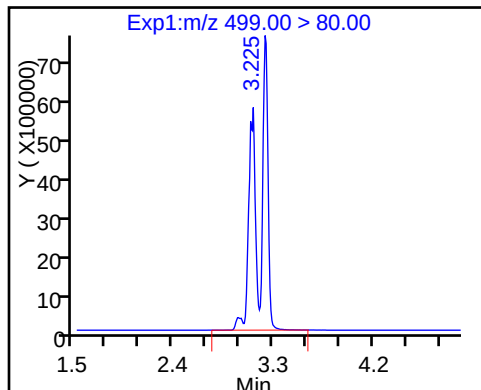
15 Perfluorooctanoic acid (M)



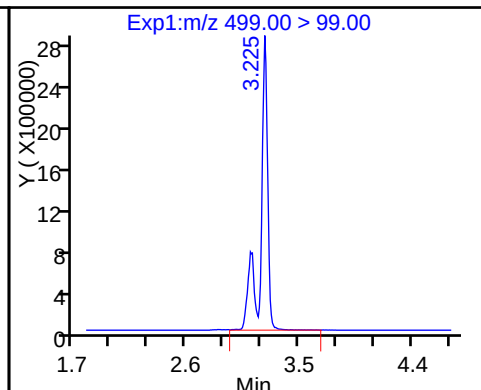
15 Perfluorooctanoic acid (M)



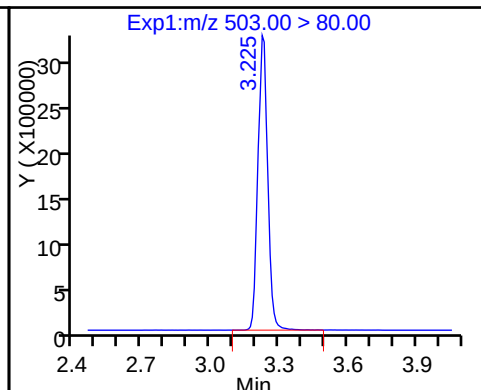
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



## TestAmerica Sacramento

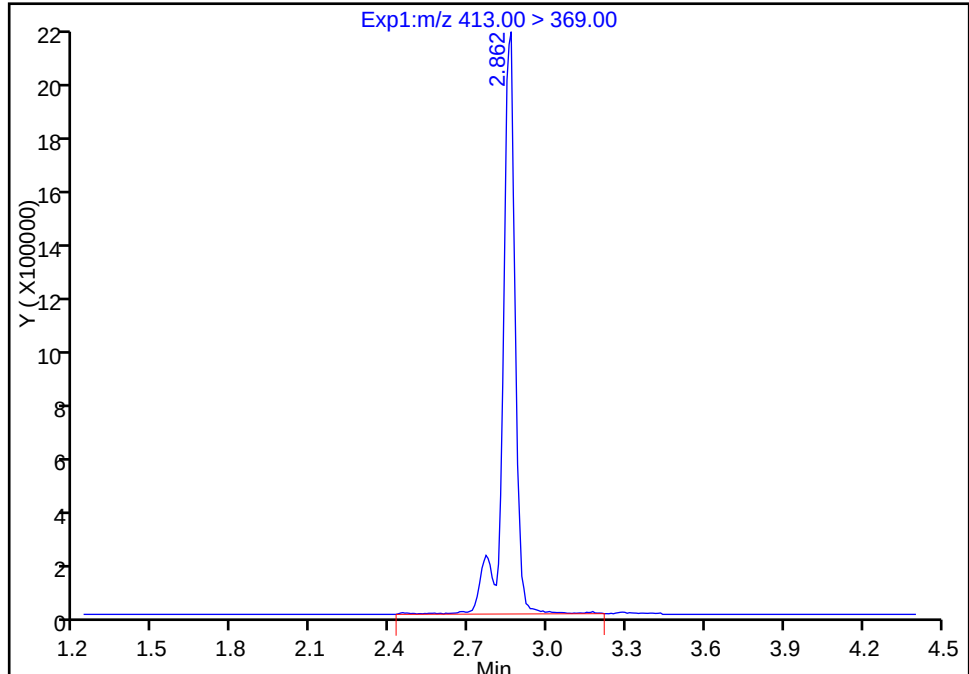
|                 |                                                                       |                |                 |                |    |
|-----------------|-----------------------------------------------------------------------|----------------|-----------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016B_007.d |                |                 |                |    |
| Injection Date: | 03-Dec-2016 16:48:42                                                  | Instrument ID: | A8_N            |                |    |
| Lims ID:        | 320-23783-A-13-A                                                      | Lab Sample ID: | 320-23783-13    |                |    |
| Client ID:      | DPT-16-15-GW-31-35                                                    |                |                 |                |    |
| Operator ID:    | A8-PC\A8                                                              | ALS Bottle#:   | 38              | Worklist Smp#: | 28 |
| Injection Vol:  | 2.0 ul                                                                | Dil. Factor:   | 1.0000          |                |    |
| Method:         | A8_N                                                                  | Limit Group:   | LC PFC_DOD ICAL |                |    |
| Column:         |                                                                       | Detector       | EXP1            |                |    |

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

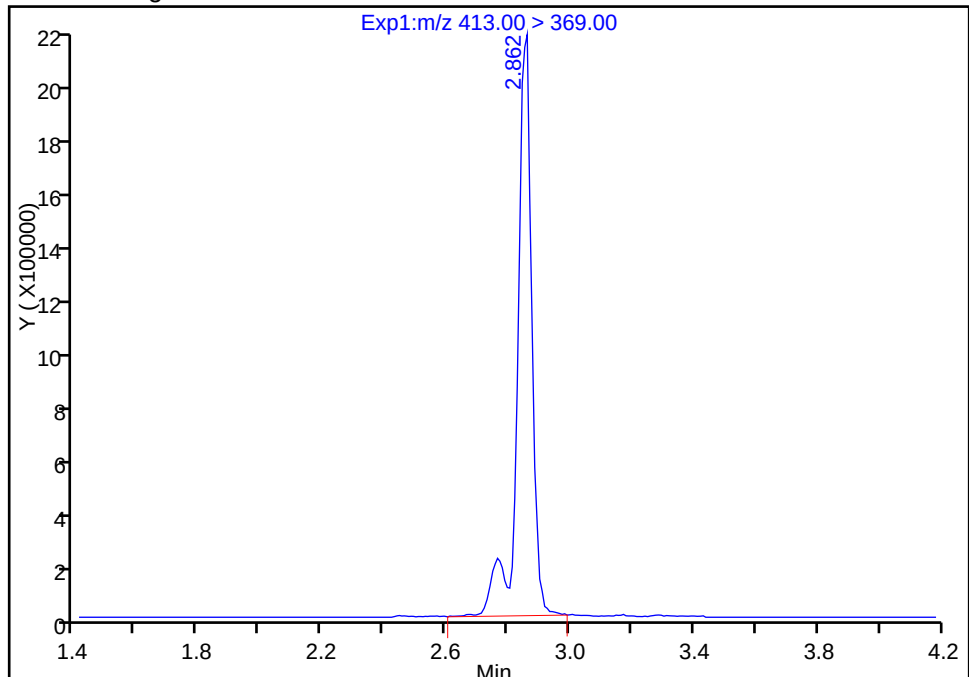
RT: 2.86  
Area: 7098853  
Amount: 134.6725  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.86  
Area: 6930971  
Amount: 131.4876  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:36:41

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

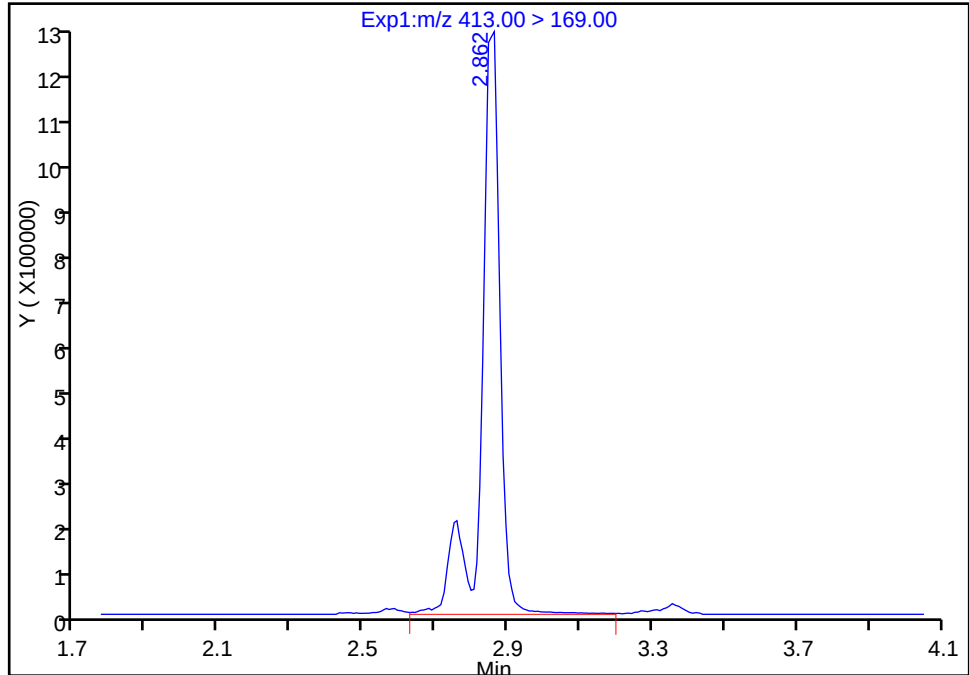
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_007.d  
Injection Date: 03-Dec-2016 16:48:42 Instrument ID: A8\_N  
Lims ID: 320-23783-A-13-A Lab Sample ID: 320-23783-13  
Client ID: DPT-16-15-GW-31-35  
Operator ID: A8-PCVA8 ALS Bottle#: 38 Worklist Smp#: 28  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 2

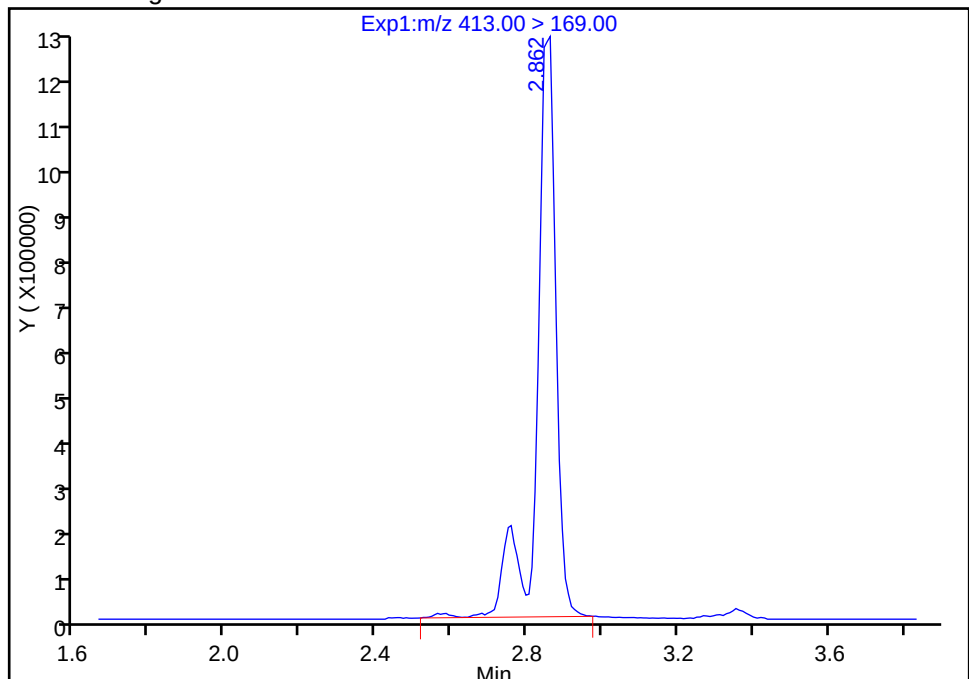
RT: 2.86  
Area: 4593402  
Amount: 134.6725  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.86  
Area: 4477342  
Amount: 131.4876  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 10:36:41

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                                |                                              |
|------------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>        | Job No.: <u>320-23783-1</u>                  |
| SDG No.: _____                                 |                                              |
| Client Sample ID: <u>DPT-16-15-GW-31-35 DL</u> | Lab Sample ID: <u>320-23783-13 DL</u>        |
| Matrix: <u>Water</u>                           | Lab File ID: <u>07DEC2016B_008.d</u>         |
| Analysis Method: <u>537 (Modified)</u>         | Date Collected: <u>11/21/2016 14:00</u>      |
| Extraction Method: <u>3535</u>                 | Date Extracted: <u>11/28/2016 16:55</u>      |
| Sample wt/vol: <u>245.9(mL)</u>                | Date Analyzed: <u>12/07/2016 17:25</u>       |
| Con. Extract Vol.: <u>0.5(mL)</u>              | Dilution Factor: <u>10</u>                   |
| Injection Volume: <u>2(uL)</u>                 | GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u> |
| % Moisture: _____                              | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>141062</u>              | Units: <u>ug/L</u>                           |

| CAS NO.   | COMPOUND NAME                              | RESULT | Q | RL    | MDL    |
|-----------|--------------------------------------------|--------|---|-------|--------|
| 335-67-1  | <i>Perfluorooctanoic acid (PFOA)</i>       | 0.27   | D | 0.025 | 0.0076 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)           | 0.45   | D | 0.041 | 0.013  |
| 375-73-5  | <i>Perfluorobutanesulfonic acid (PFBS)</i> | 0.035  | D | 0.025 | 0.0093 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 33   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 95   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 101  |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_008.d  
 Lims ID: 320-23783-A-13-A  
 Client ID: DPT-16-15-GW-31-35  
 Sample Type: Client  
 Inject. Date: 07-Dec-2016 17:25:55 ALS Bottle#: 21 Worklist Smp#: 8  
 Injection Vol: 2.0 ul Dil. Factor: 10.0000  
 Sample Info: 320-23783-a-13-a 10X  
 Misc. Info.: Plate: 1 Rack: 3  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 08-Dec-2016 09:41:54 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 08-Dec-2016 08:55:20

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 5 Perfluorobutanesulfonic acid   |       |           |           |           |          |                 |                 |      |        |       |
| 298.90 > 80.00                   | 1.850 | 1.848     | 0.002     | 1.000     | 858416   | 1.71            |                 |      |        |       |
| 298.90 > 99.00                   | 1.850 | 1.848     | 0.002     | 1.000     | 395855   |                 | 2.17(0.00-0.00) |      |        |       |
| D 10 18O2 PFHxS                  |       |           |           |           |          |                 |                 |      |        |       |
| 403.00 > 84.00                   | 2.449 | 2.460     | -0.011    |           | 1484791  | 4.75            |                 | 10.1 | 181205 |       |
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 413.00 > 369.00                  | 2.797 | 2.802     | -0.005    | 1.000     | 1028052  | 13.1            |                 |      | 14401  |       |
| 413.00 > 169.00                  | 2.797 | 2.802     | -0.005    | 1.000     | 654698   |                 | 1.57(0.90-1.10) |      | 22473  |       |
| D 14 13C4 PFOA                   |       |           |           |           |          |                 |                 |      |        |       |
| 417.00 > 372.00                  | 2.797 | 2.802     | -0.005    |           | 365581   | 1.67            |                 | 3.3  | 70562  |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 499.00 > 80.00                   | 3.166 | 3.061     | 0.105     | 1.000     | 5564937  | 21.9            |                 |      | 511379 |       |
| 499.00 > 99.00                   | 3.047 | 3.061     | -0.014    | 0.962     | 1233383  |                 | 4.51(0.90-1.10) |      | 24472  |       |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |        |       |
| 503.00 > 80.00                   | 3.166 | 3.169     | -0.003    |           | 1117563  | 4.54            |                 | 9.5  | 78635  |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_008.d

Injection Date: 07-Dec-2016 17:25:55

Instrument ID: A8\_N

Lims ID: 320-23783-A-13-A

Lab Sample ID: 320-23783-13

Client ID: DPT-16-15-GW-31-35

Operator ID: A8-PC\A8

ALS Bottle#: 21

Worklist Smp#: 8

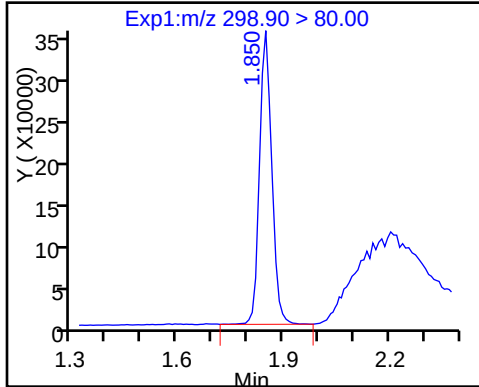
Injection Vol: 2.0 ul

Dil. Factor: 10.0000

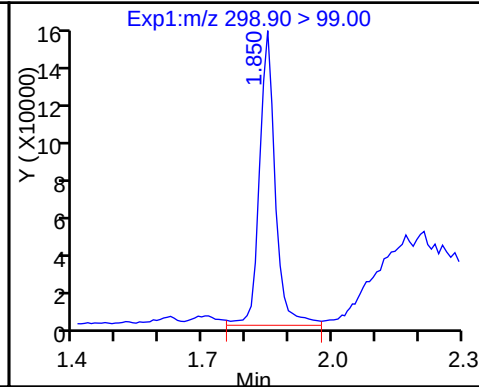
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

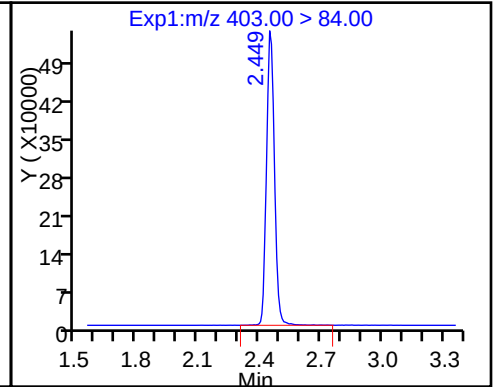
5 Perfluorobutanesulfonic acid



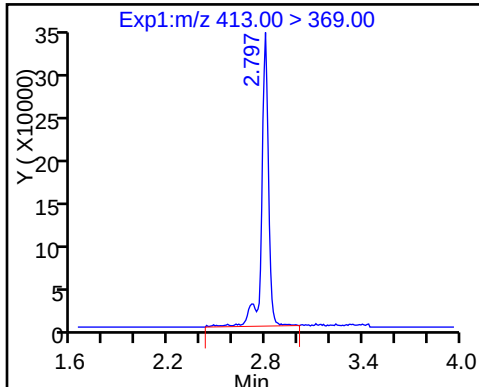
5 Perfluorobutanesulfonic acid



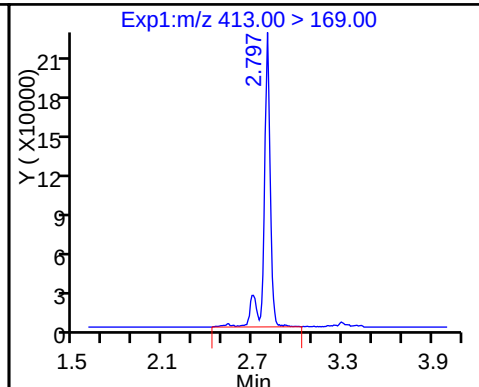
D 10 18O2 PFHxS



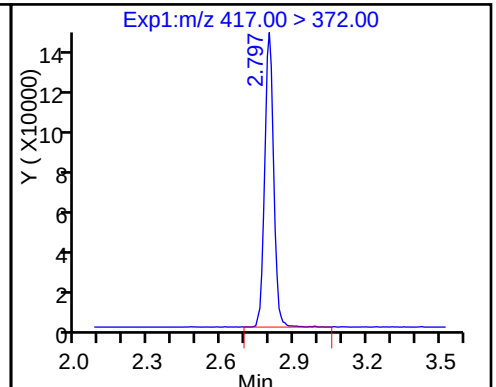
15 Perfluorooctanoic acid



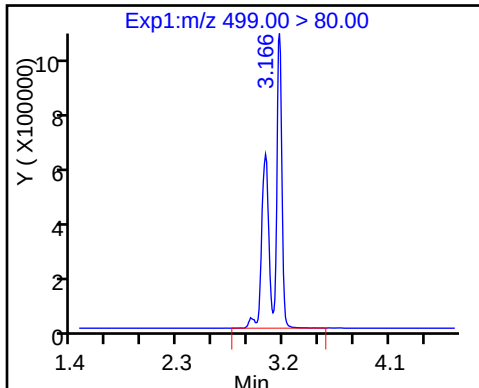
15 Perfluorooctanoic acid



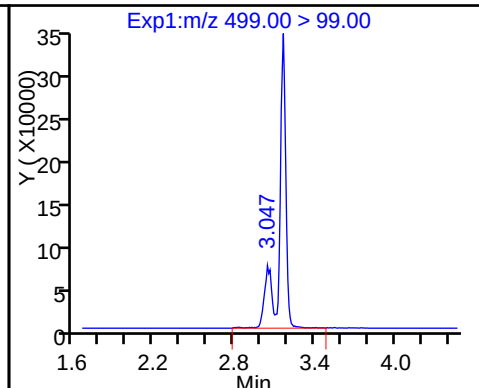
D 14 13C4 PFOA



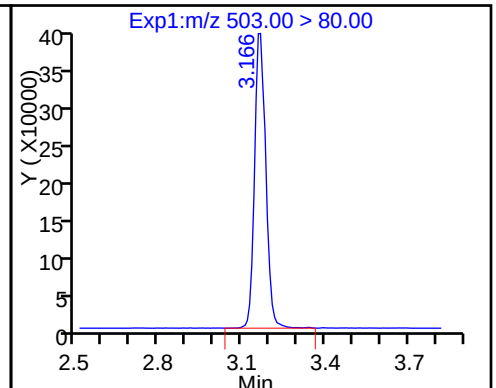
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

Calibration Files:

| LEVEL:   | LAB SAMPLE ID:   | LAB FILE ID:     |
|----------|------------------|------------------|
| Level 1  | IC 320-140382/4  | 02DEC2016A_004.d |
| Level 2  | IC 320-140382/14 | 02DEC2016A_014.d |
| Level 3  | IC 320-140382/5  | 02DEC2016A_005.d |
| Level 4  | IC 320-140382/15 | 02DEC2016A_015.d |
| Level 5  | IC 320-140382/6  | 02DEC2016A_006.d |
| Level 6  | IC 320-140382/16 | 02DEC2016A_016.d |
| Level 7  | IC 320-140382/7  | 02DEC2016A_007.d |
| Level 8  | IC 320-140382/17 | 02DEC2016A_017.d |
| Level 9  | IC 320-140382/8  | 02DEC2016A_008.d |
| Level 10 | IC 320-140382/18 | 02DEC2016A_018.d |
| Level 11 | IC 320-140382/9  | 02DEC2016A_009.d |
| Level 12 | IC 320-140382/19 | 02DEC2016A_019.d |
| Level 13 | IC 320-140382/10 | 02DEC2016A_010.d |
| Level 14 | IC 320-140382/20 | 02DEC2016A_020.d |

| ANALYTE                               | LVL 1<br>LVL 11 | LVL 2<br>LVL 12 | LVL 3<br>LVL 13 | LVL 4<br>LVL 14 | LVL 5 | LVL 6 | LVL 7 | LVL 8 | LVL 9 | LVL 10 | RT WINDOW     | AVG RT |
|---------------------------------------|-----------------|-----------------|-----------------|-----------------|-------|-------|-------|-------|-------|--------|---------------|--------|
| Perfluorobutanoic acid (PFBA)         | 1.630<br>1.610  |                 | 1.622<br>++++   |                 | 1.622 |       | 1.614 |       | 1.614 |        | 1.367 - 1.867 | 1.619  |
| Perfluoropentanoic acid (PFPeA)       | 1.944<br>1.910  |                 | 1.916<br>++++   |                 | 1.926 |       | 1.916 |       | 1.916 |        | 1.670 - 2.170 | 1.921  |
| Perfluorobutanesulfonic acid (PFBS)   | 1.983<br>1.949  |                 | 1.964<br>++++   |                 | 1.964 |       | 1.954 |       | 1.945 |        | 1.781 - 2.141 | 1.960  |
| Perfluorohexanoic acid (PFHxA)        | 2.281<br>2.225  |                 | 2.239<br>++++   |                 | 2.247 |       | 2.239 |       | 2.226 |        | 1.991 - 2.491 | 2.243  |
| Perfluoroheptanoic acid (PFHpA)       | 2.648<br>2.578  |                 | 2.604<br>++++   |                 | 2.600 |       | 2.593 |       | 2.593 |        | 2.350 - 2.850 | 2.603  |
| Perfluorohexanesulfonic acid (PFHxS)  | ++++<br>2.601   |                 | 2.619<br>2.598  |                 | 2.616 |       | 2.608 |       | 2.608 |        | 2.365 - 2.865 | 2.608  |
| 6:2FTS                                |                 | ++++<br>2.904   |                 | 2.920<br>++++   |       | 2.910 |       | 2.914 |       | 2.919  | 2.663 - 3.163 | 2.913  |
| Perfluorooctanoic acid (PFOA)         | ++++<br>2.958   |                 | 2.993<br>2.967  |                 | 2.981 |       | 2.982 |       | 2.972 |        | 2.734 - 3.234 | 2.976  |
| Perfluoroheptanesulfonic Acid (PFHpS) | 3.032<br>2.966  |                 | 2.993<br>++++   |                 | 2.989 |       | 2.982 |       | 2.972 |        | 2.736 - 3.236 | 2.989  |
| Perfluorooctane Sulfonate (PFOS)      | ++++<br>3.340   |                 | 3.380<br>3.345  |                 | 3.366 |       | 3.362 |       | 3.352 |        | 3.116 - 3.616 | 3.358  |
| Perfluorononanoic acid (PFNA)         | 3.416<br>3.348  |                 | 3.380<br>++++   |                 | 3.383 |       | 3.371 |       | 3.361 |        | 3.123 - 3.623 | 3.377  |
| Perfluorooctane Sulfonamide (FOSA)    | 3.686<br>3.643  |                 | 3.657<br>++++   |                 | 3.652 |       | 3.648 |       | 3.648 |        | 3.406 - 3.906 | 3.656  |
| 8:2FTS                                |                 | 3.668<br>3.667  |                 | 3.684<br>++++   |       | 3.673 |       | 3.678 |       | 3.674  | 3.424 - 3.924 | 3.674  |



FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

| ANALYTE                                                    | LVL 1<br>LVL 11 | LVL 2<br>LVL 12 | LVL 3<br>LVL 13 | LVL 4<br>LVL 14 | LVL 5 | LVL 6 | LVL 7 | LVL 8 | LVL 9 | LVL 10 | RT WINDOW     | AVG RT |
|------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-------|-------|-------|-------|-------|--------|---------------|--------|
| Perfluorodecanoic acid (PFDA)                              | 3.786<br>3.721  |                 | 3.746<br>++++   |                 | 3.740 |       | 3.738 |       | 3.727 |        | 3.488 - 3.988 | 3.743  |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) |                 | 3.851<br>3.832  |                 | 3.857<br>3.849  |       | 3.847 |       | 3.843 |       | 3.847  | 3.597 - 4.097 | 3.847  |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)  |                 | 4.020<br>4.009  |                 | 4.026<br>4.018  |       | 4.015 |       | 4.011 |       | 4.016  | 3.766 - 4.266 | 4.016  |
| Perfluorodecanesulfonic acid (PFDS)                        | 4.096<br>4.028  |                 | 4.061<br>4.028  |                 | 4.046 |       | 4.048 |       | 4.039 |        | 3.799 - 4.299 | 4.049  |
| Perfluoroundecanoic acid (PFUnA)                           | 4.120<br>4.054  |                 | 4.086<br>++++   |                 | 4.071 |       | 4.065 |       | 4.056 |        | 3.821 - 4.321 | 4.075  |
| MeFOSA                                                     |                 | 4.115<br>4.102  |                 | 4.114<br>4.118  |       | 4.104 |       | 4.112 |       | 4.108  | 3.860 - 4.360 | 4.110  |
| N-EtFOSA-M                                                 |                 | 4.293<br>4.296  |                 | 4.301<br>4.309  |       | 4.297 |       | 4.302 |       | 4.295  | 4.049 - 4.549 | 4.299  |
| Perfluorododecanoic acid (PFDoA)                           | 4.420<br>4.343  |                 | 4.381<br>++++   |                 | 4.376 |       | 4.365 |       | 4.354 |        | 4.120 - 4.620 | 4.373  |
| Perfluorotridecanoic Acid (PFTriA)                         | 4.681<br>4.613  |                 | 4.653<br>++++   |                 | 4.637 |       | 4.631 |       | 4.629 |        | 4.386 - 4.886 | 4.641  |
| Perfluorotetradecanoic acid (PFTeA)                        | 4.935<br>4.864  |                 | 4.893<br>++++   |                 | 4.888 |       | 4.883 |       | 4.867 |        | 4.634 - 5.134 | 4.888  |
| Perfluoro-n-hexadecanoic acid (PFHxDA)                     | 5.370<br>5.290  |                 | 5.334<br>++++   |                 | 5.326 |       | 5.315 |       | 5.306 |        | 5.070 - 5.570 | 5.324  |
| Perfluoro-n-octadecanoic acid (PFODA)                      | 5.784<br>5.688  |                 | 5.738<br>5.682  |                 | 5.726 |       | 5.717 |       | 5.702 |        | 5.470 - 5.970 | 5.720  |
| 13C4 PFBA                                                  | 1.630<br>1.602  |                 | 1.614<br>1.609  |                 | 1.622 |       | 1.614 |       | 1.614 |        | 1.365 - 1.865 | 1.615  |
| 13C5-PFPeA                                                 | 1.944<br>1.910  |                 | 1.916<br>++++   |                 | 1.916 |       | 1.916 |       | 1.916 |        | 1.668 - 2.168 | 1.920  |
| 13C2 PFHxA                                                 | 2.281<br>2.225  |                 | 2.239<br>++++   |                 | 2.239 |       | 2.231 |       | 2.226 |        | 1.989 - 2.489 | 2.240  |
| 13C4-PFHpA                                                 | 2.641<br>2.578  |                 | 2.604<br>++++   |                 | 2.600 |       | 2.593 |       | 2.593 |        | 2.349 - 2.849 | 2.602  |
| 18O2 PFHxS                                                 | 2.656<br>2.594  |                 | 2.619<br>2.598  |                 | 2.616 |       | 2.608 |       | 2.608 |        | 2.364 - 2.864 | 2.614  |
| M2-6:2FTS                                                  |                 | 2.925<br>2.912  |                 | 2.912<br>2.917  |       | 2.918 |       | 2.906 |       | 2.911  | 2.665 - 3.165 | 2.914  |
| 13C4 PFOA                                                  | 3.032<br>2.966  |                 | 2.993<br>2.958  |                 | 2.989 |       | 2.974 |       | 2.972 |        | 2.734 - 3.234 | 2.983  |
| 13C4 PFOS                                                  | 3.416<br>3.340  |                 | 3.371<br>3.345  |                 | 3.366 |       | 3.362 |       | 3.352 |        | 3.115 - 3.615 | 3.365  |
| 13C5 PFNA                                                  | 3.425<br>3.355  |                 | 3.380<br>++++   |                 | 3.375 |       | 3.371 |       | 3.361 |        | 3.124 - 3.624 | 3.378  |
| 13C8 FOSA                                                  | 3.686<br>3.634  |                 | 3.648<br>++++   |                 | 3.652 |       | 3.648 |       | 3.648 |        | 3.401 - 3.901 | 3.653  |

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

| ANALYTE      | LVL 1<br>LVL 11 | LVL 2<br>LVL 12 | LVL 3<br>LVL 13 | LVL 4<br>LVL 14 | LVL 5 | LVL 6 | LVL 7 | LVL 8 | LVL 9 | LVL 10 | RT WINDOW     | AVG RT |
|--------------|-----------------|-----------------|-----------------|-----------------|-------|-------|-------|-------|-------|--------|---------------|--------|
| M2-8:2FTS    |                 | 3.678<br>3.667  |                 | 3.684<br>3.676  |       | 3.673 |       | 3.678 |       | 3.674  | 3.426 - 3.926 | 3.676  |
| 13C2 PFDA    | 3.786<br>3.710  |                 | 3.746<br>++++   |                 | 3.740 |       | 3.738 |       | 3.727 |        | 3.488 - 3.988 | 3.741  |
| d3-NMeFOSAA  |                 | 3.843<br>3.824  |                 | 3.848<br>3.841  |       | 3.838 |       | 3.843 |       | 3.839  | 3.589 - 4.089 | 3.839  |
| d5-NEtFOSAA  |                 | 4.011<br>4.000  |                 | 4.017<br>4.009  |       | 4.006 |       | 4.011 |       | 4.007  | 3.759 - 4.259 | 4.009  |
| 13C2 PFUnA   | 4.120<br>4.045  |                 | 4.078<br>++++   |                 | 4.079 |       | 4.065 |       | 4.056 |        | 3.820 - 4.320 | 4.074  |
| d-N-MeFOSA-M |                 | 4.108<br>4.102  |                 | 4.106<br>4.110  |       | 4.104 |       | 4.104 |       | 4.100  | 3.855 - 4.355 | 4.105  |
| d-N-EtFOSA-M |                 | 4.293<br>4.286  |                 | 4.292<br>4.299  |       | 4.287 |       | 4.293 |       | 4.285  | 4.040 - 4.540 | 4.291  |
| 13C2 PFDoA   | 4.420<br>4.343  |                 | 4.381<br>++++   |                 | 4.376 |       | 4.365 |       | 4.354 |        | 4.120 - 4.620 | 4.373  |
| 13C2-PFTeDA  | 4.935<br>4.855  |                 | 4.893<br>4.860  |                 | 4.880 |       | 4.883 |       | 4.867 |        | 4.632 - 5.132 | 4.882  |
| 13C2-PFHxDA  | 5.370<br>5.290  |                 | 5.334<br>5.300  |                 | 5.326 |       | 5.315 |       | 5.306 |        | 5.070 - 5.570 | 5.320  |

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

Calibration Files:

| LEVEL:   | LAB SAMPLE ID:   | LAB FILE ID:     |
|----------|------------------|------------------|
| Level 1  | IC 320-140382/4  | 02DEC2016A_004.d |
| Level 2  | IC 320-140382/14 | 02DEC2016A_014.d |
| Level 3  | IC 320-140382/5  | 02DEC2016A_005.d |
| Level 4  | IC 320-140382/15 | 02DEC2016A_015.d |
| Level 5  | IC 320-140382/6  | 02DEC2016A_006.d |
| Level 6  | IC 320-140382/16 | 02DEC2016A_016.d |
| Level 7  | IC 320-140382/7  | 02DEC2016A_007.d |
| Level 8  | IC 320-140382/17 | 02DEC2016A_017.d |
| Level 9  | IC 320-140382/8  | 02DEC2016A_008.d |
| Level 10 | IC 320-140382/18 | 02DEC2016A_018.d |
| Level 11 | IC 320-140382/9  | 02DEC2016A_009.d |
| Level 12 | IC 320-140382/19 | 02DEC2016A_019.d |
| Level 13 | IC 320-140382/10 | 02DEC2016A_010.d |
| Level 14 | IC 320-140382/20 | 02DEC2016A_020.d |

| ANALYTE    | CF                                   |                                    |                            |                          | CURVE TYPE | COEFFICIENT |            |    | # | MIN CF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|------------|--------------------------------------|------------------------------------|----------------------------|--------------------------|------------|-------------|------------|----|---|--------|------|---|----------|------------|---|----------------|
|            | LVL 1<br>LVL 5<br>LVL 9<br>LVL 13    | LVL 2<br>LVL 6<br>LVL 10<br>LVL 14 | LVL 3<br>LVL 7<br>LVL 11   | LVL 4<br>LVL 8<br>LVL 12 |            | B           | M1         | M2 |   |        |      |   |          |            |   |                |
| 13C4 PFBA  | 315621<br>417432<br>329797<br>296657 |                                    | 338632<br>378720<br>305244 |                          | Ave        |             | 340300.229 |    |   |        | 12.7 |   | 50.0     |            |   |                |
| 13C5-PFPeA | 252783<br>331097<br>252000<br>++++   |                                    | 264694<br>302516<br>218073 |                          | Ave        |             | 270193.930 |    |   |        | 14.9 |   | 50.0     |            |   |                |
| 13C2 PFHxA | 230991<br>294886<br>230866<br>++++   |                                    | 246623<br>269968<br>205545 |                          | Ave        |             | 246479.820 |    |   |        | 12.9 |   | 50.0     |            |   |                |
| 13C4-PFHpA | 202776<br>256831<br>196027<br>++++   |                                    | 215578<br>228495<br>163352 |                          | Ave        |             | 210510.050 |    |   |        | 15.0 |   | 50.0     |            |   |                |
| 18O2 PFHxS | 293951<br>366456<br>304899<br>239385 |                                    | 310687<br>347463<br>254328 |                          | Ave        |             | 302452.643 |    |   |        | 15.1 |   | 50.0     |            |   |                |

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

| ANALYTE     | CF                                   |                                      |                            |                            | CURVE<br>TYPE | COEFFICIENT |            |    | # | MIN CF | %RSD | # | MAX<br>%RSD | R^2<br>OR COD | # | MIN R^2<br>OR COD |
|-------------|--------------------------------------|--------------------------------------|----------------------------|----------------------------|---------------|-------------|------------|----|---|--------|------|---|-------------|---------------|---|-------------------|
|             | LVL 1<br>LVL 5<br>LVL 9<br>LVL 13    | LVL 2<br>LVL 6<br>LVL 10<br>LVL 14   | LVL 3<br>LVL 7<br>LVL 11   | LVL 4<br>LVL 8<br>LVL 12   |               | B           | M1         | M2 |   |        |      |   |             |               |   |                   |
| M2-6:2FTS   |                                      | 124739<br>140185<br>117602<br>164705 |                            | 120558<br>166448<br>140694 | Ave           |             | 139275.699 |    |   |        | 14.4 |   | 50.0        |               |   |                   |
| 13C4 PFOA   | 223843<br>294113<br>211325<br>144514 |                                      | 246973<br>252700<br>162409 |                            | Ave           |             | 219410.943 |    |   |        | 23.8 |   | 50.0        |               |   |                   |
| 13C4 PFOS   | 227748<br>298992<br>246737<br>190884 |                                      | 263387<br>280702<br>203865 |                            | Ave           |             | 244616.441 |    |   |        | 16.2 |   | 50.0        |               |   |                   |
| 13C5 PFNA   | 167208<br>216529<br>165500<br>++++   |                                      | 188629<br>194611<br>136179 |                            | Ave           |             | 178109.173 |    |   |        | 15.7 |   | 50.0        |               |   |                   |
| 13C8 FOSA   | 366949<br>471533<br>404926<br>++++   |                                      | 431176<br>451020<br>359915 |                            | Ave           |             | 414252.957 |    |   |        | 10.9 |   | 50.0        |               |   |                   |
| M2-8:2FTS   |                                      | 117628<br>124671<br>122166<br>166617 |                            | 108840<br>154273<br>140315 | Ave           |             | 133501.446 |    |   |        | 15.7 |   | 50.0        |               |   |                   |
| 13C2 PFDA   | 151221<br>196057<br>159286<br>++++   |                                      | 168367<br>182254<br>139218 |                            | Ave           |             | 166066.990 |    |   |        | 12.5 |   | 50.0        |               |   |                   |
| d3-NMeFOSAA |                                      | 77601<br>82804<br>68846<br>79183     |                            | 72124<br>99067<br>80331    | Ave           |             | 79993.7857 |    |   |        | 12.1 |   | 50.0        |               |   |                   |
| d5-NETfOSAA |                                      | 89291<br>89787<br>77393<br>89956     |                            | 82682<br>104841<br>89500   | Ave           |             | 89064.1286 |    |   |        | 9.5  |   | 50.0        |               |   |                   |

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

| ANALYTE      | CF                                   |                                    |                            |                           | CURVE<br>TYPE | COEFFICIENT |            |    | # | MIN CF | %RSD | # | MAX<br>%RSD | R^2<br>OR COD | # | MIN R^2<br>OR COD |
|--------------|--------------------------------------|------------------------------------|----------------------------|---------------------------|---------------|-------------|------------|----|---|--------|------|---|-------------|---------------|---|-------------------|
|              | LVL 1<br>LVL 5<br>LVL 9<br>LVL 13    | LVL 2<br>LVL 6<br>LVL 10<br>LVL 14 | LVL 3<br>LVL 7<br>LVL 11   | LVL 4<br>LVL 8<br>LVL 12  |               | B           | M1         | M2 |   |        |      |   |             |               |   |                   |
| 13C2 PFUnA   | 122340<br>154918<br>114588<br>++++   |                                    | 133394<br>138267<br>91167  |                           | Ave           |             | 125779.243 |    |   |        | 17.4 |   | 50.0        |               |   |                   |
| d-N-MeFOSA-M |                                      | 93620<br>107246<br>99342<br>124175 |                            | 103638<br>117800<br>98551 | Ave           |             | 106338.894 |    |   |        | 10.4 |   | 50.0        |               |   |                   |
| d-N-EtFOSA-M |                                      | 86581<br>104104<br>97144<br>118377 |                            | 100979<br>112224<br>93938 | Ave           |             | 101906.806 |    |   |        | 10.6 |   | 50.0        |               |   |                   |
| 13C2 PFDoA   | 108677<br>140992<br>109985<br>++++   |                                    | 119003<br>126396<br>96377  |                           | Ave           |             | 116904.873 |    |   |        | 13.3 |   | 50.0        |               |   |                   |
| 13C2-PFTeDA  | 221880<br>299085<br>231293<br>207930 |                                    | 259139<br>271923<br>202045 |                           | Ave           |             | 241899.200 |    |   |        | 14.8 |   | 50.0        |               |   |                   |
| 13C2-PFHxDA  | 113226<br>160713<br>124217<br>120034 |                                    | 135127<br>148580<br>110713 |                           | Ave           |             | 130372.880 |    |   |        | 14.3 |   | 50.0        |               |   |                   |

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

## CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) NCalibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

| 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            | LVL 2           | LVL 3            | LVL 4           | LVL 5  |               | B           | M1     | M2 |   |         |      |   |             |               |   |                   |
|                                       | LVL 6<br>LVL 11  | LVL 7<br>LVL 12 | LVL 8<br>LVL 13  | LVL 9<br>LVL 14 | LVL 10 |               |             |        |    |   |         |      |   |             |               |   |                   |
| Perfluorobutanoic acid (PFBA)         | 287036<br>219376 | 371759          | 298633<br>++++   | 294183          | 387562 | AveID         |             | 0.8853 |    |   |         | 10.0 |   | 35.0        |               |   |                   |
| Perfluoropentanoic acid (PFPeA)       | 321460<br>171488 | 327954          | 290628<br>++++   | 249486          | 336046 | AveID         |             | 1.0408 |    |   |         | 15.3 |   | 35.0        |               |   |                   |
| Perfluorobutanesulfonic acid (PFBS)   | 481176<br>291824 | 642971          | 500216<br>++++   | 491581          | 668327 | AveID         |             | 1.6135 |    |   |         | 15.6 |   | 50.0        |               |   |                   |
| Perfluorohexanoic acid (PFHxA)        | 235306<br>166899 | 274051          | 236370<br>++++   | 217418          | 291709 | AveID         |             | 0.9559 |    |   |         | 8.0  |   | 35.0        |               |   |                   |
| Perfluoroheptanoic acid (PFHpA)       | 233630<br>146715 | 250282          | 216223<br>++++   | 204959          | 259601 | AveID         |             | 1.0342 |    |   |         | 8.4  |   | 35.0        |               |   |                   |
| Perfluorohexanesulfonic acid (PFHxS)  | ++++<br>251770   | 380131          | 376003<br>213929 | 323081          | 406797 | AveID         |             | 1.0596 |    |   |         | 10.2 |   | 35.0        |               |   |                   |
| 6:2FTS                                | 103949           | ++++<br>105654  | 93245<br>152954  | ++++            | 118849 | AveID         |             | 0.8391 |    |   |         | 14.3 |   | 35.0        |               |   |                   |
| Perfluorooctanoic acid (PFOA)         | ++++<br>148950   | 280154          | 290666<br>118726 | 218968          | 312182 | AveID         |             | 1.0203 |    |   |         | 12.7 |   | 35.0        |               |   |                   |
| Perfluoroheptanesulfonic Acid (PFHpS) | 277206<br>199679 | 364908          | 299283<br>++++   | 279830          | 372775 | AveID         |             | 1.1690 |    |   |         | 9.7  |   | 50.0        |               |   |                   |
| Perfluorooctane Sulfonate (PFOS)      | ++++<br>225419   | 309544          | 275533<br>216190 | 265826          | 316788 | AveID         |             | 1.0873 |    |   |         | 3.0  |   | 35.0        |               |   |                   |
| Perfluorononanoic acid (PFNA)         | 170148<br>126022 | 200322          | 184877<br>++++   | 164187          | 217102 | AveID         |             | 0.9912 |    |   |         | 3.7  |   | 35.0        |               |   |                   |
| Perfluorooctane Sulfonamide (FOSA)    | 360690<br>255544 | 468609          | 403791<br>++++   | 379917          | 474054 | AveID         |             | 0.9353 |    |   |         | 12.5 |   | 35.0        |               |   |                   |

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

## CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-23783-1Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_NGC Column: AcquityID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 12/02/2016 10:29Calibration End Date: 12/02/2016 12:29Calibration ID: 26849

| 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            | LVL 2           | LVL 3            | LVL 4           | LVL 5  |               | B           | M1     | M2 |   |         |      |   |             |               |   |                   |
|                                                               | LVL 6<br>LVL 11  | LVL 7<br>LVL 12 | LVL 8<br>LVL 13  | LVL 9<br>LVL 14 | LVL 10 |               |             |        |    |   |         |      |   |             |               |   |                   |
| 8:2FTS                                                        | 90169            | 91935<br>101586 | 146110           | 98719<br>+++++  | 120115 | AveID         |             | 0.8444 |    |   |         | 13.7 |   | 35.0        |               |   |                   |
| Perfluorodecanoic acid (PFDA)                                 | 155778<br>128074 | 183568          | 159778<br>+++++  | 151623          | 187771 | AveID         |             | 0.9693 |    |   |         | 4.2  |   | 35.0        |               |   |                   |
| N-methyl perfluorooctane<br>sulfonamidoacetic acid (NMeFOSAA) | 57976            | 61790<br>68867  | 91493            | 59295<br>71812  | 73940  | AveID         |             | 0.8686 |    |   |         | 13.5 |   | 35.0        |               |   |                   |
| N-ethyl perfluorooctane<br>sulfonamidoacetic acid (NEtFOSAA)  | 56792            | 60032<br>70327  | 94072            | 56004<br>70891  | 70934  | AveID         |             | 0.7671 |    |   |         | 14.6 |   | 35.0        |               |   |                   |
| Perfluorodecanesulfonic acid (PFDS)                           | 138425<br>126426 | 189172          | 156537<br>107269 | 162158          | 201706 | AveID         |             | 0.6271 |    |   |         | 6.9  |   | 50.0        |               |   |                   |
| Perfluoroundecanoic acid (PFUnA)                              | 152116<br>89994  | 145410          | 148792<br>+++++  | 111549          | 152861 | AveID         |             | 1.0596 |    |   |         | 9.9  |   | 35.0        |               |   |                   |
| MeFOSA                                                        | 72052            | 74554<br>79073  | 106455           | 73327<br>89254  | 96734  | AveID         |             | 0.7963 |    |   |         | 13.8 |   | 35.0        |               |   |                   |
| N-EtFOSA-M                                                    | 73147            | 71070<br>82751  | 109355           | 78846<br>88734  | 100899 | AveID         |             | 0.8497 |    |   |         | 14.4 |   | 35.0        |               |   |                   |
| Perfluorododecanoic acid (PFDoA)                              | 109058<br>88491  | 122257          | 109023<br>+++++  | 101710          | 133861 | AveID         |             | 0.9465 |    |   |         | 3.6  |   | 35.0        |               |   |                   |
| Perfluorotridecanoic Acid (PFTriA)                            | 109674<br>92748  | 141902          | 126175<br>+++++  | 114082          | 147998 | AveID         |             | 1.0402 |    |   |         | 5.1  |   | 50.0        |               |   |                   |
| Perfluorotetradecanoic acid (PFTeA)                           | 228612<br>159620 | 259265          | 237250<br>+++++  | 206027          | 270118 | AveID         |             | 1.9323 |    |   |         | 8.3  |   | 50.0        |               |   |                   |
| Perfluoro-n-hexadecanoic acid (PFHxDA)                        | 267566<br>93727  | 142551          | 218894<br>+++++  | 113089          | 160135 | L1ID          | 0.8109      | 0.9850 |    |   |         |      |   |             | 0.9990        |   | 0.9900            |
| Perfluoro-n-octadecanoic acid (PFODA)                         | 80380<br>68360   | 72886           | 118037<br>77747  | 107852          | 105867 | AveID         |             | 0.7863 |    |   |         | 19.0 |   | 50.0        |               |   |                   |

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

Calibration Files:

| LEVEL:   | LAB SAMPLE ID:   | LAB FILE ID:     |
|----------|------------------|------------------|
| Level 1  | IC 320-140382/4  | 02DEC2016A_004.d |
| Level 2  | IC 320-140382/14 | 02DEC2016A_014.d |
| Level 3  | IC 320-140382/5  | 02DEC2016A_005.d |
| Level 4  | IC 320-140382/15 | 02DEC2016A_015.d |
| Level 5  | IC 320-140382/6  | 02DEC2016A_006.d |
| Level 6  | IC 320-140382/16 | 02DEC2016A_016.d |
| Level 7  | IC 320-140382/7  | 02DEC2016A_007.d |
| Level 8  | IC 320-140382/17 | 02DEC2016A_017.d |
| Level 9  | IC 320-140382/8  | 02DEC2016A_008.d |
| Level 10 | IC 320-140382/18 | 02DEC2016A_018.d |
| Level 11 | IC 320-140382/9  | 02DEC2016A_009.d |
| Level 12 | IC 320-140382/19 | 02DEC2016A_019.d |
| Level 13 | IC 320-140382/10 | 02DEC2016A_010.d |
| Level 14 | IC 320-140382/20 | 02DEC2016A_020.d |

| ANALYTE    | CURVE<br>TYPE | RESPONSE |          |          |          |          | CONCENTRATION (NG/ML) |        |        |        |        |
|------------|---------------|----------|----------|----------|----------|----------|-----------------------|--------|--------|--------|--------|
|            |               | LVL 1    | LVL 2    | LVL 3    | LVL 4    | LVL 5    | LVL 1                 | LVL 2  | LVL 3  | LVL 4  | LVL 5  |
|            |               | LVL 6    | LVL 7    | LVL 8    | LVL 9    | LVL 10   | LVL 6                 | LVL 7  | LVL 8  | LVL 9  | LVL 10 |
|            |               | LVL 11   | LVL 12   | LVL 13   | LVL 14   |          | LVL 11                | LVL 12 | LVL 13 | LVL 14 |        |
| 13C4 PFBA  | Ave           | 15781027 | 18935985 | 16931601 | 16489860 | 20871580 | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|            |               | 15262180 |          | 14832847 |          |          | 50.0                  |        | 50.0   |        |        |
| 13C5-PFPeA | Ave           | 12639170 | 15125796 | 13234715 | 12600012 | 16554836 | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|            |               | 10903650 |          | +++++    |          |          | 50.0                  |        | +++++  |        |        |
| 13C2 PFHxA | Ave           | 11549542 | 13498378 | 12331127 | 11543313 | 14744313 | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|            |               | 10277273 |          | +++++    |          |          | 50.0                  |        | +++++  |        |        |
| 13C4-PFHpA | Ave           | 10138817 | 11424765 | 10778897 | 9801352  | 12841573 | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|            |               | 8167611  |          | +++++    |          |          | 50.0                  |        | +++++  |        |        |
| 18O2 PFHxS | Ave           | 13903865 | 16435009 | 14695505 | 14421709 | 17333346 | 47.3                  | 47.3   | 47.3   | 47.3   | 47.3   |
|            |               | 12029706 |          | 11322930 |          |          | 47.3                  |        | 47.3   |        |        |
| M2-6:2FTS  | Ave           | 5925112  | 5925112  | 5726516  | 5586093  |          | 47.5                  | 47.5   | 47.5   | 47.5   | 47.5   |
|            |               | 6658764  |          | 7906261  |          |          | 47.5                  |        | 47.5   |        | 47.5   |
| 13C4 PFOA  | Ave           | 11192131 | 12634984 | 12348635 | 10566267 | 14705649 | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|            |               | 8120442  |          | 7225722  |          |          | 50.0                  |        | 50.0   |        |        |



FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

| ANALYTE      | CURVE<br>TYPE | RESPONSE |          |          |          |          | CONCENTRATION (NG/ML) |        |        |        |        |
|--------------|---------------|----------|----------|----------|----------|----------|-----------------------|--------|--------|--------|--------|
|              |               | LVL 1    | LVL 2    | LVL 3    | LVL 4    | LVL 5    | LVL 1                 | LVL 2  | LVL 3  | LVL 4  | LVL 5  |
|              |               | LVL 6    | LVL 7    | LVL 8    | LVL 9    | LVL 10   | LVL 6                 | LVL 7  | LVL 8  | LVL 9  | LVL 10 |
|              |               | LVL 11   | LVL 12   | LVL 13   | LVL 14   |          | LVL 11                | LVL 12 | LVL 13 | LVL 14 |        |
| 13C4 PFOS    | Ave           | 10886366 | 13417569 | 12589922 | 11794026 | 14291797 | 47.8                  | 47.8   | 47.8   | 47.8   | 47.8   |
|              |               | 9744748  |          | 9124233  |          |          | 47.8                  |        | 47.8   |        |        |
| 13C5 PFNA    | Ave           | 8360391  | 9730546  | 9431435  | 8274989  | 10826461 | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               | 6808930  |          | +++++    |          |          | 50.0                  |        | +++++  |        |        |
| 13C8 FOSA    | Ave           | 18347473 | 22550983 | 21558794 | 20246280 | 23576629 | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               | 17995728 |          | +++++    |          |          | 50.0                  |        | +++++  |        |        |
| M2-8:2FTS    | Ave           | 5971752  | 5634375  | 7389674  | 5213436  | 5851766  | 47.9                  | 47.9   | 47.9   | 47.9   | 47.9   |
|              |               |          | 6721067  |          | 7980965  |          |                       | 47.9   |        | 47.9   |        |
| 13C2 PFDA    | Ave           | 7561029  | 9112679  | 8418346  | 7964307  | 9802839  | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               | 6960897  |          | +++++    |          |          | 50.0                  |        | +++++  |        |        |
| d3-NMeFOSAA  | Ave           | 4140205  | 3880040  | 4953346  | 3606216  | 3442292  | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               |          | 4016571  |          | 3959155  |          |                       | 50.0   |        | 50.0   |        |
| d5-NEtFOSAA  | Ave           | 4489327  | 4464530  | 5242030  | 4134123  | 3869672  | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               |          | 4474975  |          | 4497788  |          |                       | 50.0   |        | 50.0   |        |
| 13C2 PFUnA   | Ave           | 6117015  | 6913372  | 6669716  | 5729423  | 7745917  | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               | 4558330  |          | +++++    |          |          | 50.0                  |        | +++++  |        |        |
| d-N-MeFOSA-M | Ave           | 5362314  | 4681022  | 5889991  | 5181881  | 4967092  | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               |          | 4927555  |          | 6208758  |          |                       | 50.0   |        | 50.0   |        |
| d-N-EtFOSA-M | Ave           | 5205212  | 4329074  | 5611197  | 5048951  | 4857179  | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               |          | 4696896  |          | 5918873  |          |                       | 50.0   |        | 50.0   |        |
| 13C2 PFDoA   | Ave           | 5433841  | 6319787  | 5950161  | 5499233  | 7049582  | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               | 4818858  |          | +++++    |          |          | 50.0                  |        | +++++  |        |        |
| 13C2-PFTeDA  | Ave           | 11093975 | 13596161 | 12956938 | 11564641 | 14954236 | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               | 10102255 |          | 10396514 |          |          | 50.0                  |        | 50.0   |        |        |
| 13C2-PFHxDA  | Ave           | 5661315  | 7428976  | 6756331  | 6210852  | 8035665  | 50.0                  | 50.0   | 50.0   | 50.0   | 50.0   |
|              |               | 5535655  |          | 6001714  |          |          | 50.0                  |        | 50.0   |        |        |

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382  
SDG No.: \_\_\_\_\_  
Instrument ID: A8\_N GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N  
Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

Curve Type Legend:

Ave = Average

## RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

## Calibration Files:

| LEVEL:   | LAB SAMPLE ID:   | LAB FILE ID:     |
|----------|------------------|------------------|
| Level 1  | IC 320-140382/4  | 02DEC2016A_004.d |
| Level 2  | IC 320-140382/14 | 02DEC2016A_014.d |
| Level 3  | IC 320-140382/5  | 02DEC2016A_005.d |
| Level 4  | IC 320-140382/15 | 02DEC2016A_015.d |
| Level 5  | IC 320-140382/6  | 02DEC2016A_006.d |
| Level 6  | IC 320-140382/16 | 02DEC2016A_016.d |
| Level 7  | IC 320-140382/7  | 02DEC2016A_007.d |
| Level 8  | IC 320-140382/17 | 02DEC2016A_017.d |
| Level 9  | IC 320-140382/8  | 02DEC2016A_008.d |
| Level 10 | IC 320-140382/18 | 02DEC2016A_018.d |
| Level 11 | IC 320-140382/9  | 02DEC2016A_009.d |
| Level 12 | IC 320-140382/19 | 02DEC2016A_019.d |
| Level 13 | IC 320-140382/10 | 02DEC2016A_010.d |
| Level 14 | IC 320-140382/20 | 02DEC2016A_020.d |

| ANALYTE                              | IS<br>REF | CURVE<br>TYPE | RESPONSE |          |          |          |         | CONCENTRATION (NG/ML) |        |        |        |        |
|--------------------------------------|-----------|---------------|----------|----------|----------|----------|---------|-----------------------|--------|--------|--------|--------|
|                                      |           |               | LVL 1    | LVL 2    | LVL 3    | LVL 4    | LVL 5   | LVL 1                 | LVL 2  | LVL 3  | LVL 4  | LVL 5  |
|                                      |           |               | LVL 6    | LVL 7    | LVL 8    | LVL 9    | LVL 10  | LVL 6                 | LVL 7  | LVL 8  | LVL 9  | LVL 10 |
|                                      |           |               | LVL 11   | LVL 12   | LVL 13   | LVL 14   |         | LVL 11                | LVL 12 | LVL 13 | LVL 14 |        |
| Perfluorobutanoic acid (PFBA)        |           | AveID         | 143518   | 7435187  | 298633   | 14709131 | 1937809 | 0.500                 | 20.0   | 1.00   | 50.0   | 5.00   |
|                                      |           |               | 43875101 |          | +++++    |          |         | 200                   |        | +++++  |        |        |
| Perfluoropentanoic acid (PFPeA)      |           | AveID         | 160730   | 6559082  | 290628   | 12474289 | 1680231 | 0.500                 | 20.0   | 1.00   | 50.0   | 5.00   |
|                                      |           |               | 34297516 |          | +++++    |          |         | 200                   |        | +++++  |        |        |
| Perfluorobutanesulfonic acid (PFBS)  |           | AveID         | 212680   | 11367724 | 442191   | 21727893 | 2954006 | 0.442                 | 17.7   | 0.884  | 44.2   | 4.42   |
|                                      |           |               | 51594571 |          | +++++    |          |         | 177                   |        | +++++  |        |        |
| Perfluorohexanoic acid (PFHxA)       |           | AveID         | 117653   | 5481010  | 236370   | 10870881 | 1458544 | 0.500                 | 20.0   | 1.00   | 50.0   | 5.00   |
|                                      |           |               | 33379792 |          | +++++    |          |         | 200                   |        | +++++  |        |        |
| Perfluoroheptanoic acid (PFHpA)      |           | AveID         | 116815   | 5005633  | 216223   | 10247953 | 1298003 | 0.500                 | 20.0   | 1.00   | 50.0   | 5.00   |
|                                      |           |               | 29343029 |          | +++++    |          |         | 200                   |        | +++++  |        |        |
| Perfluorohexanesulfonic acid (PFHxS) |           | AveID         | +++++    | 6918390  | 342163   | 14700167 | 1850926 | +++++                 | 18.2   | 0.910  | 45.5   | 4.55   |
|                                      |           |               | 45822208 |          | 77870104 |          |         | 182                   |        | 364    |        |        |
| 6:2FTS                               |           | AveID         | 492719   | +++++    | 2900008  | 88396    | 5633441 | 4.74                  | +++++  | 19.0   | 0.948  | 47.4   |
|                                      |           |               |          | 20031946 |          | +++++    |         |                       | 190    |        | +++++  |        |

## RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-23783-1Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_NGC Column: AcquityID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 12/02/2016 10:29Calibration End Date: 12/02/2016 12:29Calibration ID: 26849

| ANALYTE                                                    | IS<br>REF | CURVE<br>TYPE | RESPONSE                 |                          |                          |                          |                 | CONCENTRATION (NG/ML)    |                          |                          |                          |                 |
|------------------------------------------------------------|-----------|---------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------|
|                                                            |           |               | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8<br>LVL 13 | LVL 4<br>LVL 9<br>LVL 14 | LVL 5<br>LVL 10 | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8<br>LVL 13 | LVL 4<br>LVL 9<br>LVL 14 | LVL 5<br>LVL 10 |
| Perfluorooctanoic acid (PFOA)                              |           | AveID         | +++++                    | 5603089                  | 290666                   | 10948383                 | 1560911         | +++++                    | 20.0                     | 1.00                     | 50.0                     | 5.00            |
|                                                            |           |               | 29789966                 |                          | 47490545                 |                          |                 | 200                      |                          | 400                      |                          |                 |
| Perfluoroheptanesulfonic Acid (PFHpS)                      |           | AveID         | 131950                   | 6947857                  | 284917                   | 13319919                 | 1774408         | 0.476                    | 19.0                     | 0.952                    | 47.6                     | 4.76            |
|                                                            |           |               | 38018954                 |                          | +++++                    |                          |                 | 190                      |                          | +++++                    |                          |                 |
| Perfluorooctane Sulfonate (PFOS)                           |           | AveID         | +++++                    | 5745134                  | 255695                   | 12334342                 | 1469896         | +++++                    | 18.6                     | 0.928                    | 46.4                     | 4.64            |
|                                                            |           |               | 41837729                 |                          | 80249842                 |                          |                 | 186                      |                          | 371                      |                          |                 |
| Perfluorononanoic acid (PFNA)                              |           | AveID         | 85074                    | 4006430                  | 184877                   | 8209339                  | 1085508         | 0.500                    | 20.0                     | 1.00                     | 50.0                     | 5.00            |
|                                                            |           |               | 25204338                 |                          | +++++                    |                          |                 | 200                      |                          | +++++                    |                          |                 |
| Perfluorooctane Sulfonamide (FOSA)                         |           | AveID         | 180345                   | 9372172                  | 403791                   | 18995833                 | 2370271         | 0.500                    | 20.0                     | 1.00                     | 50.0                     | 5.00            |
|                                                            |           |               | 51108754                 |                          | +++++                    |                          |                 | 200                      |                          | +++++                    |                          |                 |
| 8:2FTS                                                     |           | AveID         | 431909                   | 44037                    | 2799477                  | 94573                    | 5753486         | 4.79                     | 0.479                    | 19.2                     | 0.958                    | 47.9            |
|                                                            |           |               |                          | 19463965                 |                          | +++++                    |                 |                          | 192                      |                          | +++++                    |                 |
| Perfluorodecanoic acid (PFDA)                              |           | AveID         | 77889                    | 3671358                  | 159778                   | 7581125                  | 938853          | 0.500                    | 20.0                     | 1.00                     | 50.0                     | 5.00            |
|                                                            |           |               | 25614867                 |                          | +++++                    |                          |                 | 200                      |                          | +++++                    |                          |                 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) |           | AveID         | 289882                   | 30895                    | 1829869                  | 59295                    | 3696988         | 5.00                     | 0.500                    | 20.0                     | 1.00                     | 50.0            |
|                                                            |           |               | 13773335                 |                          |                          | 28724886                 |                 | 200                      |                          | 400                      |                          |                 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)  |           | AveID         | 283960                   | 30016                    | 1881436                  | 56004                    | 3546696         | 5.00                     | 0.500                    | 20.0                     | 1.00                     | 50.0            |
|                                                            |           |               | 14065497                 |                          |                          | 28356327                 |                 | 200                      |                          | 400                      |                          |                 |
| Perfluorodecanesulfonic acid (PFDS)                        |           | AveID         | 66721                    | 3647236                  | 150902                   | 7816007                  | 972225          | 0.482                    | 19.3                     | 0.964                    | 48.2                     | 4.82            |
|                                                            |           |               | 24374906                 |                          | 41362935                 |                          |                 | 193                      |                          | 386                      |                          |                 |
| Perfluoroundecanoic acid (PFUnA)                           |           | AveID         | 76058                    | 2908196                  | 148792                   | 5577456                  | 764307          | 0.500                    | 20.0                     | 1.00                     | 50.0                     | 5.00            |
|                                                            |           |               | 17998762                 |                          | +++++                    |                          |                 | 200                      |                          | +++++                    |                          |                 |
| MeFOSA                                                     |           | AveID         | 360259                   | 37277                    | 2129108                  | 73327                    | 4836683         | 5.00                     | 0.500                    | 20.0                     | 1.00                     | 50.0            |
|                                                            |           |               |                          | 15814534                 |                          | 35701676                 |                 | 200                      |                          | 400                      |                          |                 |
| N-EtFOSA-M                                                 |           | AveID         | 365734                   | 35535                    | 2187091                  | 78846                    | 5044937         | 5.00                     | 0.500                    | 20.0                     | 1.00                     | 50.0            |
|                                                            |           |               |                          | 16550291                 |                          | 35493503                 |                 |                          | 200                      |                          | 400                      |                 |

## RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140382

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

| ANALYTE                                | IS<br>REF | CURVE<br>TYPE | RESPONSE |         |          |          |         | CONCENTRATION (NG/ML) |        |        |        |        |
|----------------------------------------|-----------|---------------|----------|---------|----------|----------|---------|-----------------------|--------|--------|--------|--------|
|                                        |           |               | LVL 1    | LVL 2   | LVL 3    | LVL 4    | LVL 5   | LVL 1                 | LVL 2  | LVL 3  | LVL 4  | LVL 5  |
|                                        |           |               | LVL 6    | LVL 7   | LVL 8    | LVL 9    | LVL 10  | LVL 6                 | LVL 7  | LVL 8  | LVL 9  | LVL 10 |
|                                        |           |               | LVL 11   | LVL 12  | LVL 13   | LVL 14   |         | LVL 11                | LVL 12 | LVL 13 | LVL 14 |        |
| Perfluorododecanoic acid (PFDoA)       |           | AveID         | 54529    | 2445148 | 109023   | 5085511  | 669306  | 0.500                 | 20.0   | 1.00   | 50.0   | 5.00   |
|                                        |           |               | 17698276 |         | +++++    |          |         | 200                   |        | +++++  |        |        |
| Perfluorotridecanoic Acid (PFTriA)     |           | AveID         | 54837    | 2838032 | 126175   | 5704096  | 739992  | 0.500                 | 20.0   | 1.00   | 50.0   | 5.00   |
|                                        |           |               | 18549592 |         | +++++    |          |         | 200                   |        | +++++  |        |        |
| Perfluorotetradecanoic acid (PFTeA)    |           | AveID         | 114306   | 5185293 | 237250   | 10301361 | 1350591 | 0.500                 | 20.0   | 1.00   | 50.0   | 5.00   |
|                                        |           |               | 31923969 |         | +++++    |          |         | 200                   |        | +++++  |        |        |
| Perfluoro-n-hexadecanoic acid (PFHxDA) |           | L1ID          | 133783   | 2851018 | 218894   | 5654463  | 800676  | 0.500                 | 20.0   | 1.00   | 50.0   | 5.00   |
|                                        |           |               | 18745470 |         | +++++    |          |         | 200                   |        | +++++  |        |        |
| Perfluoro-n-octadecanoic acid (PFODA)  |           | AveID         | 40190    | 1457725 | 118037   | 5392609  | 529337  | 0.500                 | 20.0   | 1.00   | 50.0   | 5.00   |
|                                        |           |               | 13671969 |         | 31098706 |          |         | 200                   |        | 400    |        |        |

## Curve Type Legend:

AveID = Average isotope dilution  
L1ID = Linear 1/conc IsoDil

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_004.d  
 Lims ID: IC L1  
 Client ID:  
 Sample Type: IC Calib Level: 1  
 Inject. Date: 02-Dec-2016 10:29:38 ALS Bottle#: 37 Worklist Smp#: 4  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L1\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:51:29 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:37:48

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.630 | 1.615  | 0.015  |        | 15781027 | 46.4         |                 | 92.7 | 1736709 |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.630 | 1.617  | 0.013  | 1.000  | 143518   | 0.5136       |                 | 103  | 1140    |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.944 | 1.918  | 0.026  |        | 12639170 | 46.8         |                 | 93.6 | 942300  |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.944 | 1.920  | 0.024  | 1.000  | 160730   | 0.6109       |                 | 122  | 1551    |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.983 | 1.961  | 0.022  | 1.000  | 212680   | 0.4484       |                 | 101  |         |       |
| 298.90 > 99.00                 | 1.983 | 1.961  | 0.022  | 1.000  | 94809    |              | 2.24(0.00-0.00) | 101  |         |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.281 | 2.239  | 0.042  |        | 11549542 | 46.9         |                 | 93.7 | 865664  |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.281 | 2.241  | 0.040  | 1.000  | 117653   | 0.5329       |                 | 107  | 3266    |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.641 | 2.599  | 0.042  |        | 10138817 | 48.2         |                 | 96.3 | 926585  |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.648 | 2.600  | 0.048  | 1.000  | 116815   | 0.5570       |                 | 111  | 2490    |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.656 | 2.614  | 0.042  |        | 13903865 | 46.0         |                 | 97.2 | 1297944 |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.656 | 2.615  | 0.041  | 1.000  | 196748   | 0.6317       |                 | 139  |         |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 3.032 | 2.984  | 0.048  | 1.000  | 158739   | 0.6950       |                 | 139  | 1573    |       |
| 413.00 > 169.00                | 3.032 | 2.984  | 0.048  | 1.000  | 89616    |              | 1.77(0.90-1.10) | 139  | 8158    |       |

D 14 13C4 PFOA

417.00 > 372.00 3.032 2.984 0.048 11192131 51.0 102 1037140  
 Page 505 of 834 12/09/2016

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |        |       |
| 449.00 > 80.00                   | 3.032 | 2.986  | 0.046  | 1.000  | 131950   | 0.4956       |                 | 104  |        |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.416 | 3.365  | 0.051  |        | 10886366 | 44.5         |                 | 93.1 | 481501 |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 499.00 > 80.00                   | 3.416 | 3.366  | 0.050  | 1.000  | 120361   | 0.4860       |                 | 105  | 16520  |       |
| 499.00 > 99.00                   | 3.425 | 3.366  | 0.059  | 1.003  | 28366    |              | 4.24(0.90-1.10) | 105  | 2029   |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 463.00 > 419.00                  | 3.416 | 3.373  | 0.043  | 1.000  | 85074    | 0.5133       |                 | 103  | 1441   |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                  | 3.425 | 3.374  | 0.051  |        | 8360391  | 46.9         |                 | 93.9 | 601596 |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                   | 3.686 | 3.651  | 0.035  |        | 18347473 | 44.3         |                 | 88.6 | 659525 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                   | 3.686 | 3.656  | 0.030  | 1.000  | 180345   | 0.5254       |                 | 105  | 13418  |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                  | 3.786 | 3.738  | 0.048  | 1.000  | 77889    | 0.5314       |                 | 106  | 2050   |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                  | 3.786 | 3.738  | 0.048  |        | 7561029  | 45.5         |                 | 91.1 | 167715 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                   | 4.096 | 4.049  | 0.047  | 1.000  | 66721    | 0.4671       |                 | 96.9 |        |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                  | 4.120 | 4.070  | 0.050  |        | 6117015  | 48.6         |                 | 97.3 | 398481 |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                  | 4.120 | 4.071  | 0.049  | 1.000  | 76058    | 0.5867       |                 | 117  | 2233   |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                  | 4.420 | 4.370  | 0.050  |        | 5433841  | 46.5         |                 | 93.0 | 245704 |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 613.00 > 569.00                  | 4.420 | 4.370  | 0.050  | 1.000  | 54529    | 0.5301       |                 | 106  | 74.3   |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                  | 4.681 | 4.636  | 0.045  | 1.000  | 54837    | 0.4851       |                 | 97.0 | 81.1   |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                  | 4.935 | 4.882  | 0.053  |        | 11093975 | 45.9         |                 | 91.7 | 599425 |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |        | M     |
| 712.50 > 668.90                  | 4.935 | 4.884  | 0.051  | 1.000  | 114306   | 0.5443       |                 | 109  | 74.0   |       |
| 713.00 > 169.00                  | 4.918 | 4.884  | 0.034  | 0.997  | 21224    |              | 5.39(0.00-0.00) | 109  | 2088   | M     |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |        |       |
| 815.00 > 770.00                  | 5.370 | 5.320  | 0.050  |        | 5661315  | 43.4         |                 | 86.8 | 129845 |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 813.00 > 769.00                  | 5.370 | 5.320  | 0.050  | 1.000  | 133783   | 0.4265       |                 | 85.3 | 239    |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 913.00 > 869.00                  | 5.784 | 5.720  | 0.064  | 1.000  | 40190    | 0.4703       |                 | 94.1 | 105    |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## Reagents:

LCPFC-L1\_00021

Amount Added: 1.00

Units: mL



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_004.d

Injection Date: 02-Dec-2016 10:29:38

Instrument ID: A8\_N

Lims ID: IC L1

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 37

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

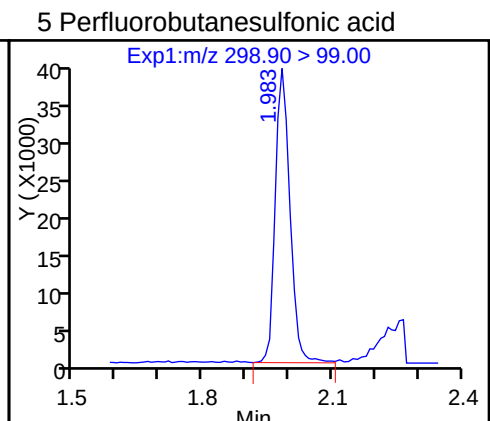
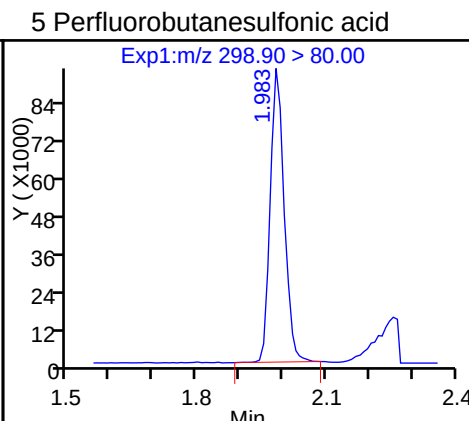
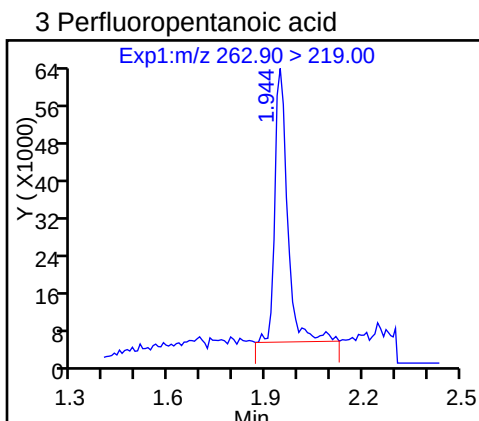
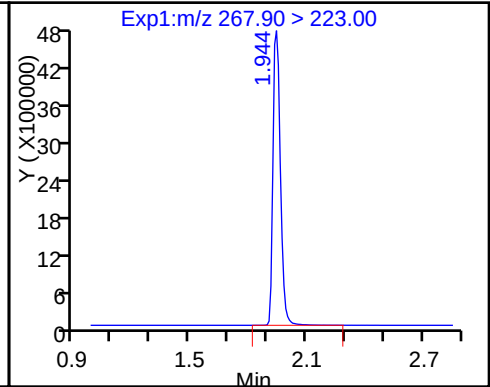
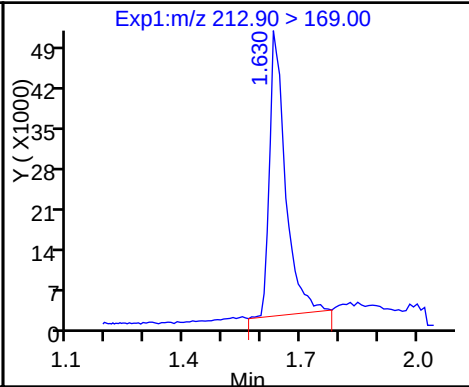
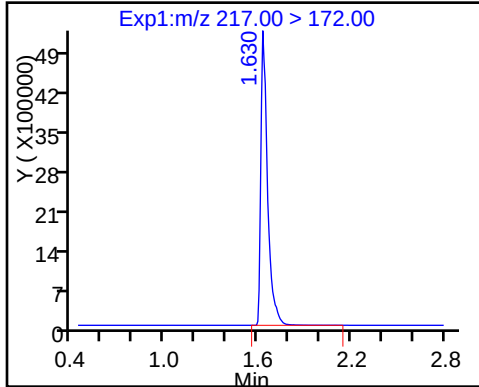
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

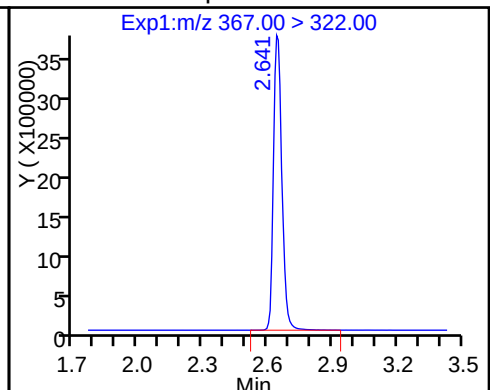
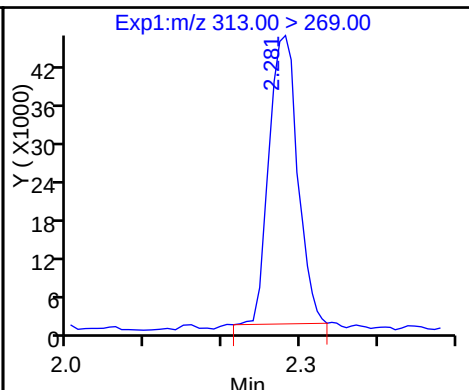
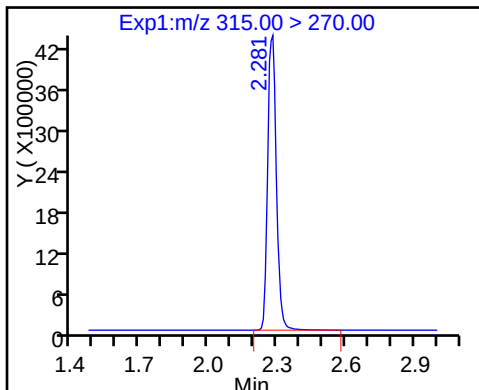
D 4 13C5-PFPeA



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

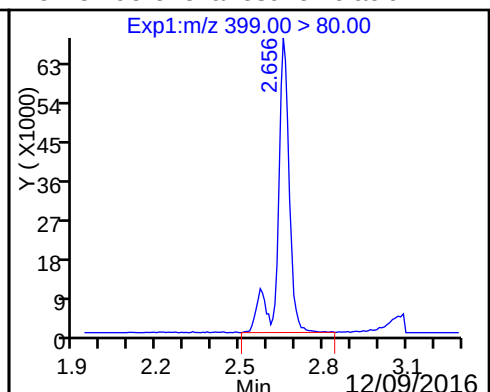
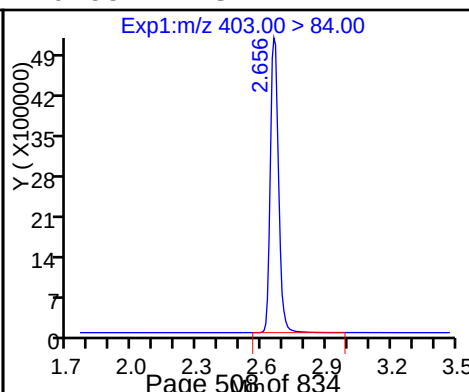
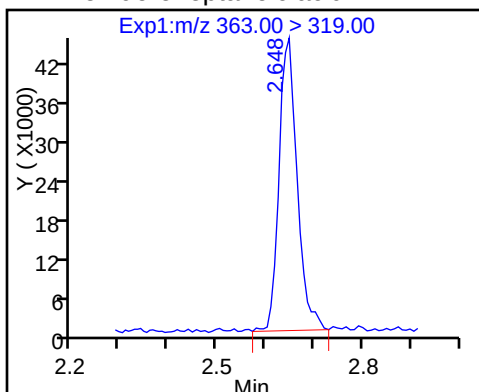
D 11 13C4-PFHpA

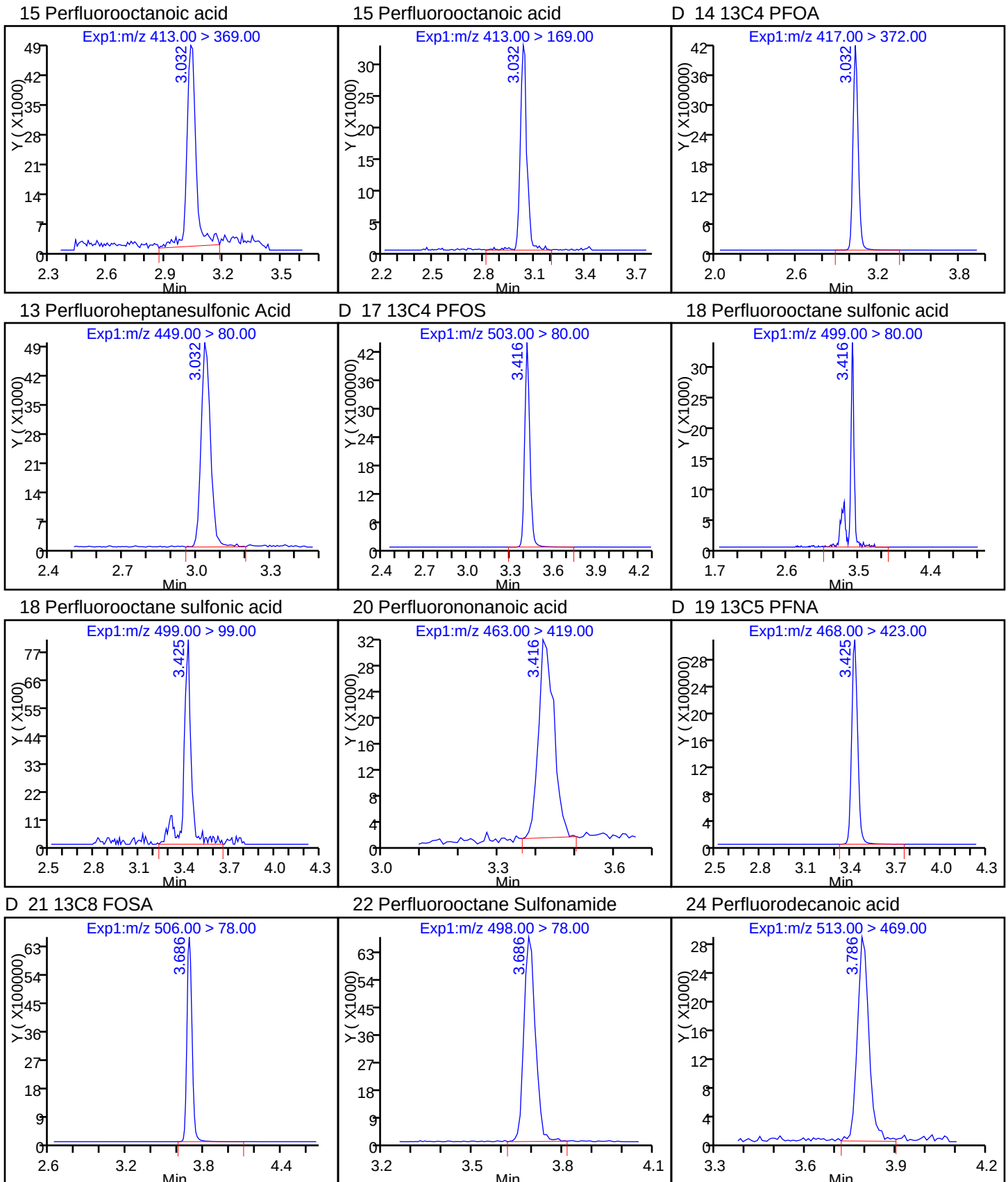


12 Perfluoroheptanoic acid

D 10 18O2 PFHxS

9 Perfluorohexanesulfonic acid

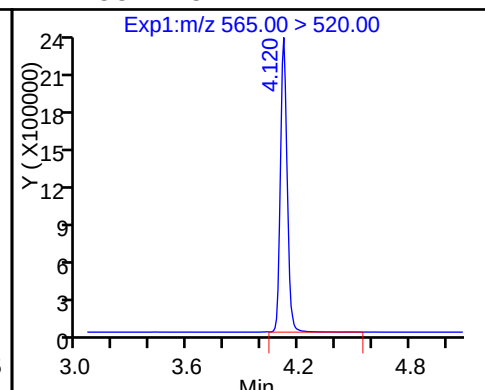
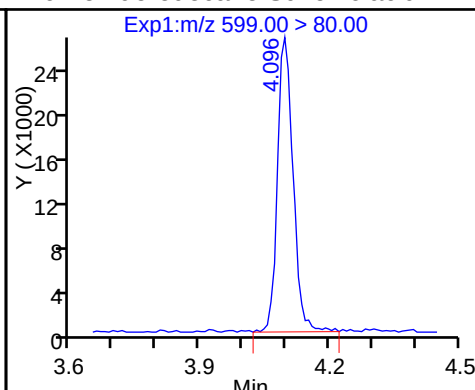
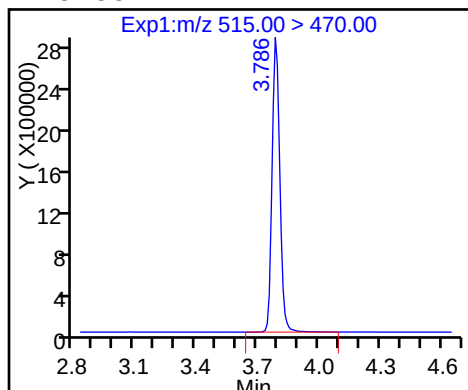




## D 23 13C2 PFDA

## 26 Perfluorodecane Sulfonic acid

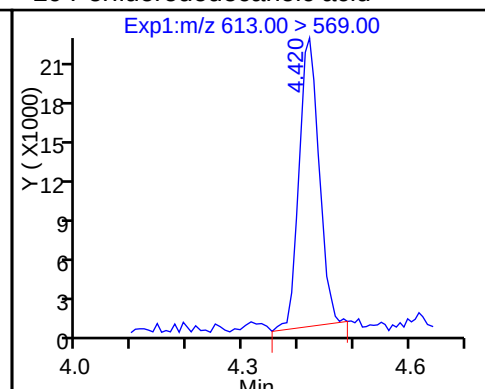
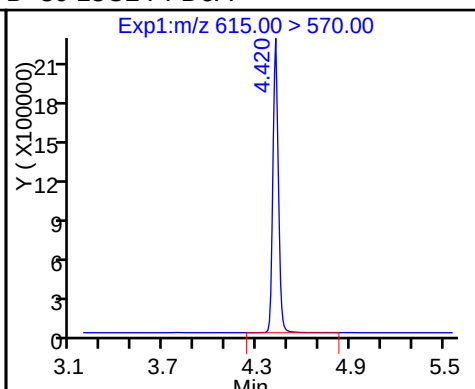
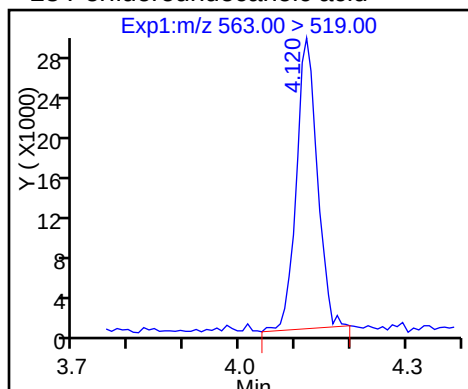
## D 27 13C2 PFUnA



## 28 Perfluoroundecanoic acid

## D 30 13C2 PFDaA

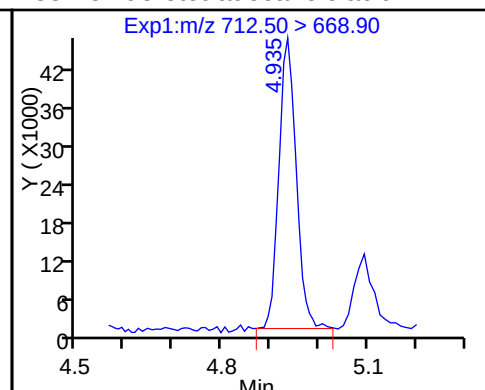
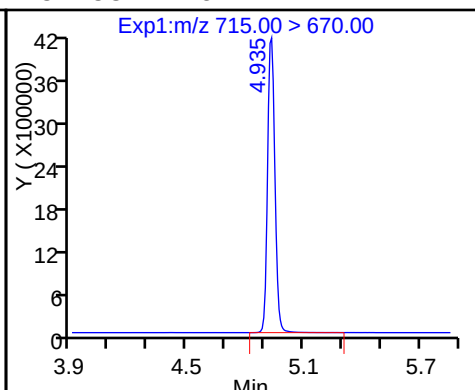
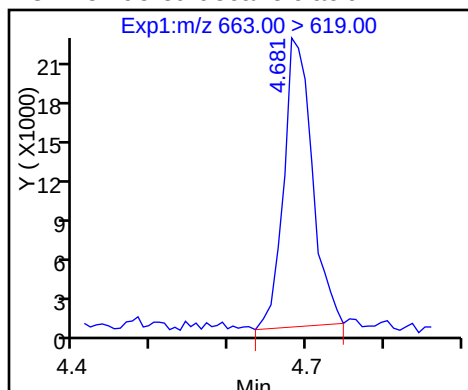
## 29 Perfluorododecanoic acid



## 31 Perfluorotridecanoic acid

## D 32 13C2-PFTeDA

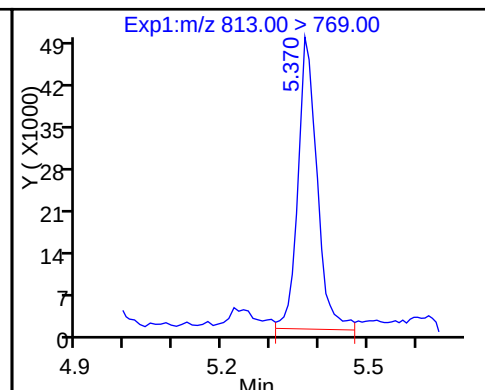
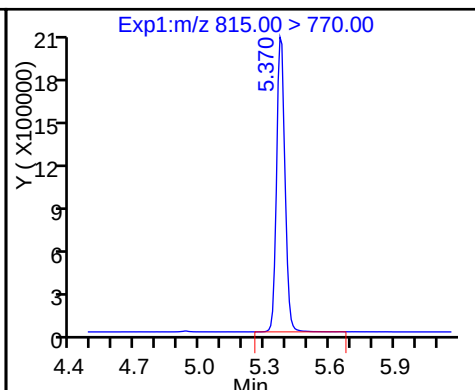
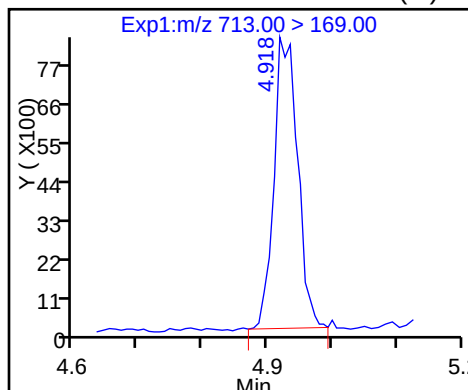
## 33 Perfluorotetradecanoic acid



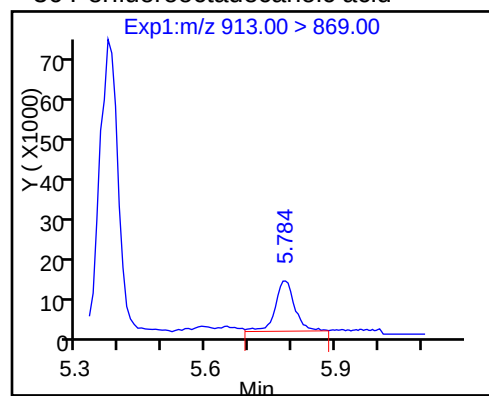
## 33 Perfluorotetradecanoic acid (M)

## D 34 13C2-PFHxDA

## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



## TestAmerica Sacramento

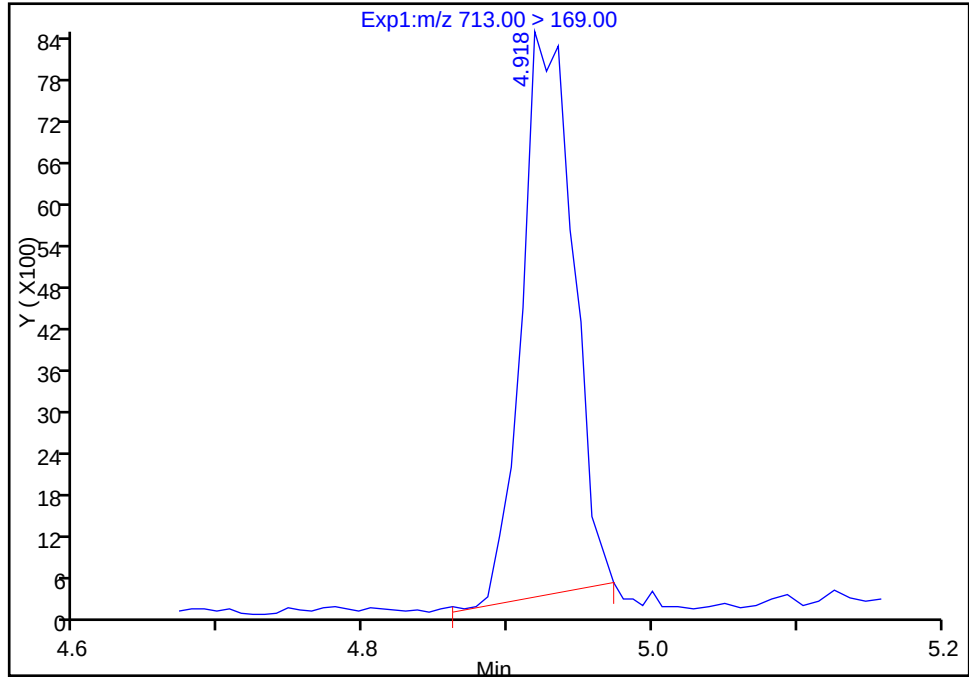
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_004.d  
Injection Date: 02-Dec-2016 10:29:38 Instrument ID: A8\_N  
Lims ID: IC L1  
Client ID:  
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**33 Perfluorotetradecanoic acid, CAS: 376-06-7**

Signal: 2

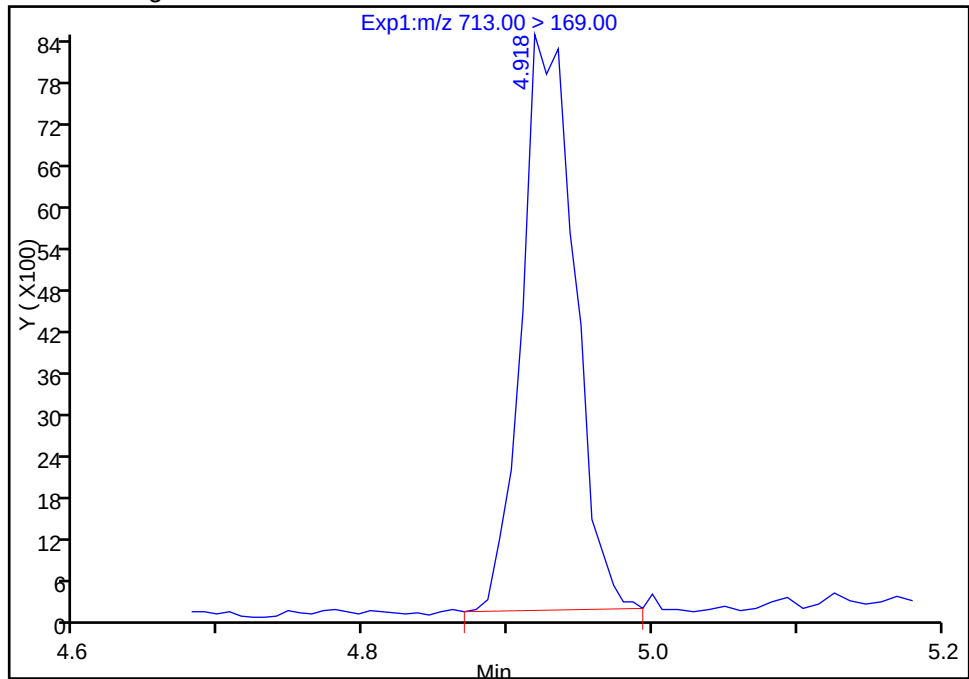
RT: 4.92  
Area: 20090  
Amount: 0.574454  
Amount Units: ng/ml

## Processing Integration Results



RT: 4.92  
Area: 21224  
Amount: 0.544327  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 02-Dec-2016 13:37:48

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_005.d  
 Lims ID: IC L2  
 Client ID:  
 Sample Type: IC Calib Level: 2  
 Inject. Date: 02-Dec-2016 10:37:07 ALS Bottle#: 38 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L2\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:51:31 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:38:35

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.614 | 1.615  | -0.001 |        | 16931601 | 49.8         |                 | 99.5 | 861260  |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.622 | 1.617  | 0.005  | 1.000  | 298633   | 1.00         |                 | 99.6 | 2205    |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.916 | 1.918  | -0.002 |        | 13234715 | 49.0         |                 | 98.0 | 1668802 |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.916 | 1.920  | -0.004 | 1.000  | 290628   | 1.05         |                 | 105  | 2905    |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.964 | 1.961  | 0.003  | 1.000  | 442191   | 0.8821       |                 | 99.8 |         |       |
| 298.90 > 99.00                 | 1.954 | 1.961  | -0.007 | 0.995  | 183888   |              | 2.40(0.00-0.00) | 99.8 |         |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.239 | 2.239  | 0.0    |        | 12331127 | 50.0         |                 | 100  | 1160245 |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.239 | 2.241  | -0.002 | 1.000  | 236370   | 1.00         |                 | 100  | 7007    |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.604 | 2.599  | 0.005  |        | 10778897 | 51.2         |                 | 102  | 1033732 |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.604 | 2.600  | 0.004  | 1.000  | 216223   | 0.9699       |                 | 97.0 | 3288    |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.619 | 2.614  | 0.005  |        | 14695505 | 48.6         |                 | 103  | 816827  |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.619 | 2.615  | 0.004  | 1.000  | 342163   | 1.04         |                 | 114  |         |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.993 | 2.984  | 0.009  | 1.000  | 290666   | 1.15         |                 | 115  | 3791    |       |
| 413.00 > 169.00                | 2.993 | 2.984  | 0.009  | 1.000  | 166261   |              | 1.75(0.90-1.10) | 115  | 12537   |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.993 | 2.984  | 0.009  |        | 12348635 | 56.3         |                 | 113  | 1464087 |       |

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 13 Perfluoroheptanesulfonic Acid |       |           |           |           |          |                 |                 |      |         |       |
| 449.00 > 80.00                   | 2.993 | 2.986     | 0.007     | 1.000     | 284917   | 0.9254          |                 | 97.2 |         |       |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |         |       |
| 503.00 > 80.00                   | 3.371 | 3.365     | 0.006     |           | 12589922 | 51.5            |                 | 108  | 793078  |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |         | M     |
| 499.00 > 80.00                   | 3.380 | 3.366     | 0.014     | 1.000     | 255695   | 0.8928          |                 | 96.2 | 33794   |       |
| 499.00 > 99.00                   | 3.371 | 3.366     | 0.005     | 0.997     | 58595    |                 | 4.36(0.90-1.10) | 96.2 | 6167    | M     |
| 20 Perfluorononanoic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 463.00 > 419.00                  | 3.380 | 3.373     | 0.007     | 1.000     | 184877   | 0.9888          |                 | 98.9 | 3375    |       |
| D 19 13C5 PFNA                   |       |           |           |           |          |                 |                 |      |         |       |
| 468.00 > 423.00                  | 3.380 | 3.374     | 0.006     |           | 9431435  | 53.0            |                 | 106  | 1129875 |       |
| D 21 13C8 FOSA                   |       |           |           |           |          |                 |                 |      |         |       |
| 506.00 > 78.00                   | 3.648 | 3.651     | -0.003    |           | 21558794 | 52.0            |                 | 104  | 974406  |       |
| 22 Perfluorooctane Sulfonamide   |       |           |           |           |          |                 |                 |      |         |       |
| 498.00 > 78.00                   | 3.657 | 3.656     | 0.001     | 1.000     | 403791   | 1.00            |                 | 100  | 30165   |       |
| 24 Perfluorodecanoic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 513.00 > 469.00                  | 3.746 | 3.738     | 0.008     | 1.000     | 159778   | 0.9790          |                 | 97.9 | 5715    |       |
| D 23 13C2 PFDA                   |       |           |           |           |          |                 |                 |      |         |       |
| 515.00 > 470.00                  | 3.746 | 3.738     | 0.008     |           | 8418346  | 50.7            |                 | 101  | 248297  |       |
| 26 Perfluorodecane Sulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 599.00 > 80.00                   | 4.061 | 4.049     | 0.012     | 1.000     | 150902   | 0.9136          |                 | 94.8 |         |       |
| D 27 13C2 PFUnA                  |       |           |           |           |          |                 |                 |      |         |       |
| 565.00 > 520.00                  | 4.078 | 4.070     | 0.008     |           | 6669716  | 53.0            |                 | 106  | 287118  |       |
| 28 Perfluoroundecanoic acid      |       |           |           |           |          |                 |                 |      |         |       |
| 563.00 > 519.00                  | 4.086 | 4.071     | 0.015     | 1.000     | 148792   | 1.05            |                 | 105  | 3690    |       |
| D 30 13C2 PFDaA                  |       |           |           |           |          |                 |                 |      |         |       |
| 615.00 > 570.00                  | 4.381 | 4.370     | 0.011     |           | 5950161  | 50.9            |                 | 102  | 144810  |       |
| 29 Perfluorododecanoic acid      |       |           |           |           |          |                 |                 |      |         |       |
| 613.00 > 569.00                  | 4.381 | 4.370     | 0.011     | 1.000     | 109023   | 0.9679          |                 | 96.8 | 130     |       |
| 31 Perfluorotridecanoic acid     |       |           |           |           |          |                 |                 |      |         |       |
| 663.00 > 619.00                  | 4.653 | 4.636     | 0.017     | 1.000     | 126175   | 1.02            |                 | 102  | 142     |       |
| D 32 13C2-PFTeDA                 |       |           |           |           |          |                 |                 |      |         |       |
| 715.00 > 670.00                  | 4.893 | 4.882     | 0.011     |           | 12956938 | 53.6            |                 | 107  | 632063  |       |
| 33 Perfluorotetradecanoic acid   |       |           |           |           |          |                 |                 |      |         |       |
| 712.50 > 668.90                  | 4.893 | 4.884     | 0.009     | 1.000     | 237250   | 1.03            |                 | 103  | 104     |       |
| 713.00 > 169.00                  | 4.885 | 4.884     | 0.001     | 0.998     | 41035    |                 | 5.78(0.00-0.00) | 103  | 4184    |       |
| D 34 13C2-PFHxDA                 |       |           |           |           |          |                 |                 |      |         |       |
| 815.00 > 770.00                  | 5.334 | 5.320     | 0.014     |           | 6756331  | 51.8            |                 | 104  | 147007  |       |
| 35 Perfluorohexadecanoic acid    |       |           |           |           |          |                 |                 |      |         |       |
| 813.00 > 769.00                  | 5.334 | 5.320     | 0.014     | 1.000     | 218894   | 1.04            |                 | 104  | 287     |       |
| 36 Perfluorooctadecanoic acid    |       |           |           |           |          |                 |                 |      |         |       |
| 913.00 > 869.00                  | 5.738 | 5.720     | 0.018     | 1.000     | 118037   | 1.26            |                 | 126  | 233     |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## Reagents:

LCPFC-L2\_00022

Amount Added: 1.00

Units: mL



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_005.d

Injection Date: 02-Dec-2016 10:37:07

Instrument ID: A8\_N

Lims ID: IC L2

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 38

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

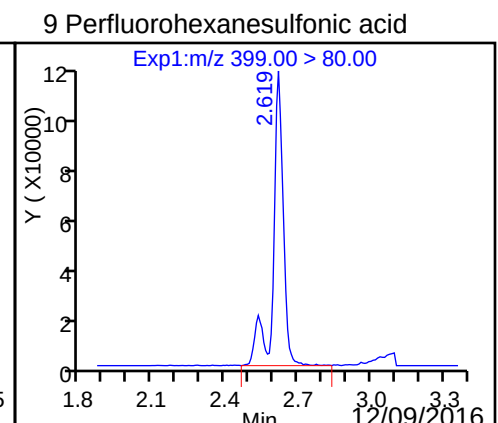
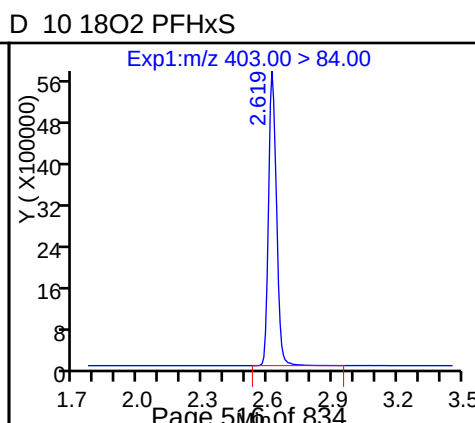
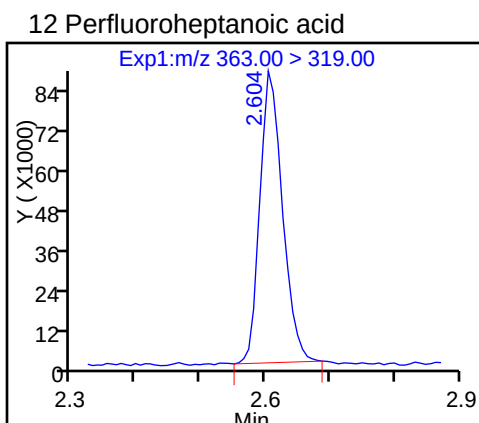
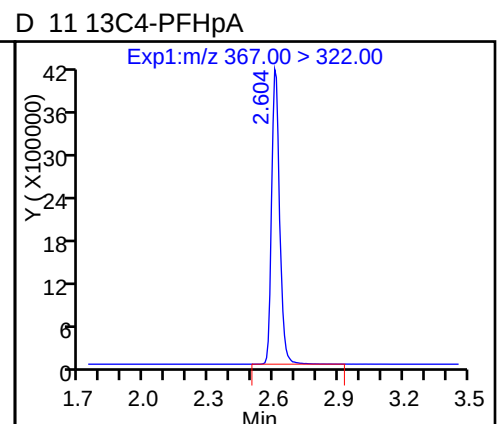
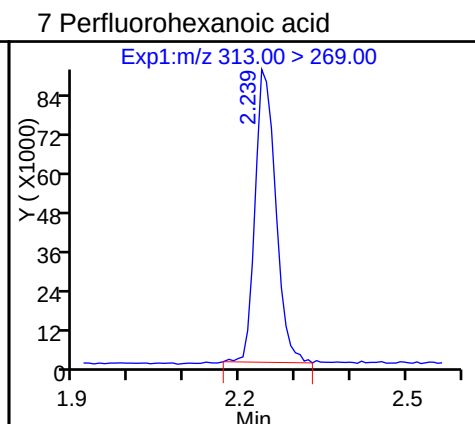
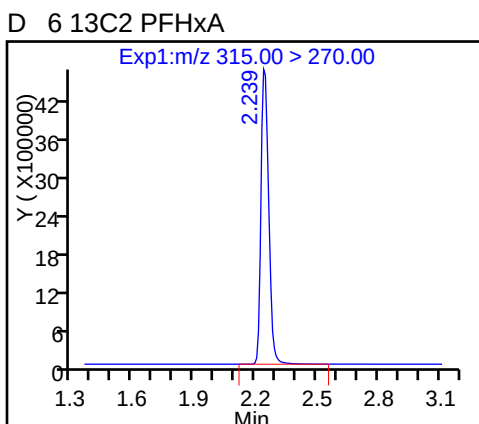
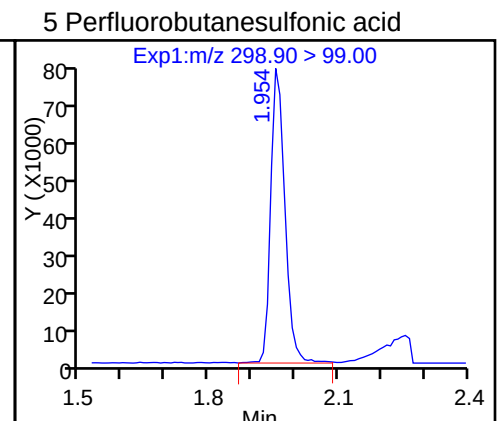
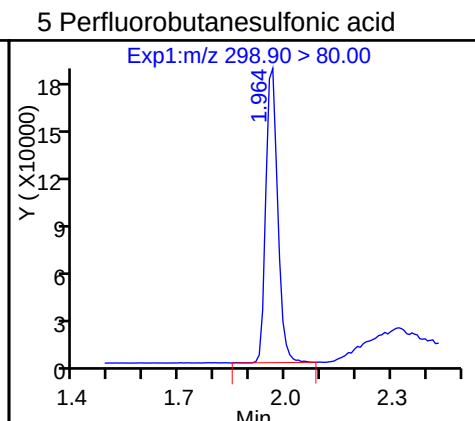
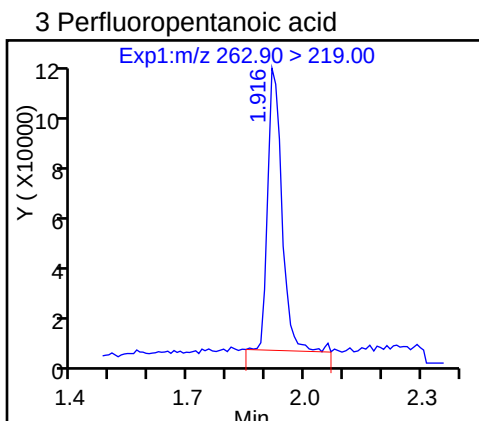
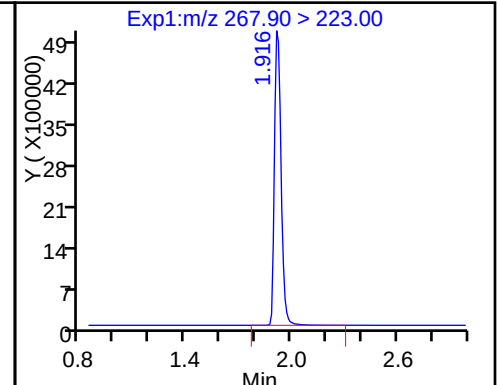
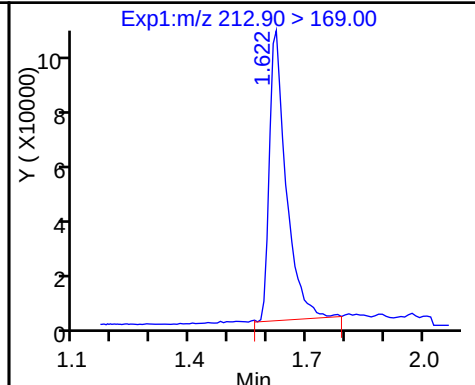
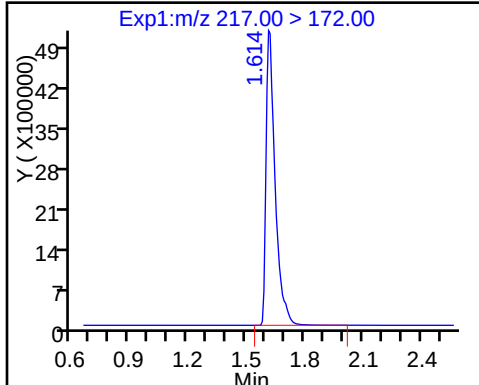
Method: A8\_N

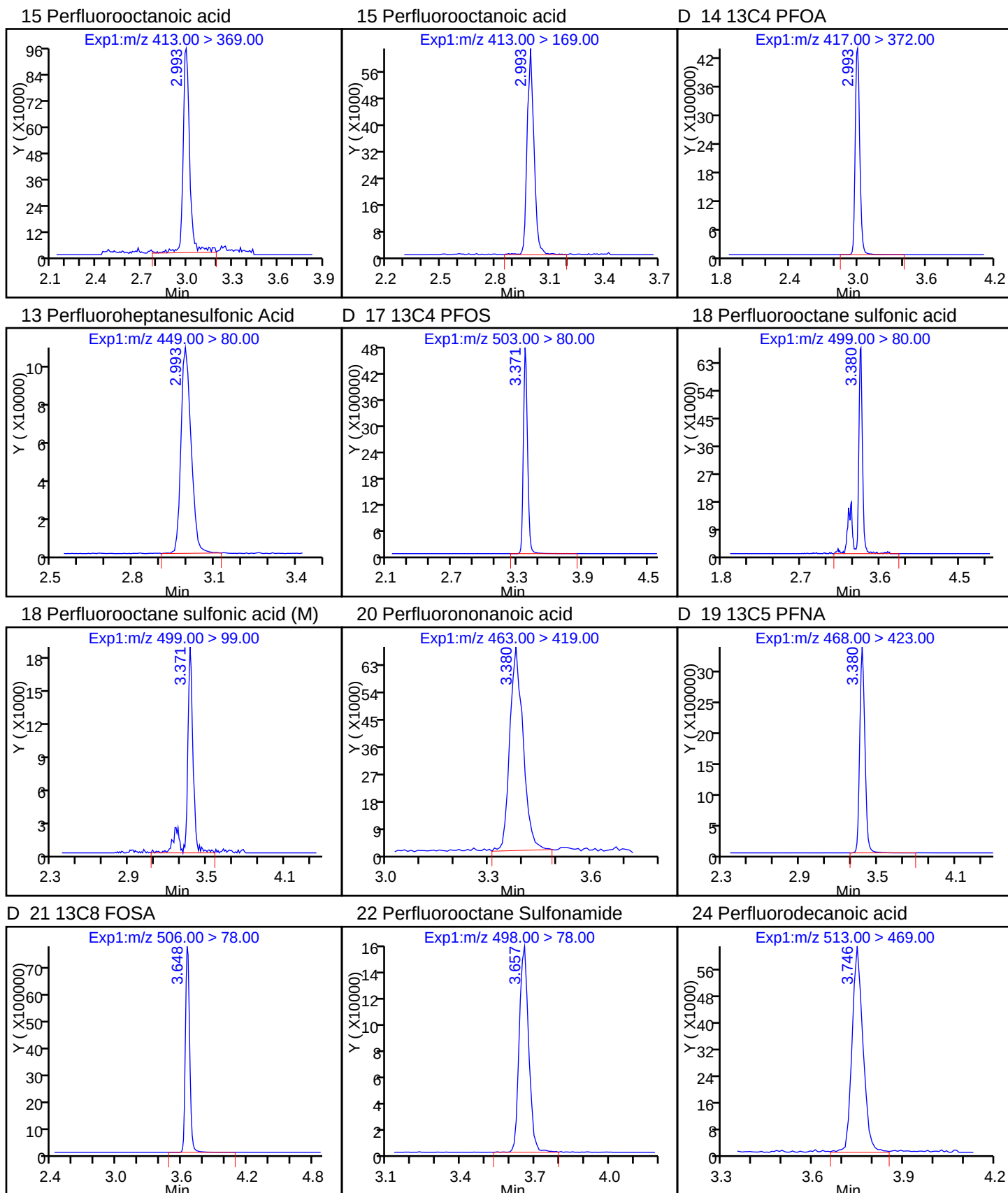
Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

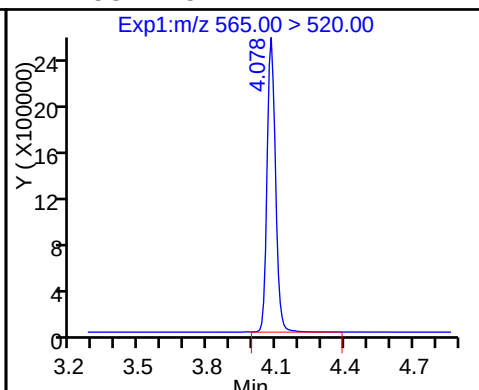
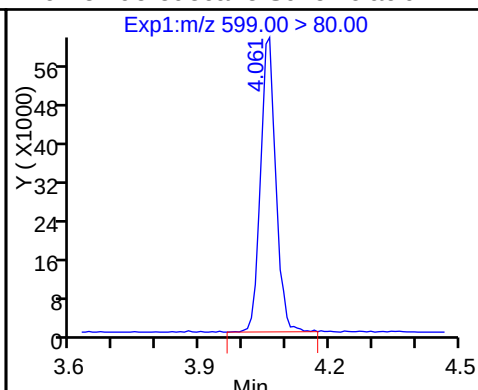
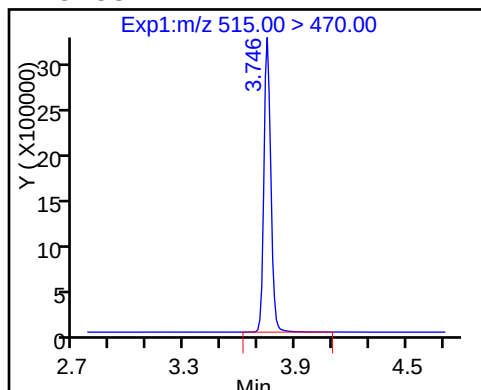




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

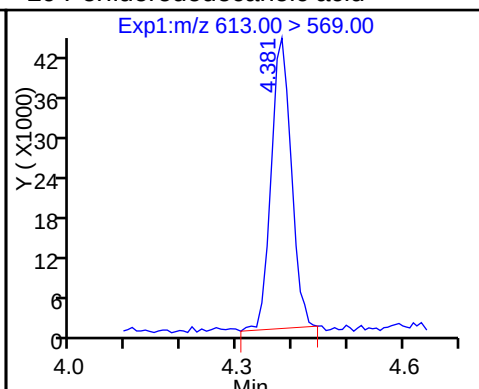
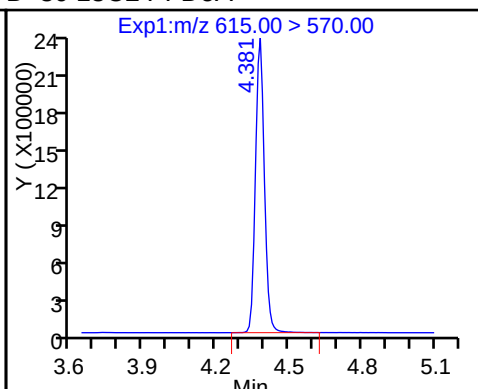
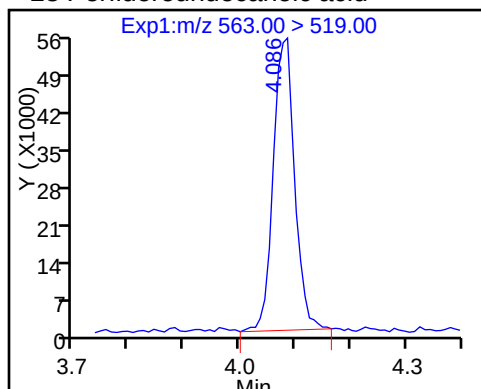
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

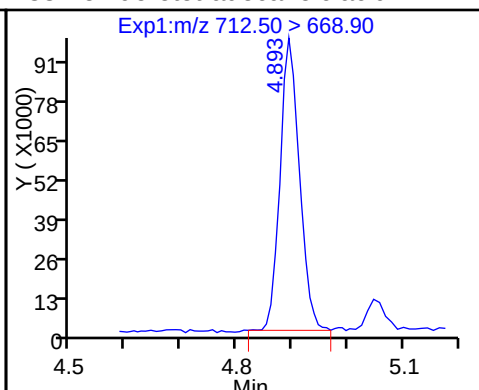
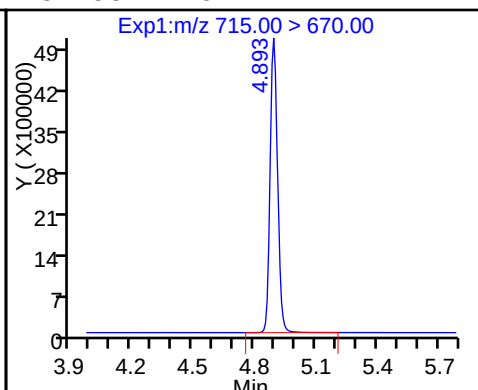
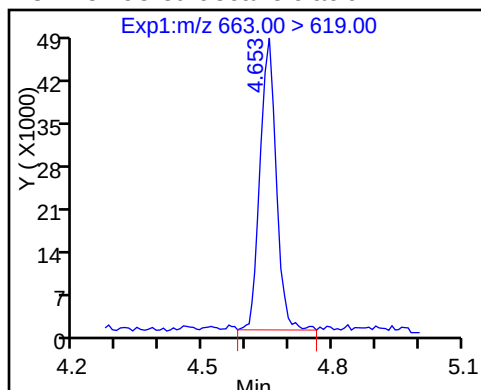
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

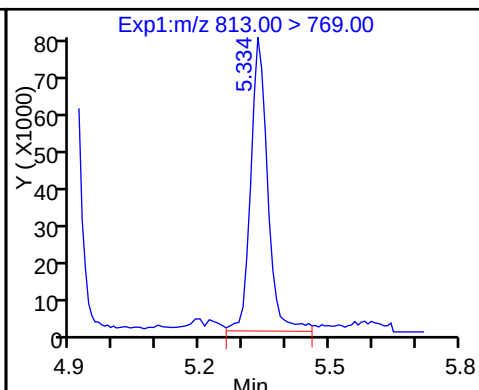
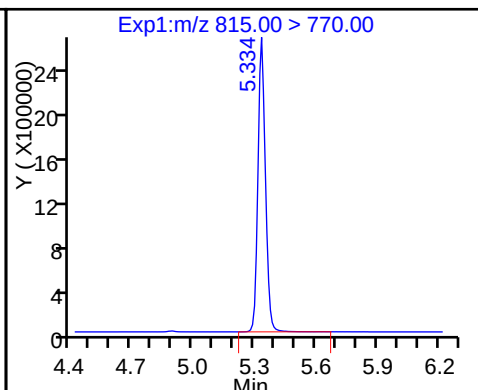
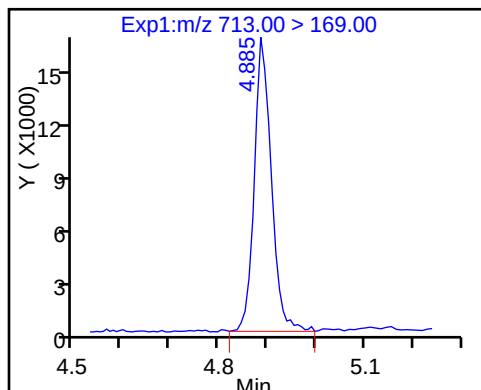
33 Perfluorotetradecanoic acid



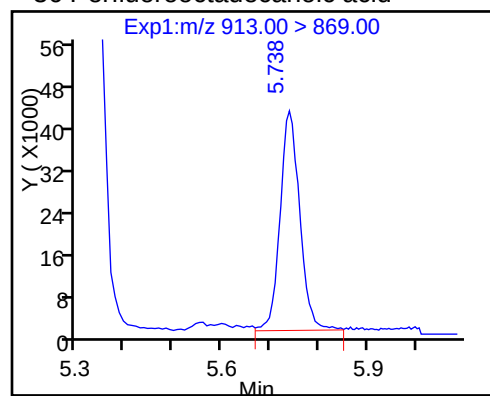
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



## TestAmerica Sacramento

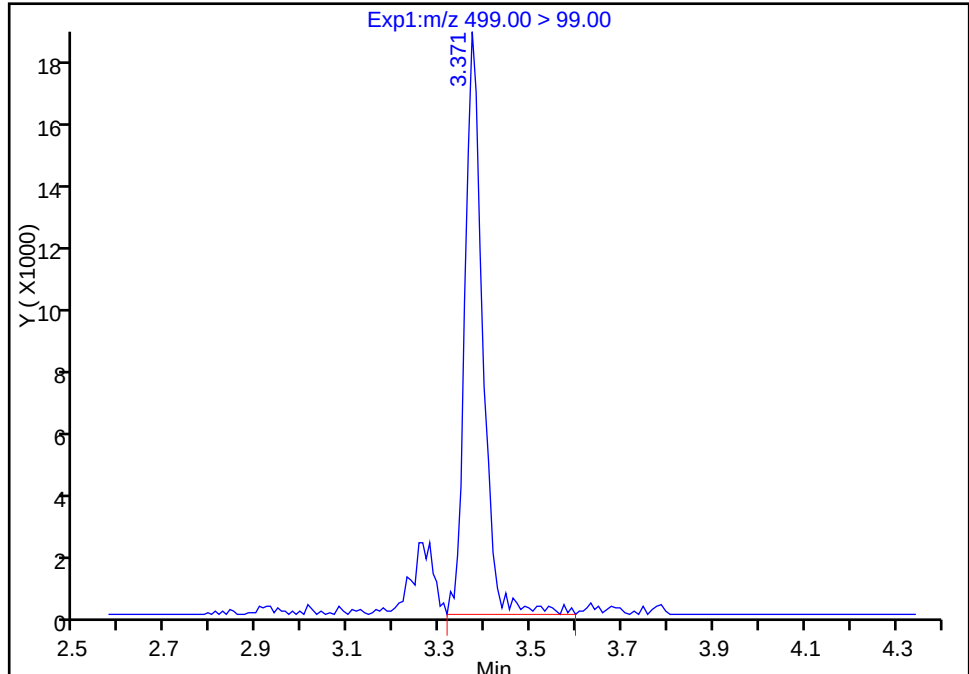
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_005.d  
Injection Date: 02-Dec-2016 10:37:07 Instrument ID: A8\_N  
Lims ID: IC L2  
Client ID:  
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**18 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

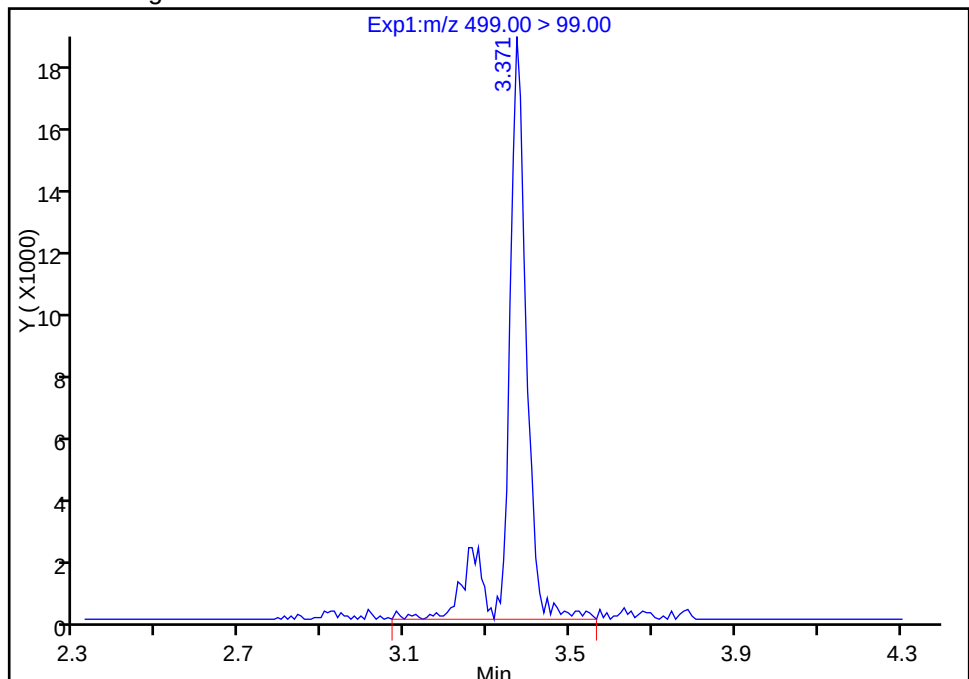
RT: 3.37  
Area: 50423  
Amount: 0.892814  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.37  
Area: 58595  
Amount: 0.892814  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 02-Dec-2016 13:38:35

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_006.d  
 Lims ID: IC L3  
 Client ID:  
 Sample Type: IC Calib Level: 3  
 Inject. Date: 02-Dec-2016 10:44:37 ALS Bottle#: 39 Worklist Smp#: 6  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L3\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:51:32 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:38:56

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.622 | 1.615  | 0.007  |        | 20871580 | 61.3         |                 | 123  | 1270902 |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.622 | 1.617  | 0.005  | 1.000  | 1937809  | 5.24         |                 | 105  | 16704   |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.916 | 1.918  | -0.002 |        | 16554836 | 61.3         |                 | 123  | 1251857 |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.926 | 1.920  | 0.006  | 1.000  | 1680231  | 4.88         |                 | 97.5 | 18184   |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.964 | 1.961  | 0.003  | 1.000  | 2954006  | 5.00         |                 | 113  |         |       |
| 298.90 > 99.00                 | 1.955 | 1.961  | -0.007 | 0.995  | 1239873  |              | 2.38(0.00-0.00) | 113  |         |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.239 | 2.239  | -0.001 |        | 14744313 | 59.8         |                 | 120  | 1821555 |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.247 | 2.241  | 0.006  | 1.000  | 1458544  | 5.17         |                 | 103  | 41938   |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.600 | 2.599  | 0.001  |        | 12841573 | 61.0         |                 | 122  | 826915  |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.600 | 2.600  | 0.0    | 1.000  | 1298003  | 4.89         |                 | 97.7 | 25441   |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.616 | 2.614  | 0.002  |        | 17333346 | 57.3         |                 | 121  | 1088243 |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.616 | 2.615  | 0.001  | 1.000  | 1850926  | 4.77         |                 | 105  |         |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.981 | 2.984  | -0.003 | 1.000  | 1560911  | 5.20         |                 | 104  | 22497   |       |
| 413.00 > 169.00                | 2.989 | 2.984  | 0.005  | 1.003  | 958311   |              | 1.63(0.90-1.10) | 104  | 88434   |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.989 | 2.984  | 0.005  |        | 14705649 | 67.0         |                 | 134  | 862824  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |        |       |
| 449.00 > 80.00                   | 2.989 | 2.986  | 0.003  | 1.000  | 1774408  | 5.08         |                 | 107  |        |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.366 | 3.365  | 0.001  |        | 14291797 | 58.4         |                 | 122  | 925059 |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 499.00 > 80.00                   | 3.366 | 3.366  | 0.0    | 1.000  | 1469896  | 4.52         |                 | 97.4 | 134789 |       |
| 499.00 > 99.00                   | 3.366 | 3.366  | 0.0    | 1.000  | 312360   |              | 4.71(0.90-1.10) | 97.4 | 26246  |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 463.00 > 419.00                  | 3.383 | 3.373  | 0.010  | 1.000  | 1085508  | 5.06         |                 | 101  | 19854  |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                  | 3.375 | 3.374  | 0.001  |        | 10826461 | 60.8         |                 | 122  | 367418 |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                   | 3.652 | 3.651  | 0.001  |        | 23576629 | 56.9         |                 | 114  | 722968 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                   | 3.652 | 3.656  | -0.004 | 1.000  | 2370271  | 5.37         |                 | 107  | 305013 |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                  | 3.740 | 3.738  | 0.002  | 1.000  | 938853   | 4.94         |                 | 98.8 | 39325  |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                  | 3.740 | 3.738  | 0.002  |        | 9802839  | 59.0         |                 | 118  | 248176 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                   | 4.046 | 4.049  | -0.003 | 1.000  | 972225   | 5.18         |                 | 108  |        |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                  | 4.079 | 4.070  | 0.009  |        | 7745917  | 61.6         |                 | 123  | 312996 |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                  | 4.071 | 4.071  | 0.0    | 1.000  | 764307   | 4.66         |                 | 93.1 | 21162  |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                  | 4.376 | 4.370  | 0.006  |        | 7049582  | 60.3         |                 | 121  | 194268 |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 613.00 > 569.00                  | 4.376 | 4.370  | 0.006  | 1.000  | 669306   | 5.02         |                 | 100  | 638    |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                  | 4.637 | 4.636  | 0.001  | 1.000  | 739992   | 5.05         |                 | 101  | 761    |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                  | 4.880 | 4.882  | -0.002 |        | 14954236 | 61.8         |                 | 124  | 563118 |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |        |       |
| 712.50 > 668.90                  | 4.888 | 4.884  | 0.004  | 1.000  | 1350591  | 4.96         |                 | 99.1 | 554    |       |
| 713.00 > 169.00                  | 4.880 | 4.884  | -0.004 | 0.998  | 220454   |              | 6.13(0.00-0.00) | 99.1 | 17882  |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |        |       |
| 815.00 > 770.00                  | 5.326 | 5.320  | 0.006  |        | 8035665  | 61.6         |                 | 123  | 159038 |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 813.00 > 769.00                  | 5.326 | 5.320  | 0.006  | 1.000  | 800676   | 4.94         |                 | 98.8 | 999    |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 913.00 > 869.00                  | 5.726 | 5.720  | 0.006  | 1.000  | 529337   | 4.77         |                 | 95.5 | 857    |       |

## Reagents:

LCPFC-L3\_00019

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_006.d

Injection Date: 02-Dec-2016 10:44:37

Instrument ID: A8\_N

Lims ID: IC L3

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#:

39

Worklist Smp#:

6

Injection Vol: 2.0 ul

Dil. Factor:

1.0000

Method: A8\_N

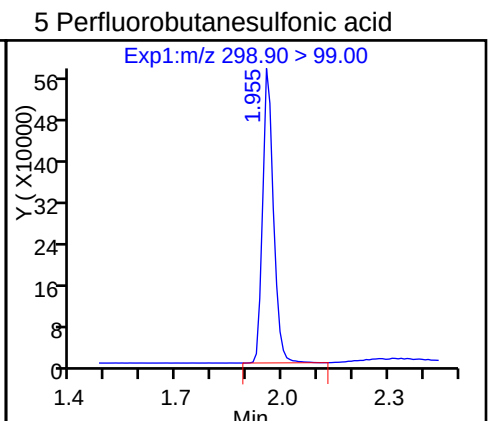
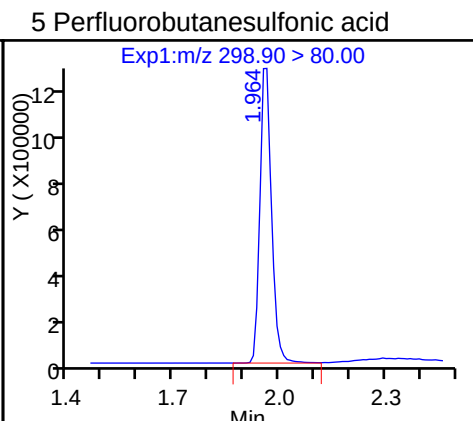
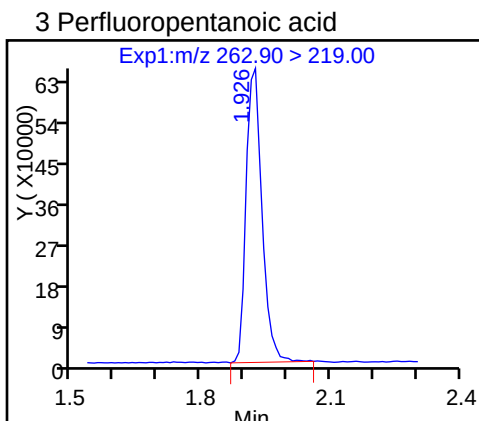
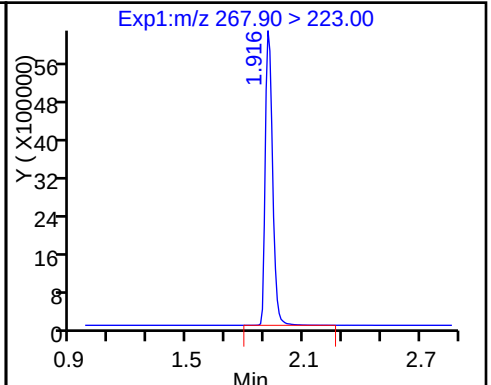
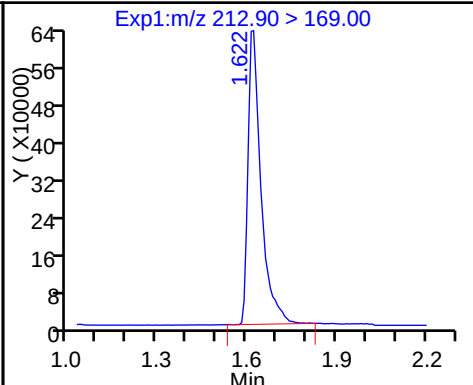
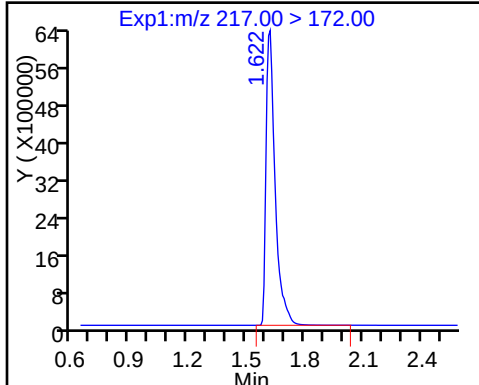
Limit Group:

LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

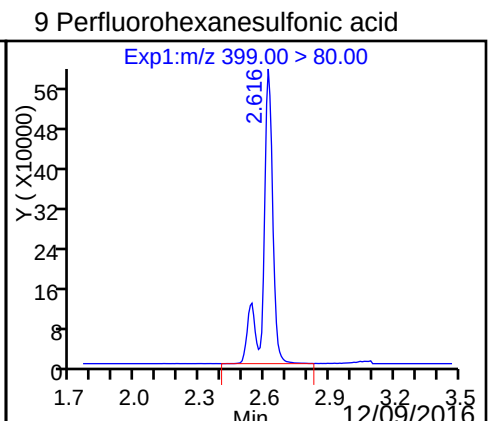
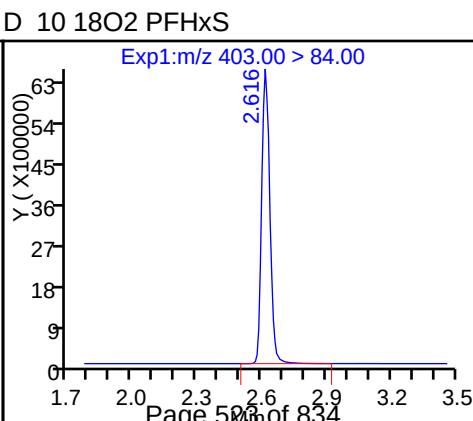
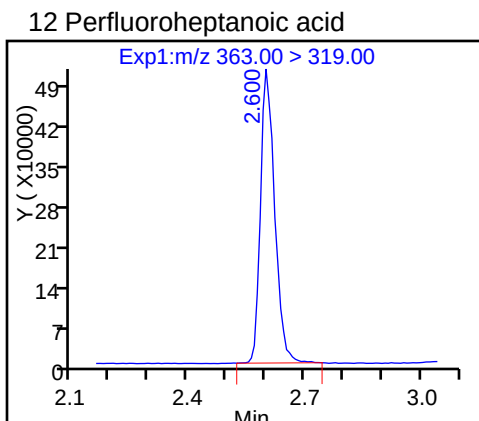
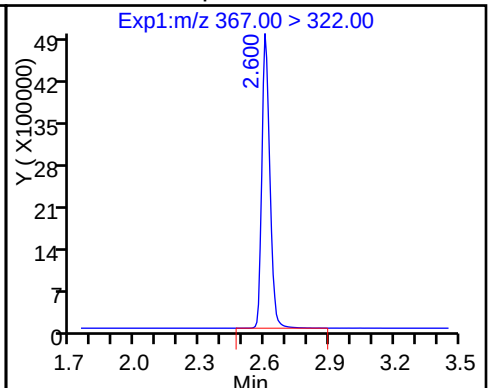
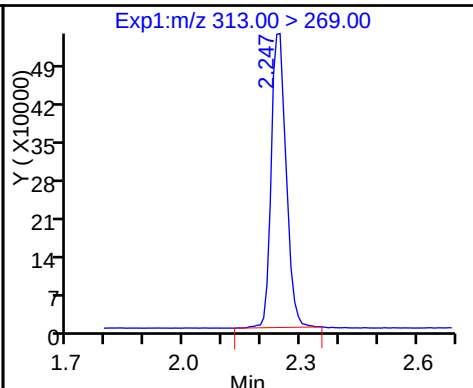
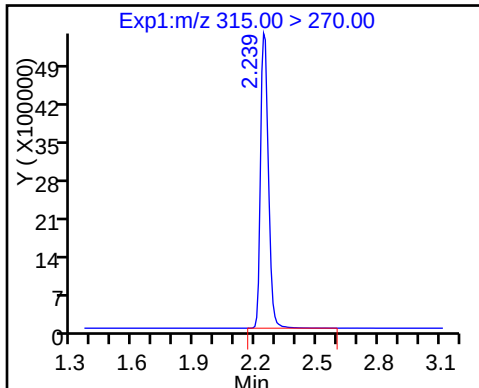
D 4 13C5-PFPeA



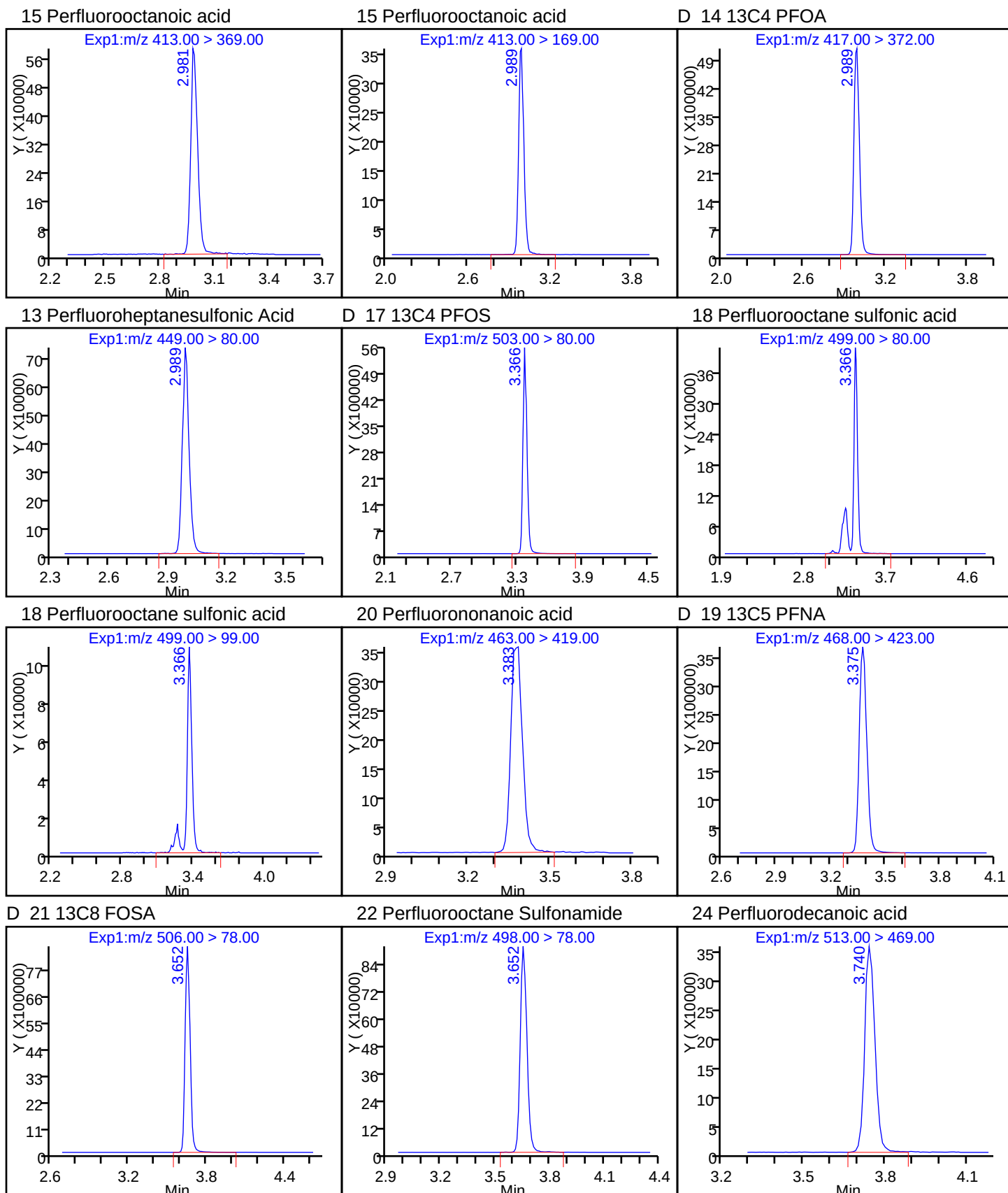
D 6 13C2 PFHxA

7 Perfluorohexanoic acid

D 11 13C4-PFHpA



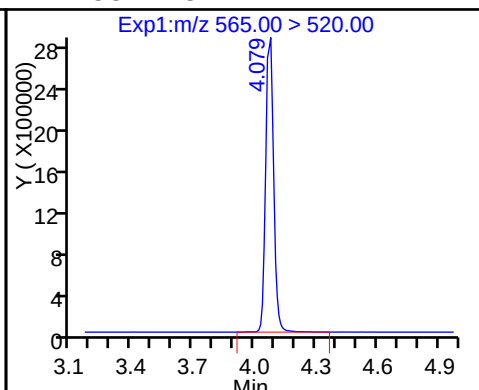
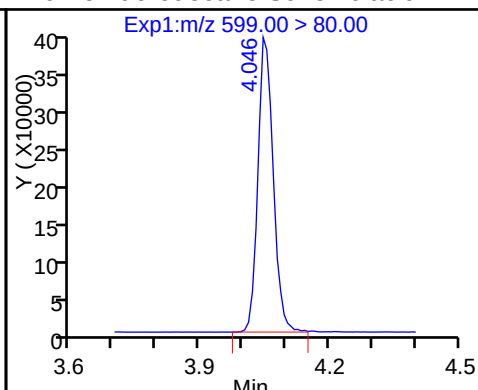
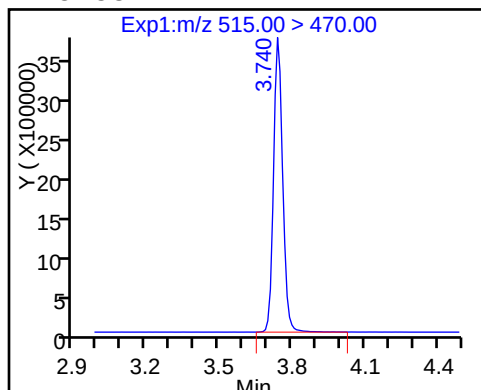




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

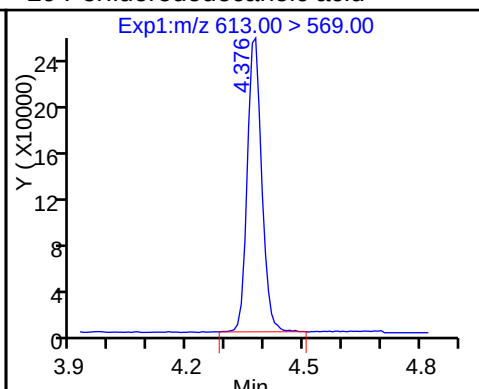
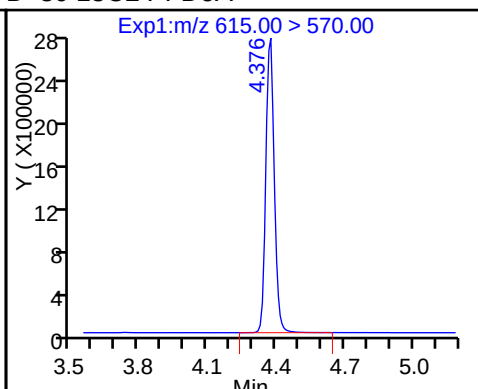
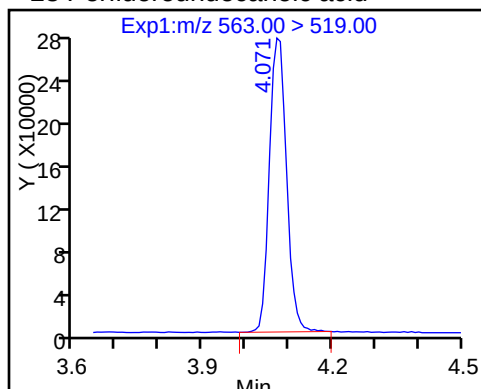
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

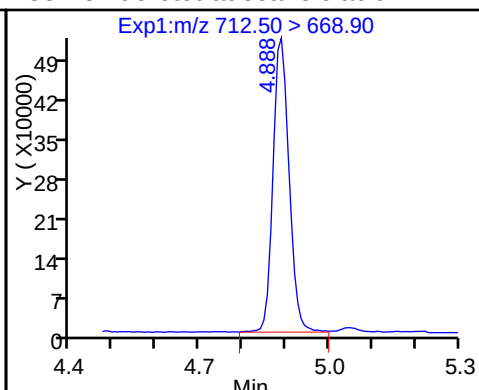
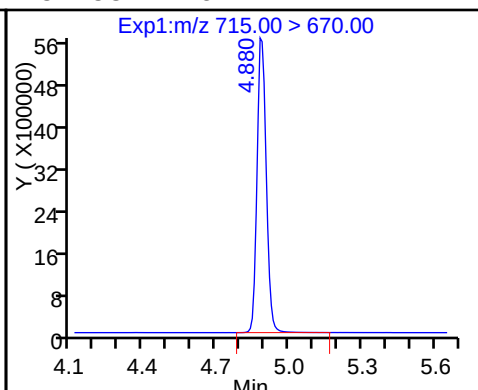
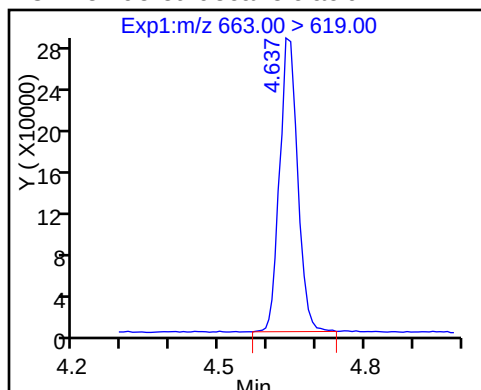
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

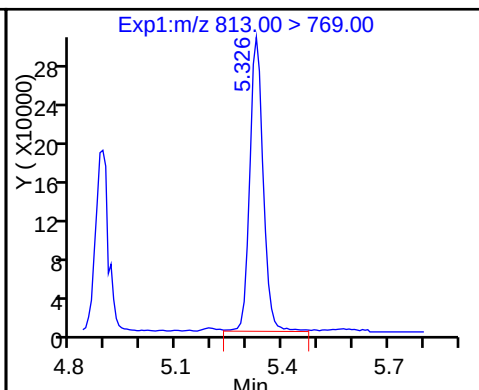
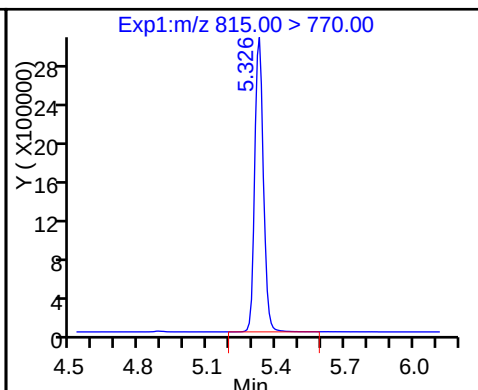
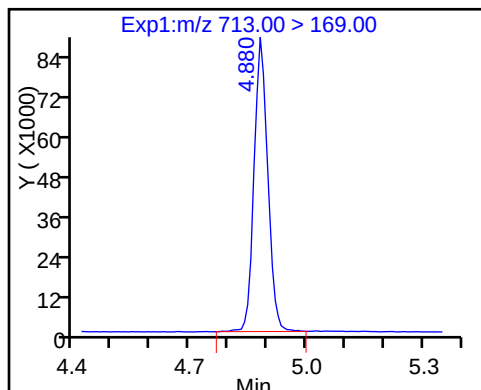
33 Perfluorotetradecanoic acid



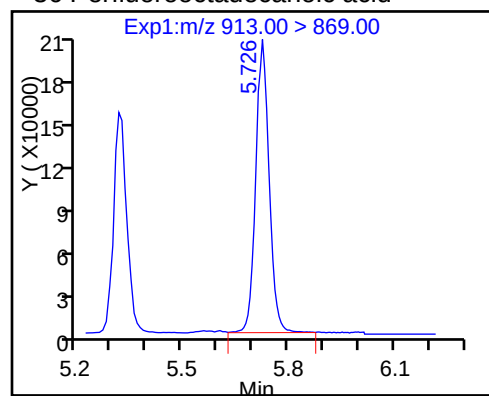
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_007.d  
 Lims ID: IC L4  
 Client ID:  
 Sample Type: IC Calib Level: 4  
 Inject. Date: 02-Dec-2016 10:52:06 ALS Bottle#: 40 Worklist Smp#: 7  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L4\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:51:34 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:36:08

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.614 | 1.615  | -0.001 |        | 18935985 | 55.6         |                 | 111  | 1406021 |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.614 | 1.617  | -0.003 | 1.000  | 7435187  | 22.2         |                 | 111  | 60389   |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.916 | 1.918  | -0.002 |        | 15125796 | 56.0         |                 | 112  | 1182515 |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.916 | 1.920  | -0.004 | 1.000  | 6559082  | 20.8         |                 | 104  | 50558   |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.954 | 1.961  | -0.007 | 1.000  | 11367724 | 20.3         |                 | 115  |         |       |
| 298.90 > 99.00                 | 1.954 | 1.961  | -0.007 | 1.000  | 4784706  |              | 2.38(0.00-0.00) | 115  |         |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.231 | 2.239  | -0.008 |        | 13498378 | 54.8         |                 | 110  | 1276286 |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.239 | 2.241  | -0.002 | 1.000  | 5481010  | 21.2         |                 | 106  | 245929  |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.593 | 2.599  | -0.006 |        | 11424765 | 54.3         |                 | 109  | 4354289 |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.593 | 2.600  | -0.007 | 1.000  | 5005633  | 21.2         |                 | 106  | 82737   |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.608 | 2.614  | -0.006 |        | 16435009 | 54.3         |                 | 115  | 2029890 |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.608 | 2.615  | -0.007 | 1.000  | 6918390  | 18.8         |                 | 103  |         |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.982 | 2.984  | -0.002 | 1.000  | 5603089  | 21.7         |                 | 109  | 76131   |       |
| 413.00 > 169.00                | 2.974 | 2.984  | -0.010 | 0.997  | 3413139  |              | 1.64(0.90-1.10) | 109  | 244664  |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.974 | 2.984  | -0.010 |        | 12634984 | 57.6         |                 | 115  | 1129431 |       |

| Signal                           | RT              | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 13 Perfluoroheptanesulfonic Acid | 449.00 > 80.00  | 2.982  | 2.986  | -0.004 | 1.000    | 6947857      | 21.2            | 111  |         |       |
| D 17 13C4 PFOS                   | 503.00 > 80.00  | 3.362  | 3.365  | -0.003 |          | 13417569     | 54.9            | 115  | 370037  |       |
| 18 Perfluorooctane sulfonic acid | 499.00 > 80.00  | 3.362  | 3.366  | -0.004 | 1.000    | 5745134      | 18.8            | 101  | 258473  |       |
| 499.00 > 99.00                   | 3.362           | 3.366  | -0.004 | 1.000  | 1279643  |              | 4.49(0.90-1.10) | 101  | 205142  |       |
| 20 Perfluorononanoic acid        | 463.00 > 419.00 | 3.371  | 3.373  | -0.002 | 1.000    | 4006430      | 20.8            | 104  | 50680   |       |
| D 19 13C5 PFNA                   | 468.00 > 423.00 | 3.371  | 3.374  | -0.003 |          | 9730546      | 54.6            | 109  | 1069619 |       |
| D 21 13C8 FOSA                   | 506.00 > 78.00  | 3.648  | 3.651  | -0.003 |          | 22550983     | 54.4            | 109  | 565745  |       |
| 22 Perfluorooctane Sulfonamide   | 498.00 > 78.00  | 3.648  | 3.656  | -0.008 | 1.000    | 9372172      | 22.2            | 111  | 355431  |       |
| 24 Perfluorodecanoic acid        | 513.00 > 469.00 | 3.738  | 3.738  | 0.0    | 1.000    | 3671358      | 20.8            | 104  | 97996   |       |
| D 23 13C2 PFDA                   | 515.00 > 470.00 | 3.738  | 3.738  | 0.0    |          | 9112679      | 54.9            | 110  | 235961  |       |
| 26 Perfluorodecane Sulfonic acid | 599.00 > 80.00  | 4.048  | 4.049  | -0.001 | 1.000    | 3647236      | 20.7            | 107  |         |       |
| D 27 13C2 PFUnA                  | 565.00 > 520.00 | 4.065  | 4.070  | -0.005 |          | 6913372      | 55.0            | 110  | 380701  |       |
| 28 Perfluoroundecanoic acid      | 563.00 > 519.00 | 4.065  | 4.071  | -0.006 | 1.000    | 2908196      | 19.8            | 99.2 | 75091   |       |
| D 30 13C2 PFDaA                  | 615.00 > 570.00 | 4.365  | 4.370  | -0.005 |          | 6319787      | 54.1            | 108  | 160074  |       |
| 29 Perfluorododecanoic acid      | 613.00 > 569.00 | 4.365  | 4.370  | -0.005 | 1.000    | 2445148      | 20.4            | 102  | 2507    |       |
| 31 Perfluorotridecanoic acid     | 663.00 > 619.00 | 4.631  | 4.636  | -0.005 | 1.000    | 2838032      | 21.6            | 108  | 3011    |       |
| D 32 13C2-PFTeDA                 | 715.00 > 670.00 | 4.883  | 4.882  | 0.001  |          | 13596161     | 56.2            | 112  | 754431  |       |
| 33 Perfluorotetradecanoic acid   | 712.50 > 668.90 | 4.883  | 4.884  | -0.001 | 1.000    | 5185293      | 21.2            | 106  | 2202    |       |
| 713.00 > 169.00                  | 4.875           | 4.884  | -0.009 | 0.998  | 789160   |              | 6.57(0.00-0.00) | 106  | 63701   |       |
| D 34 13C2-PFHxDA                 | 815.00 > 770.00 | 5.315  | 5.320  | -0.005 |          | 7428976      | 57.0            | 114  | 148527  |       |
| 35 Perfluorohexadecanoic acid    | 813.00 > 769.00 | 5.315  | 5.320  | -0.005 | 1.000    | 2851018      | 22.1            | 110  | 3329    |       |
| 36 Perfluorooctadecanoic acid    | 913.00 > 869.00 | 5.717  | 5.720  | -0.003 | 1.000    | 1457725      | 14.7            | 73.3 | 2373    |       |

## Reagents:

LCPFC-L4\_00022

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_007.d

Injection Date: 02-Dec-2016 10:52:06

Instrument ID: A8\_N

Lims ID: IC L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

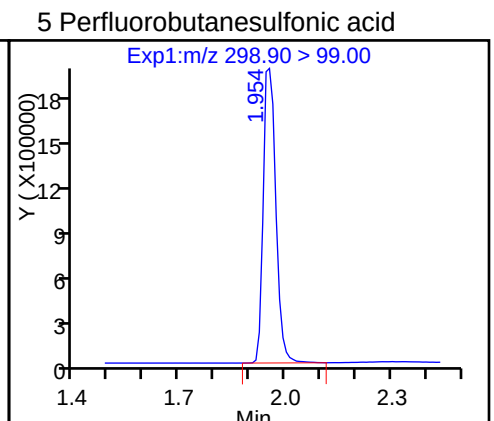
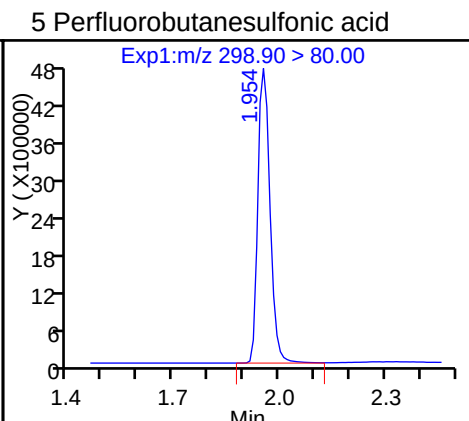
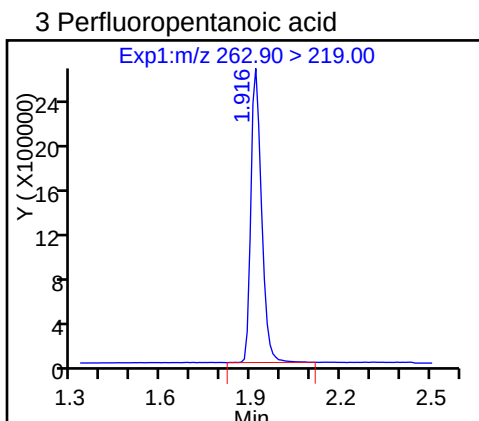
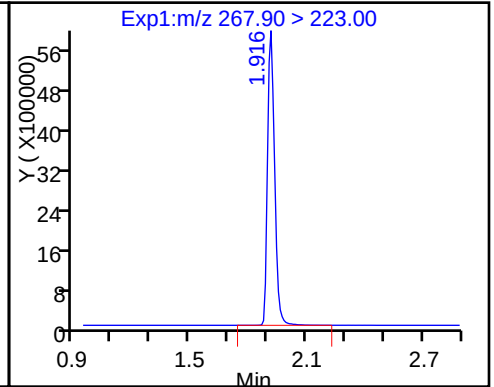
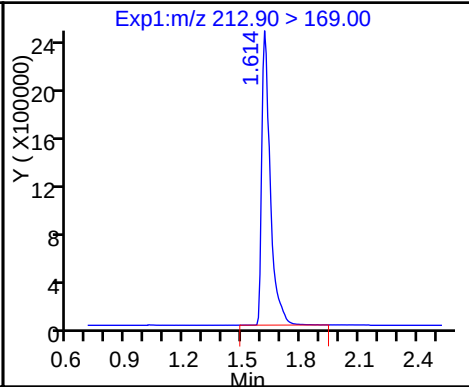
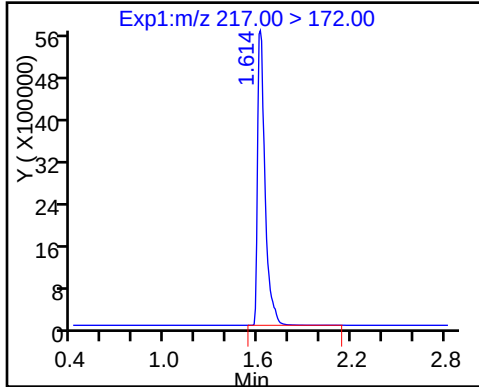
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

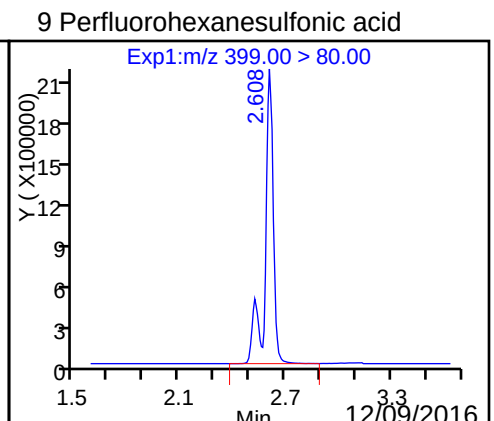
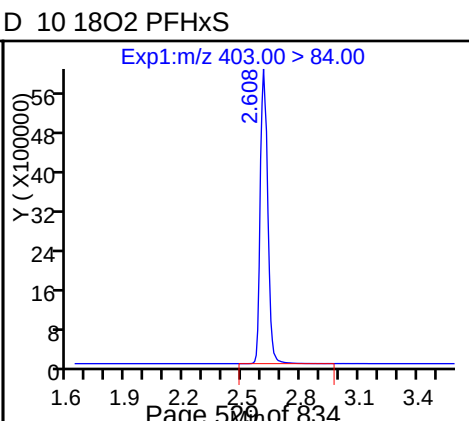
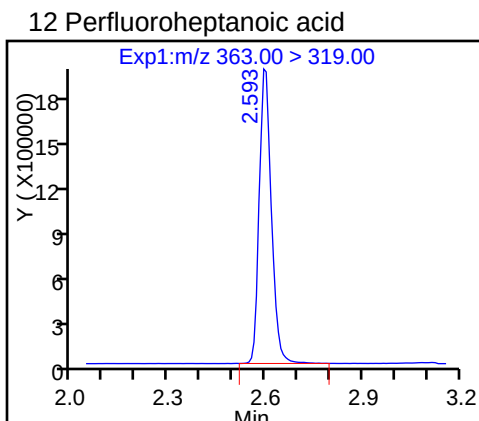
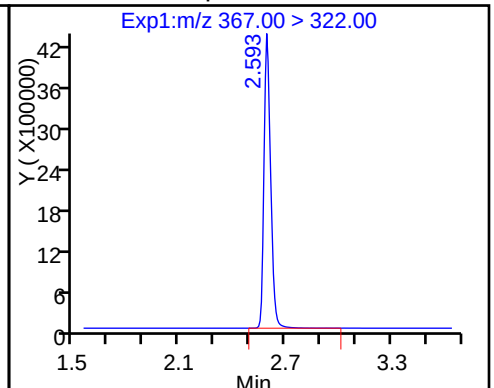
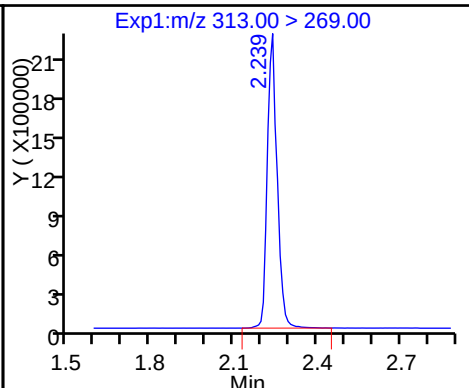
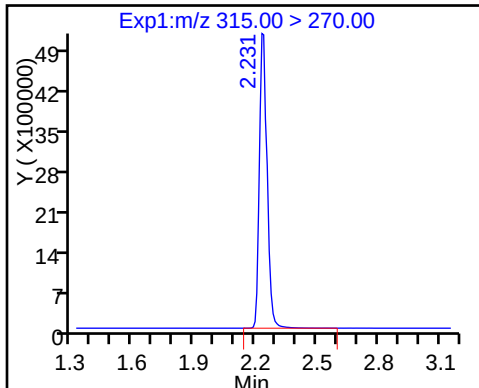
D 4 13C5-PFPeA

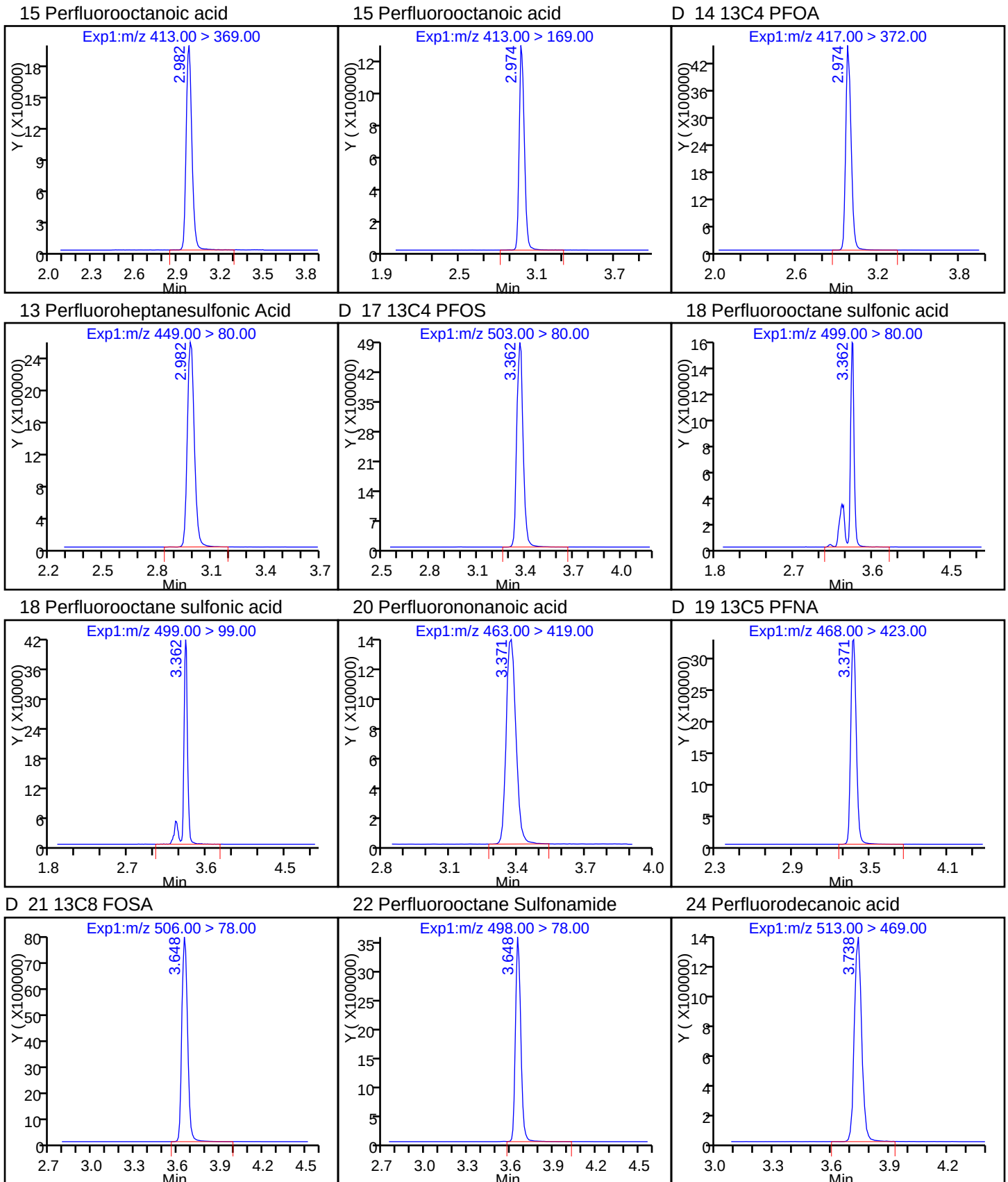


D 6 13C2 PFHxA

7 Perfluorohexanoic acid

D 11 13C4-PFHpA

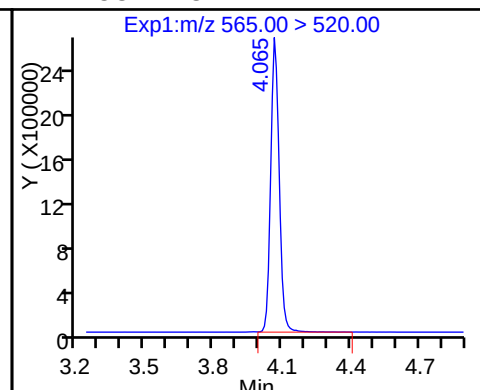
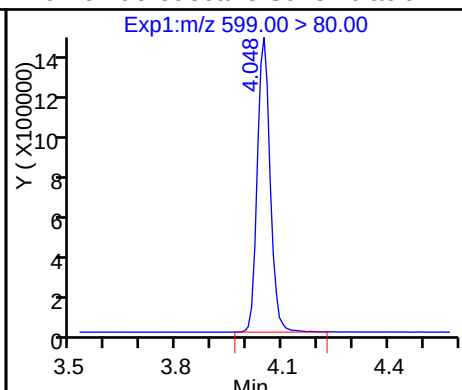
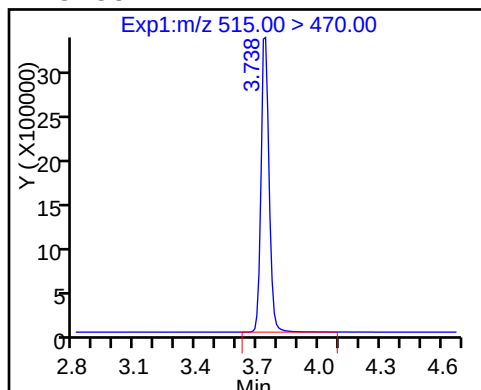




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

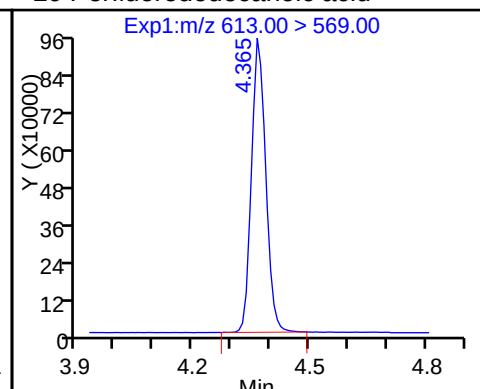
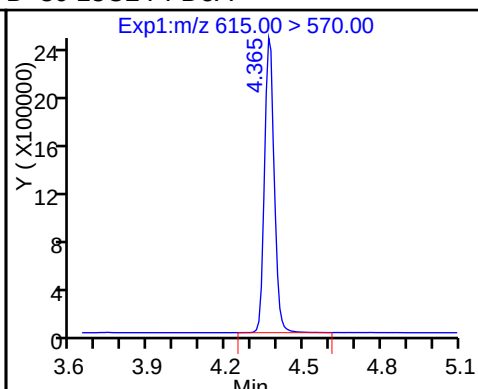
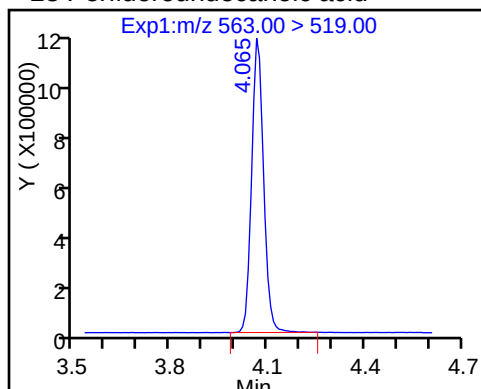
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

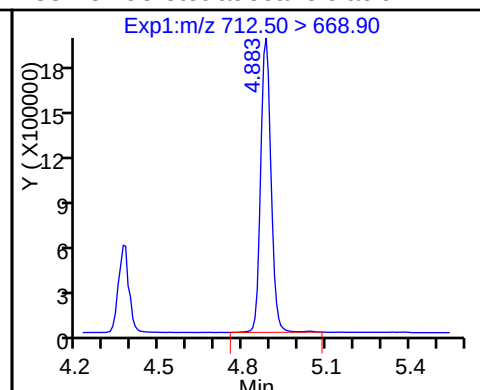
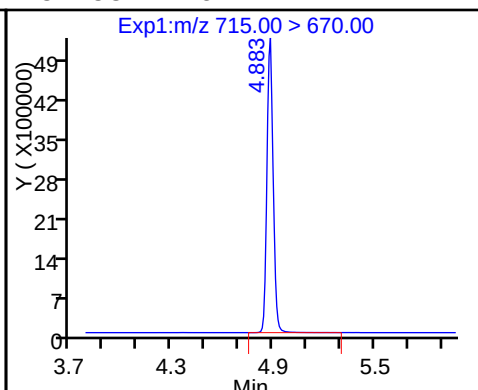
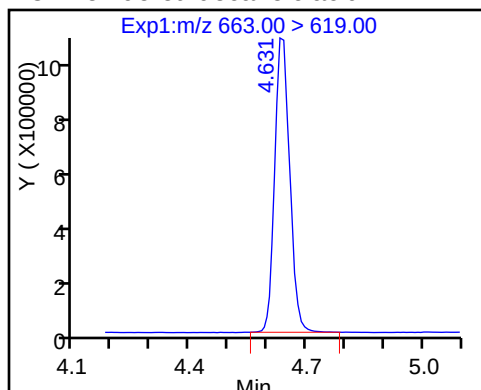
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

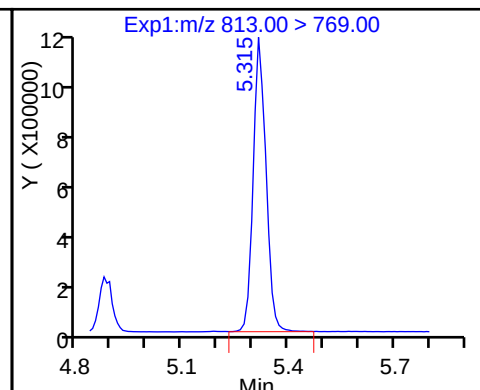
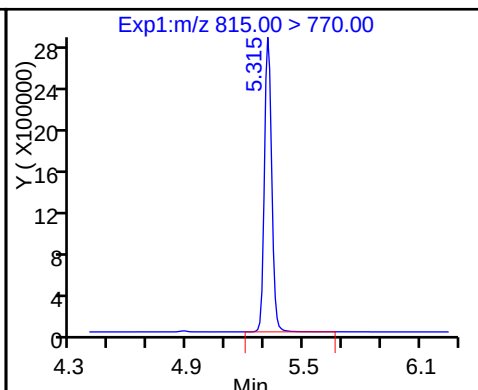
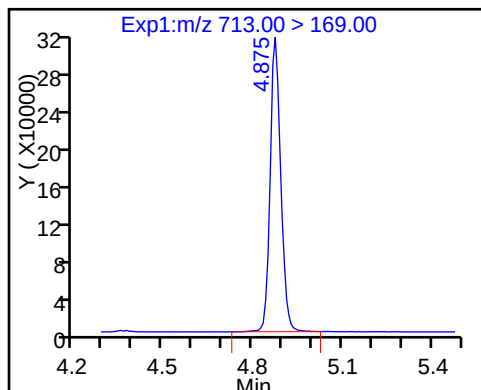
33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

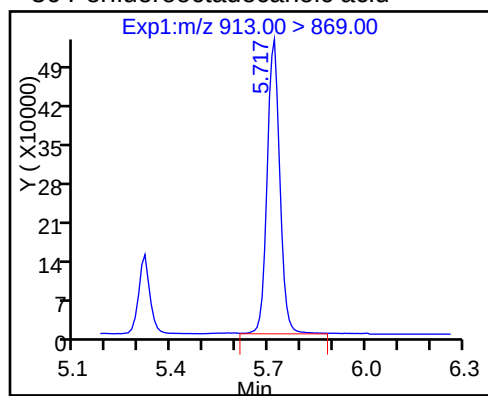
D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid





## 36 Perfluorooctadecanoic acid



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_008.d  
 Lims ID: IC L5  
 Client ID:  
 Sample Type: IC Calib Level: 5  
 Inject. Date: 02-Dec-2016 10:59:32 ALS Bottle#: 41 Worklist Smp#: 8  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L5\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:51:36 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:39:38

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.614 | 1.615  | -0.001 |        | 16489860 | 48.5         |                 | 96.9 | 1638772 |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.614 | 1.617  | -0.003 | 1.000  | 14709131 | 50.4         |                 | 101  | 160438  |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.916 | 1.918  | -0.002 |        | 12600012 | 46.6         |                 | 93.3 | 943576  |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.916 | 1.920  | -0.004 | 1.000  | 12474289 | 47.6         |                 | 95.1 | 93266   |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.945 | 1.961  | -0.016 | 1.000  | 21727893 | 44.2         |                 | 99.9 |         |       |
| 298.90 > 99.00                 | 1.945 | 1.961  | -0.016 | 1.000  | 10461832 |              | 2.08(0.00-0.00) | 99.9 |         |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.226 | 2.239  | -0.013 |        | 11543313 | 46.8         |                 | 93.7 | 1429849 |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.226 | 2.241  | -0.015 | 1.000  | 10870881 | 49.3         |                 | 98.5 | 324820  |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.593 | 2.599  | -0.006 |        | 9801352  | 46.6         |                 | 93.1 | 1194438 |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.593 | 2.600  | -0.007 | 1.000  | 10247953 | 50.6         |                 | 101  | 131961  |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.608 | 2.614  | -0.006 |        | 14421709 | 47.7         |                 | 101  | 804399  |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.608 | 2.615  | -0.007 | 1.000  | 14700167 | 45.5         |                 | 100  |         |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.972 | 2.984  | -0.012 | 1.000  | 10948383 | 50.8         |                 | 102  | 135691  |       |
| 413.00 > 169.00                | 2.972 | 2.984  | -0.012 | 1.000  | 6763939  |              | 1.62(0.90-1.10) | 102  | 350881  |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.972 | 2.984  | -0.012 |        | 10566267 | 48.2         |                 | 96.3 | 1210292 |       |

| Signal                           | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 13 Perfluoroheptanesulfonic Acid | 449.00 > 80.00  | 2.972     | 2.986     | -0.014    | 1.000    | 13319919        | 46.2            | 97.0 |         |       |
| D 17 13C4 PFOS                   | 503.00 > 80.00  | 3.352     | 3.365     | -0.013    |          | 11794026        | 48.2            | 101  | 334101  |       |
| 18 Perfluorooctane sulfonic acid | 499.00 > 80.00  | 3.352     | 3.366     | -0.014    | 1.000    | 12334342        | 46.0            | 99.1 | 3198173 |       |
|                                  | 499.00 > 99.00  | 3.352     | 3.366     | -0.014    | 1.000    | 2699806         | 4.57(0.90-1.10) | 99.1 | 276987  |       |
| 20 Perfluorononanoic acid        | 463.00 > 419.00 | 3.361     | 3.373     | -0.012    | 1.000    | 8209339         | 50.0            | 100  | 106298  |       |
| D 19 13C5 PFNA                   | 468.00 > 423.00 | 3.361     | 3.374     | -0.013    |          | 8274989         | 46.5            | 92.9 | 464531  |       |
| D 21 13C8 FOSA                   | 506.00 > 78.00  | 3.648     | 3.651     | -0.003    |          | 20246280        | 48.9            | 97.7 | 412589  |       |
| 22 Perfluorooctane Sulfonamide   | 498.00 > 78.00  | 3.648     | 3.656     | -0.008    | 1.000    | 18995833        | 50.2            | 100  | 525604  |       |
| 24 Perfluorodecanoic acid        | 513.00 > 469.00 | 3.727     | 3.738     | -0.011    | 1.000    | 7581125         | 49.1            | 98.2 | 195732  |       |
| D 23 13C2 PFDA                   | 515.00 > 470.00 | 3.727     | 3.738     | -0.011    |          | 7964307         | 48.0            | 95.9 | 183252  |       |
| 26 Perfluorodecane Sulfonic acid | 599.00 > 80.00  | 4.039     | 4.049     | -0.010    | 1.000    | 7816007         | 50.5            | 105  |         |       |
| D 27 13C2 PFUnA                  | 565.00 > 520.00 | 4.056     | 4.070     | -0.014    |          | 5729423         | 45.6            | 91.1 | 366101  |       |
| 28 Perfluoroundecanoic acid      | 563.00 > 519.00 | 4.056     | 4.071     | -0.015    | 1.000    | 5577456         | 45.9            | 91.9 | 89442   |       |
| D 30 13C2 PFDaA                  | 615.00 > 570.00 | 4.354     | 4.370     | -0.016    |          | 5499233         | 47.0            | 94.1 | 178583  |       |
| 29 Perfluorododecanoic acid      | 613.00 > 569.00 | 4.354     | 4.370     | -0.016    | 1.000    | 5085511         | 48.8            | 97.7 | 5770    |       |
| 31 Perfluorotridecanoic acid     | 663.00 > 619.00 | 4.629     | 4.636     | -0.007    | 1.000    | 5704096         | 49.9            | 99.7 | 5914    |       |
| D 32 13C2-PFTeDA                 | 715.00 > 670.00 | 4.867     | 4.882     | -0.015    |          | 11564641        | 47.8            | 95.6 | 896262  |       |
| 33 Perfluorotetradecanoic acid   | 712.50 > 668.90 | 4.867     | 4.884     | -0.017    | 1.000    | 10301361        | 48.5            | 96.9 | 4268    |       |
|                                  | 713.00 > 169.00 | 4.867     | 4.884     | -0.017    | 1.000    | 1659281         | 6.21(0.00-0.00) | 96.9 | 129903  |       |
| D 34 13C2-PFHxDA                 | 815.00 > 770.00 | 5.306     | 5.320     | -0.014    |          | 6210852         | 47.6            | 95.3 | 147641  |       |
| 35 Perfluorohexadecanoic acid    | 813.00 > 769.00 | 5.306     | 5.320     | -0.014    | 1.000    | 5654463         | 51.4            | 103  | 6481    |       |
| 36 Perfluorooctadecanoic acid    | 913.00 > 869.00 | 5.702     | 5.720     | -0.018    | 1.000    | 5392609         | 62.4            | 125  | 9388    |       |

## Reagents:

LCPFC-L5\_00020

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_008.d

Injection Date: 02-Dec-2016 10:59:32

Instrument ID: A8\_N

Lims ID: IC L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

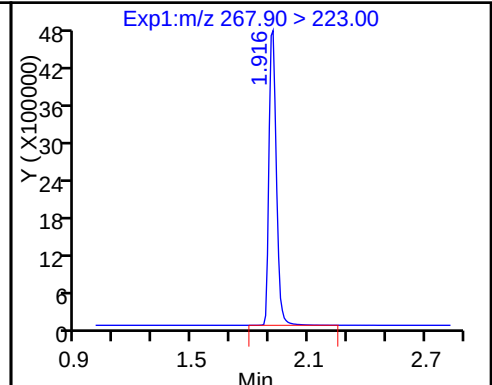
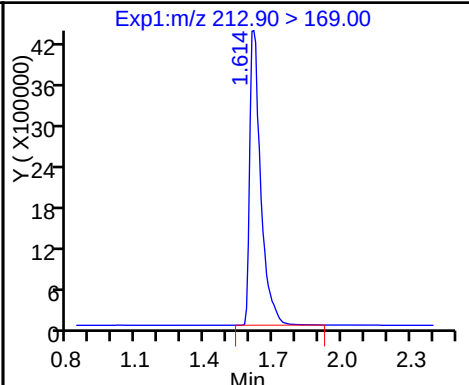
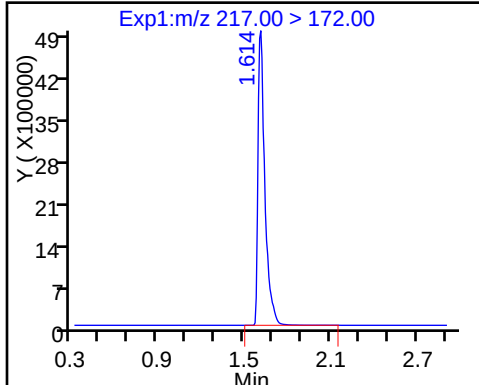
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

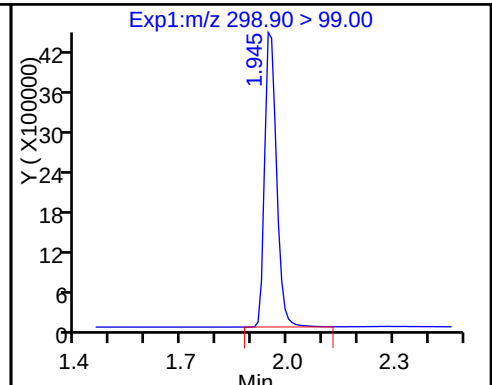
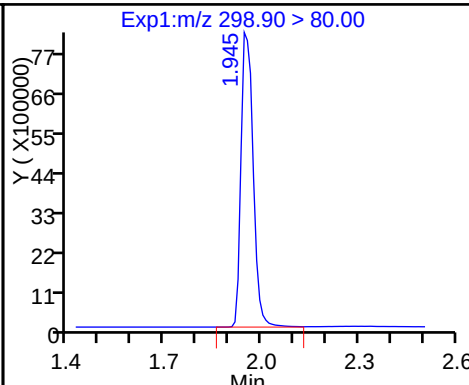
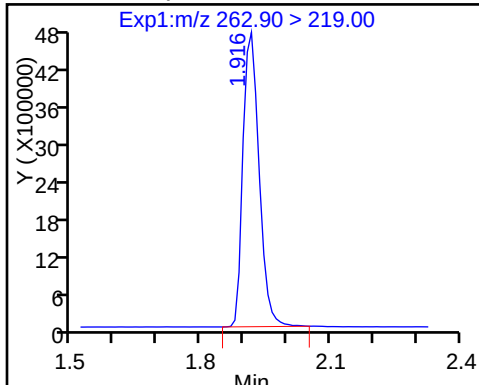
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

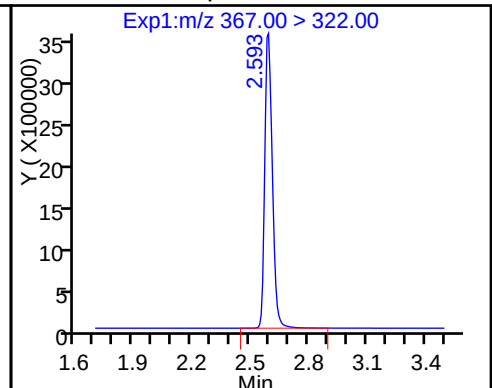
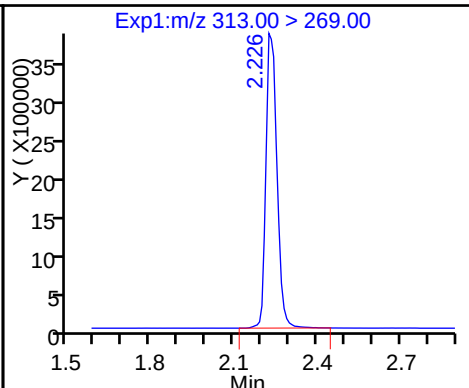
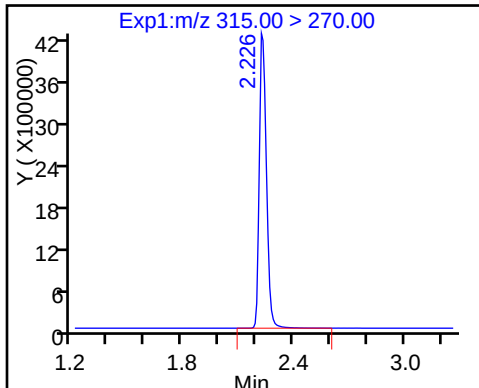
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

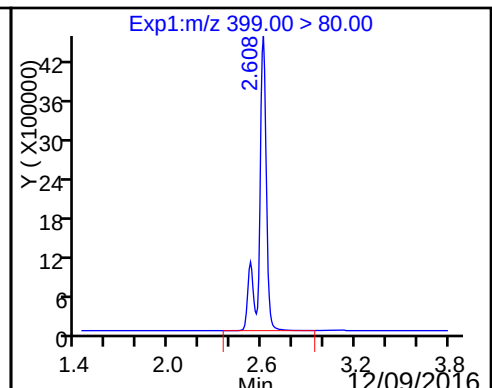
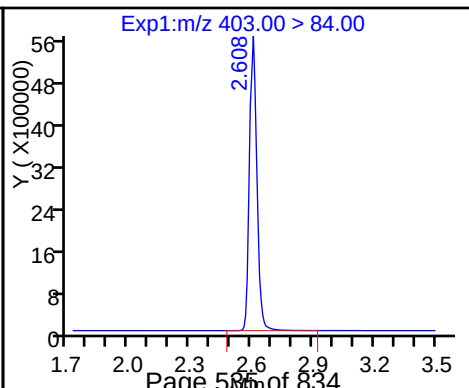
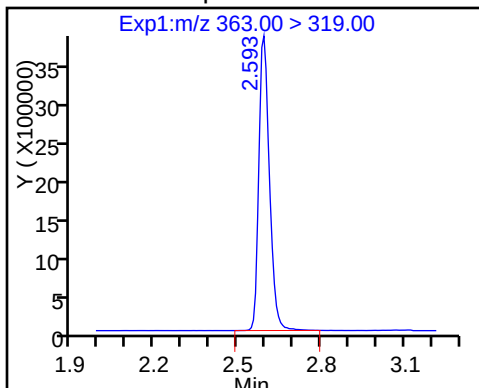
D 11 13C4-PFHpA

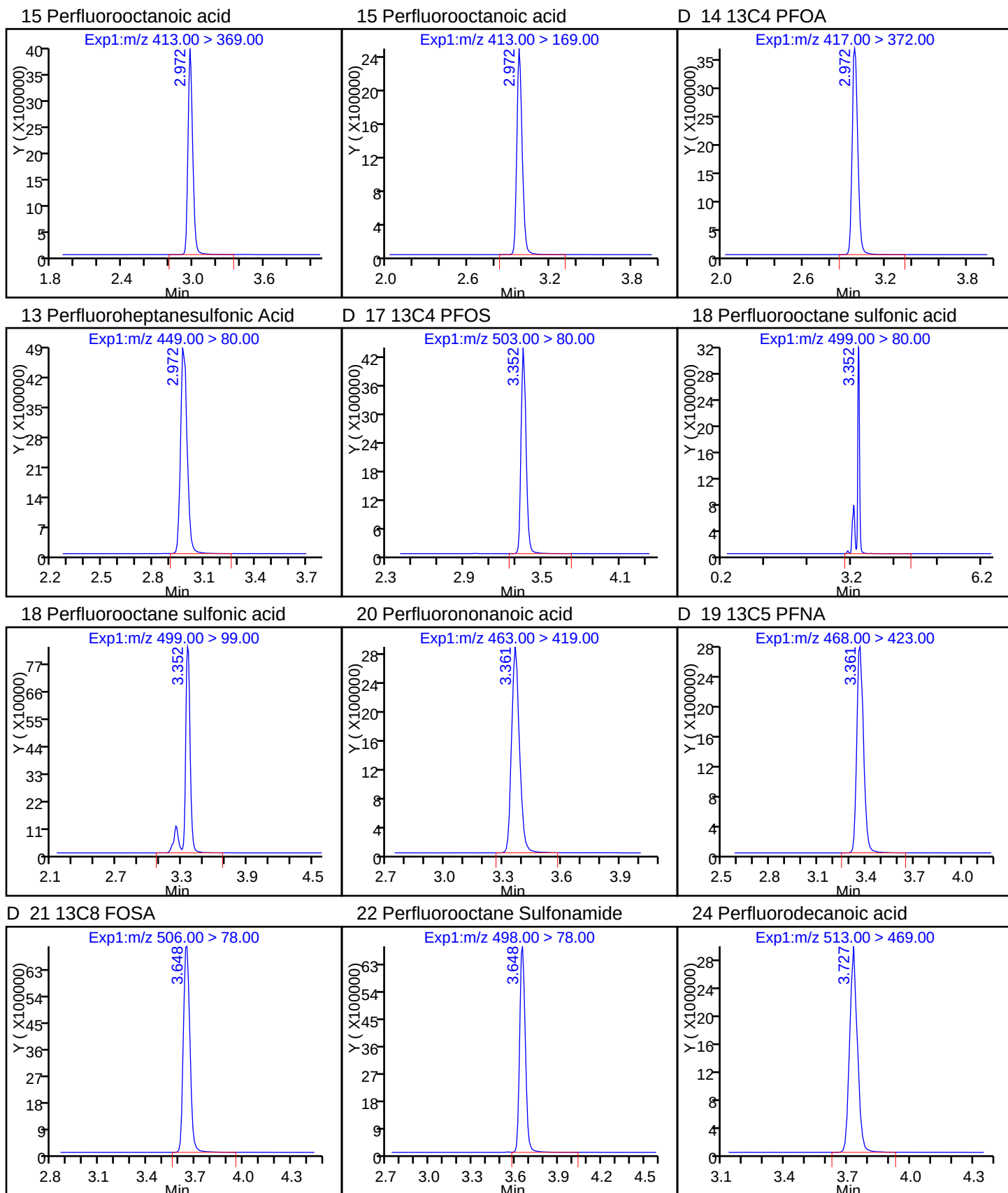


12 Perfluoroheptanoic acid

D 10 18O2 PFHxS

9 Perfluorohexanesulfonic acid

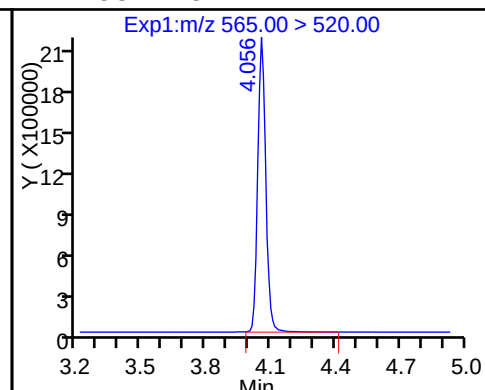
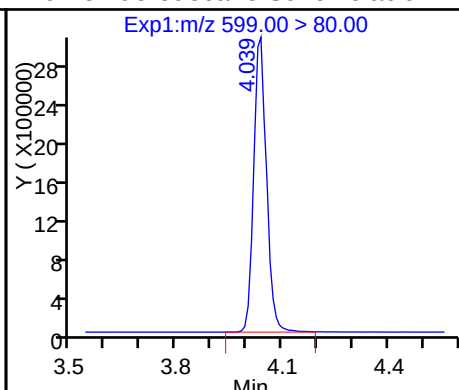
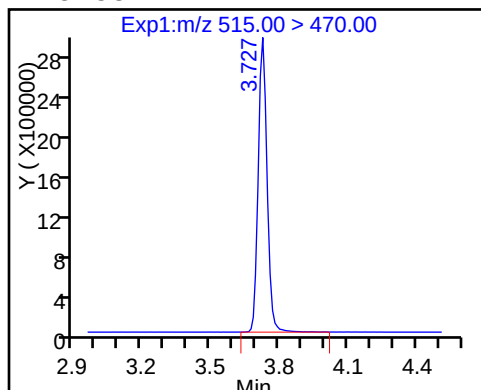




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

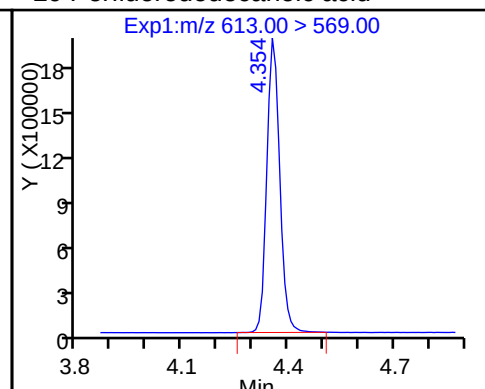
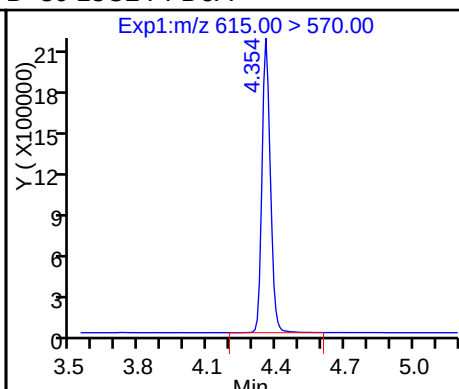
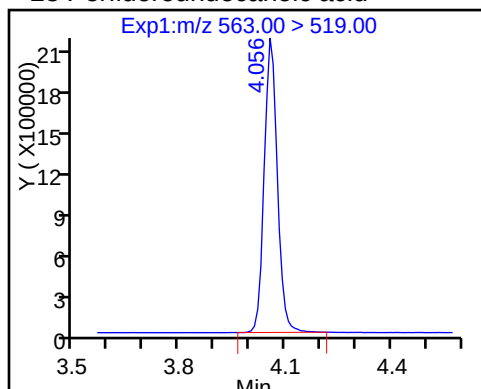
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

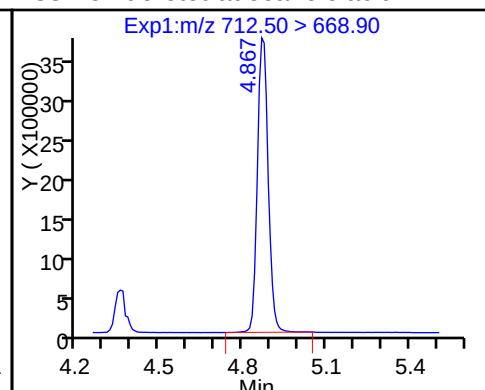
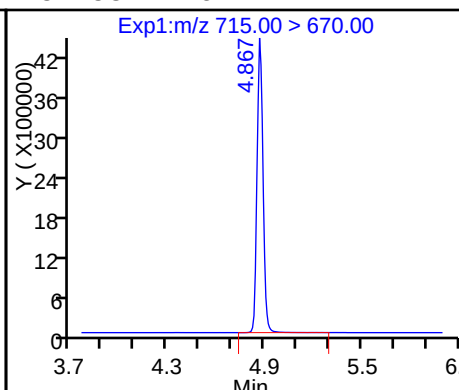
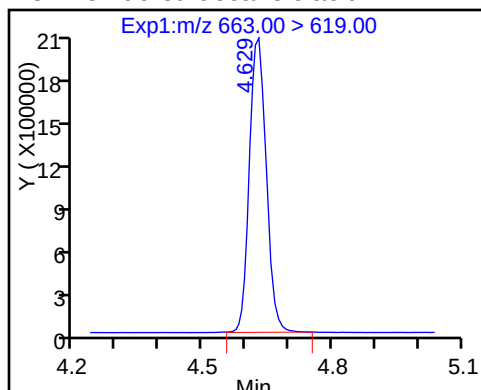
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

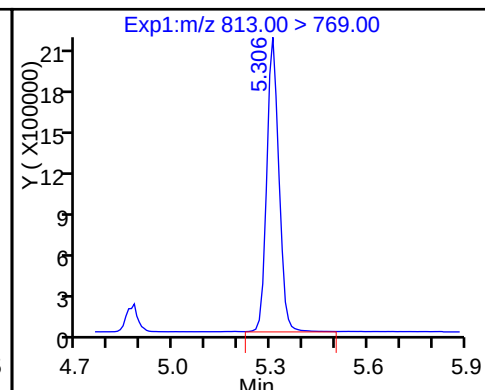
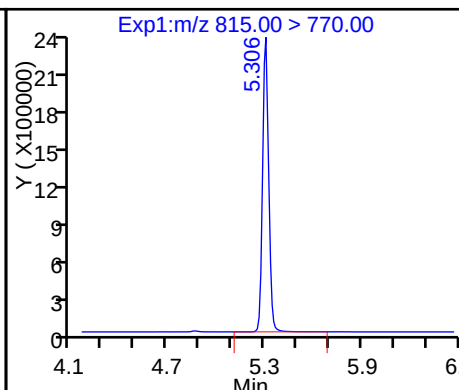
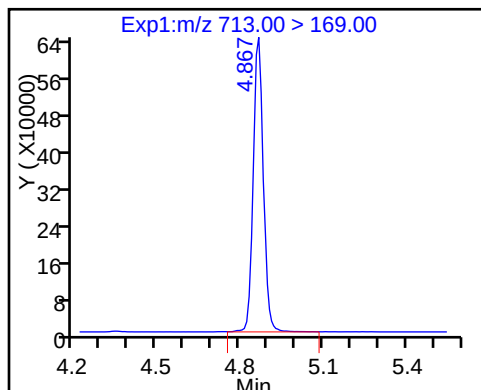
33 Perfluorotetradecanoic acid



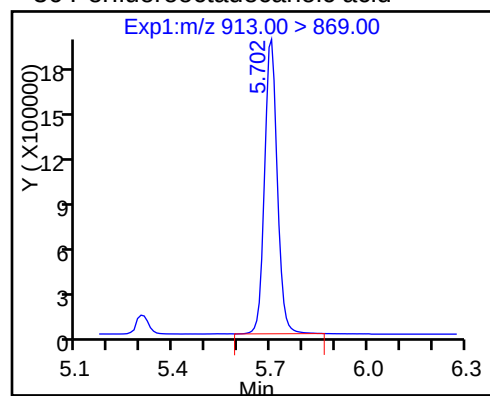
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_009.d  
 Lims ID: IC L6  
 Client ID:  
 Sample Type: IC Calib Level: 6  
 Inject. Date: 02-Dec-2016 11:07:02 ALS Bottle#: 42 Worklist Smp#: 9  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L6\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:51:37 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:41:33

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.602 | 1.615  | -0.013 |        | 15262180 | 44.8         |                 | 89.7 | 765913  |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.610 | 1.617  | -0.007 | 1.000  | 43875101 | 162.4        |                 | 81.2 | 412834  |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.910 | 1.918  | -0.008 |        | 10903650 | 40.4         |                 | 80.7 | 1365253 |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.910 | 1.920  | -0.010 | 1.000  | 34297516 | 151.1        |                 | 75.6 | 270259  |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.949 | 1.961  | -0.012 | 1.000  | 51594571 | 125.7        |                 | 71.1 |         |       |
| 298.90 > 99.00                 | 1.939 | 1.961  | -0.022 | 0.995  | 28882906 |              | 1.79(0.00-0.00) | 71.1 |         |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.225 | 2.239  | -0.014 |        | 10277273 | 41.7         |                 | 83.4 | 928195  |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.225 | 2.241  | -0.016 | 1.000  | 33379792 | 169.9        |                 | 84.9 | 455453  |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.578 | 2.599  | -0.021 |        | 8167611  | 38.8         |                 | 77.6 | 1010737 |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.578 | 2.600  | -0.022 | 1.000  | 29343029 | 173.7        |                 | 86.8 | 246277  |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.594 | 2.614  | -0.020 |        | 12029706 | 39.8         |                 | 84.1 | 822262  |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.601 | 2.615  | -0.014 | 1.000  | 45822208 | 170.0        |                 | 93.4 |         |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.958 | 2.984  | -0.026 | 1.000  | 29789966 | 179.8        |                 | 89.9 | 348106  |       |
| 413.00 > 169.00                | 2.966 | 2.984  | -0.018 | 1.003  | 20146226 |              | 1.48(0.90-1.10) | 89.9 | 805973  |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.966 | 2.984  | -0.018 |        | 8120442  | 37.0         |                 | 74.0 | 869612  |       |



| Signal                           | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 13 Perfluoroheptanesulfonic Acid | 449.00 > 80.00  | 2.966     | 2.986     | -0.020    | 1.000    | 38018954        | 159.5           | 83.8 |         |       |
| D 17 13C4 PFOS                   | 503.00 > 80.00  | 3.340     | 3.365     | -0.025    |          | 9744748         | 39.8            | 83.3 | 81434   |       |
| 18 Perfluorooctane sulfonic acid | 499.00 > 80.00  | 3.340     | 3.366     | -0.026    | 1.000    | 41837729        | 188.7           | 102  | 8979223 |       |
|                                  | 499.00 > 99.00  | 3.340     | 3.366     | -0.026    | 1.000    | 9665788         | 4.33(0.90-1.10) | 102  | 925115  |       |
| 20 Perfluorononanoic acid        | 463.00 > 419.00 | 3.348     | 3.373     | -0.025    | 1.000    | 25204338        | 186.7           | 93.4 | 245903  |       |
| D 19 13C5 PFNA                   | 468.00 > 423.00 | 3.355     | 3.374     | -0.019    |          | 6808930         | 38.2            | 76.5 | 557624  |       |
| D 21 13C8 FOSA                   | 506.00 > 78.00  | 3.634     | 3.651     | -0.017    |          | 17995728        | 43.4            | 86.9 | 430609  |       |
| 22 Perfluorooctane Sulfonamide   | 498.00 > 78.00  | 3.643     | 3.656     | -0.013    | 1.000    | 51108754        | 151.8           | 75.9 | 319115  |       |
| 24 Perfluorodecanoic acid        | 513.00 > 469.00 | 3.721     | 3.738     | -0.017    | 1.000    | 25614867        | 189.8           | 94.9 | 333805  |       |
| D 23 13C2 PFDA                   | 515.00 > 470.00 | 3.710     | 3.738     | -0.028    |          | 6960897         | 41.9            | 83.8 | 168207  |       |
| 26 Perfluorodecane Sulfonic acid | 599.00 > 80.00  | 4.028     | 4.049     | -0.021    | 1.000    | 24374906        | 190.6           | 98.9 |         |       |
| D 27 13C2 PFUnA                  | 565.00 > 520.00 | 4.045     | 4.070     | -0.025    |          | 4558330         | 36.2            | 72.5 | 316100  |       |
| 28 Perfluoroundecanoic acid      | 563.00 > 519.00 | 4.054     | 4.071     | -0.017    | 1.000    | 17998762        | 186.3           | 93.2 | 327205  |       |
| D 30 13C2 PFDaA                  | 615.00 > 570.00 | 4.343     | 4.370     | -0.027    |          | 4818858         | 41.2            | 82.4 | 222562  |       |
| 29 Perfluorododecanoic acid      | 613.00 > 569.00 | 4.343     | 4.370     | -0.027    | 1.000    | 17698276        | 194.0           | 97.0 | 23046   |       |
| 31 Perfluorotridecanoic acid     | 663.00 > 619.00 | 4.613     | 4.636     | -0.023    | 1.000    | 18549592        | 185.0           | 92.5 | 33008   |       |
| D 32 13C2-PFTeDA                 | 715.00 > 670.00 | 4.855     | 4.882     | -0.027    |          | 10102255        | 41.8            | 83.5 | 643461  |       |
| 33 Perfluorotetradecanoic acid   | 712.50 > 668.90 | 4.864     | 4.884     | -0.020    | 1.000    | 31923969        | 171.4           | 85.7 | 17512   |       |
|                                  | 713.00 > 169.00 | 4.855     | 4.884     | -0.029    | 0.998    | 6059732         | 5.27(0.00-0.00) | 85.7 | 373056  |       |
| D 34 13C2-PFHxDA                 | 815.00 > 770.00 | 5.290     | 5.320     | -0.030    |          | 5535655         | 42.5            | 84.9 | 147627  |       |
| 35 Perfluorohexadecanoic acid    | 813.00 > 769.00 | 5.290     | 5.320     | -0.030    | 1.000    | 18745470        | 196.6           | 98.3 | 24259   |       |
| 36 Perfluorooctadecanoic acid    | 913.00 > 869.00 | 5.688     | 5.720     | -0.032    | 1.000    | 13671969        | 180.4           | 90.2 | 26246   |       |

## Reagents:

LCPFC-L6\_00019

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_009.d

Injection Date: 02-Dec-2016 11:07:02

Instrument ID: A8\_N

Lims ID: IC L6

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 42

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

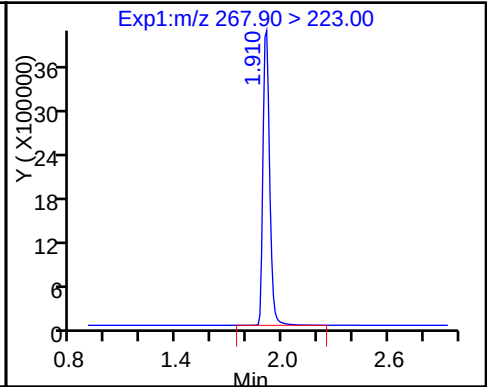
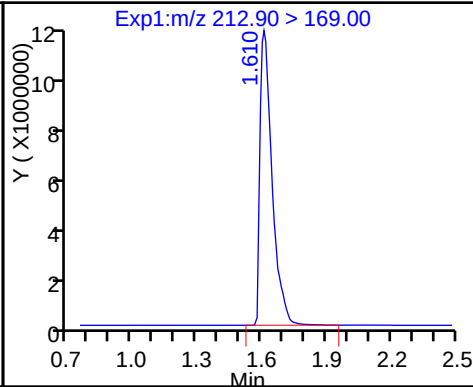
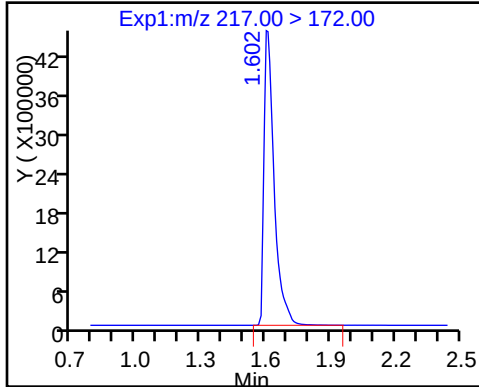
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

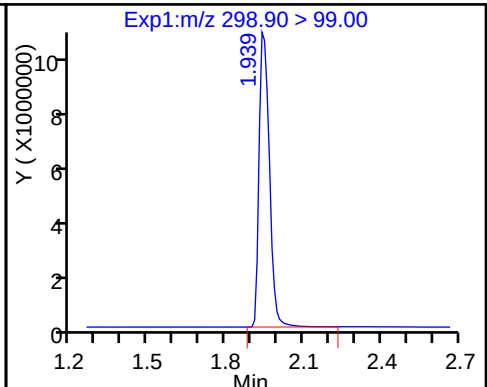
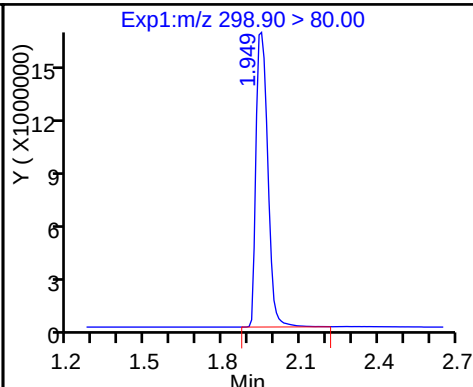
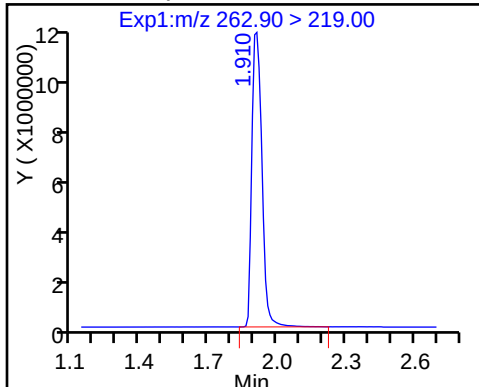
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

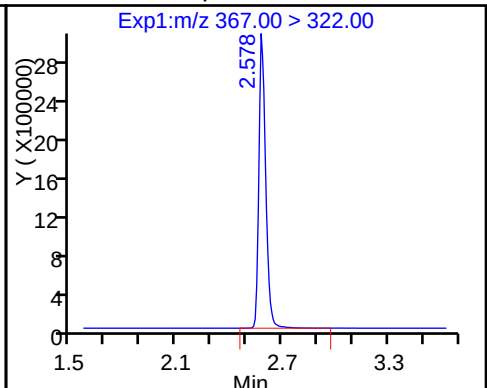
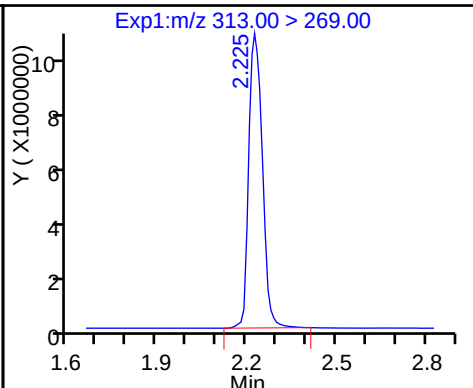
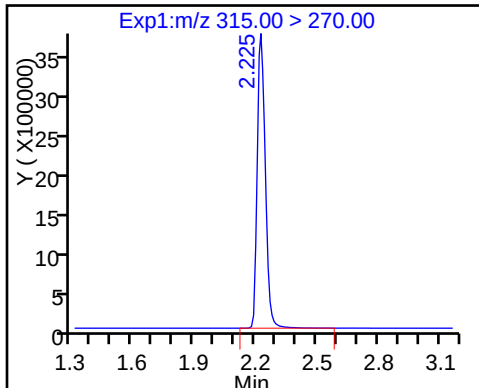
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

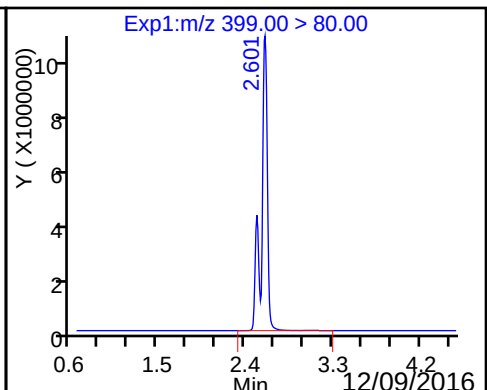
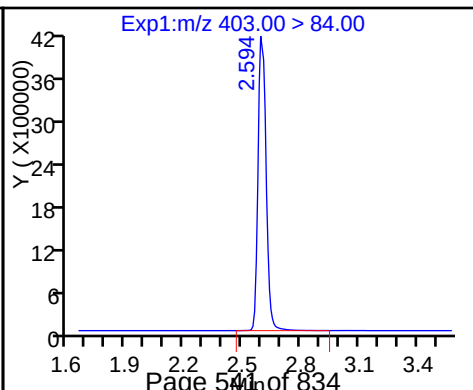
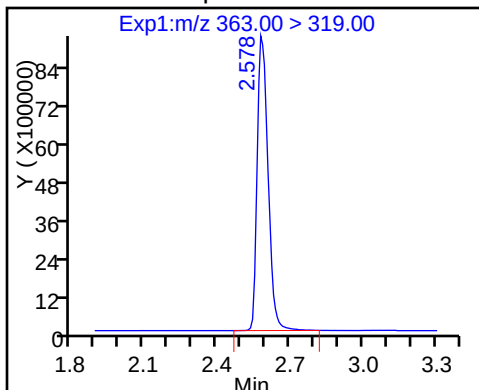
D 11 13C4-PFHpA

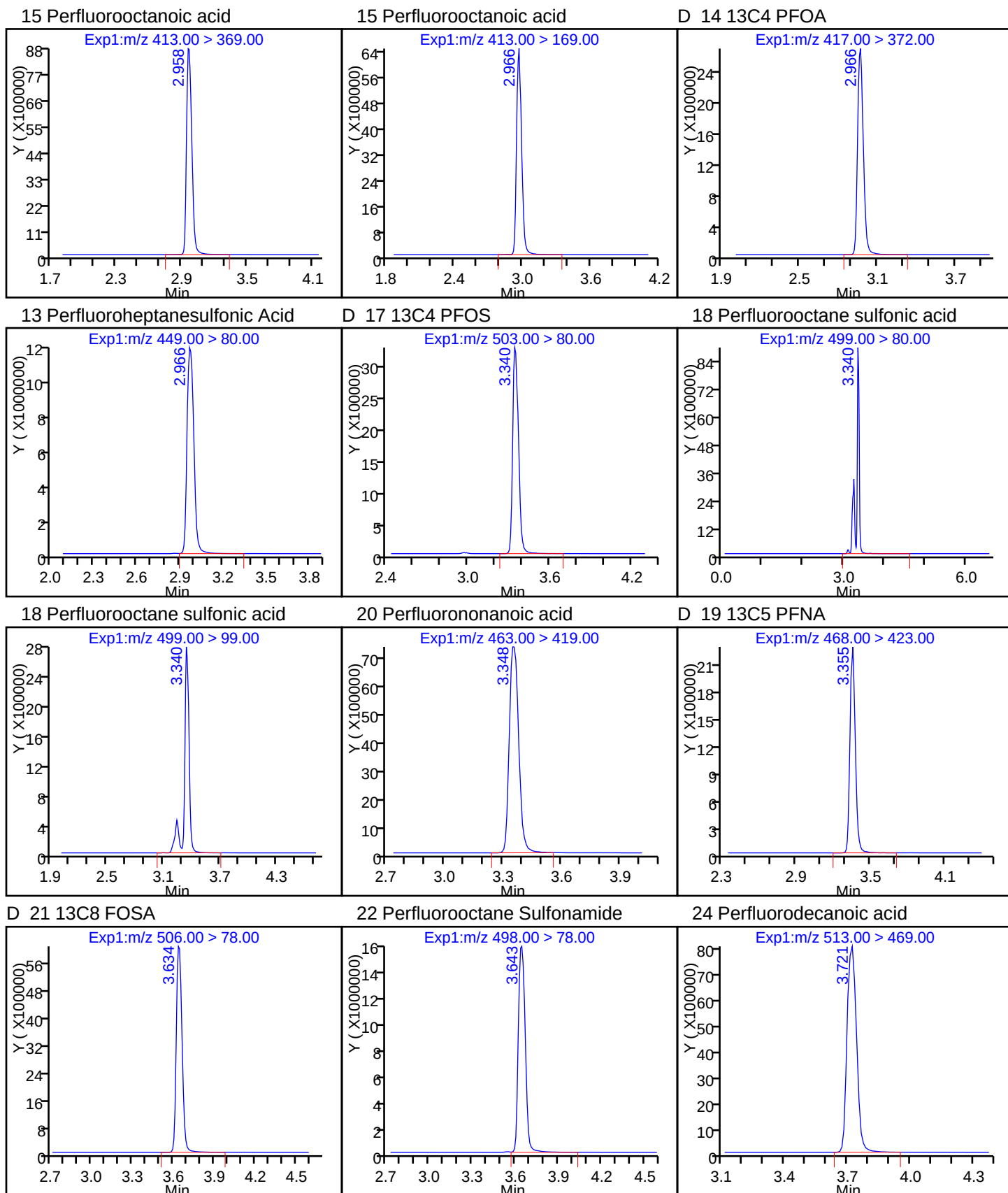


12 Perfluoroheptanoic acid

D 10 18O2 PFHxS

9 Perfluorohexanesulfonic acid

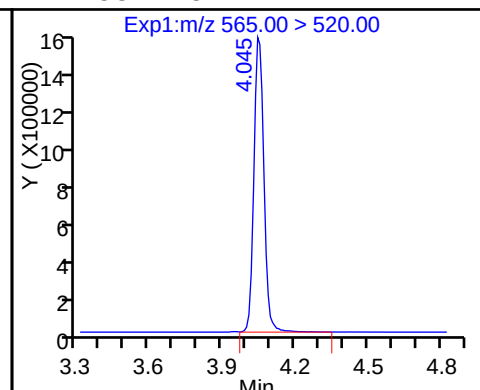
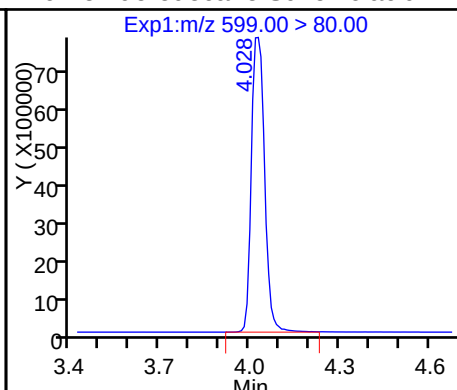
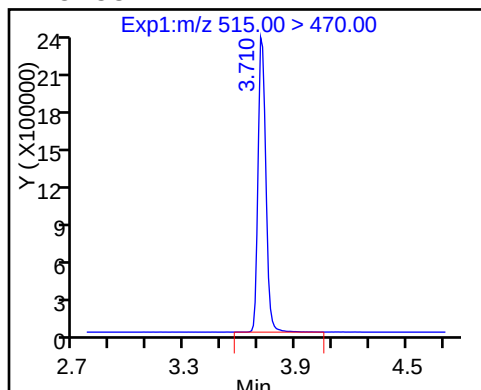




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

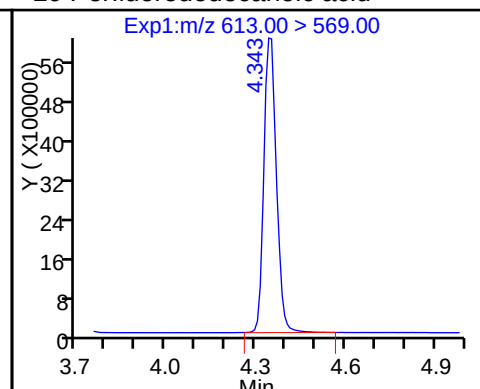
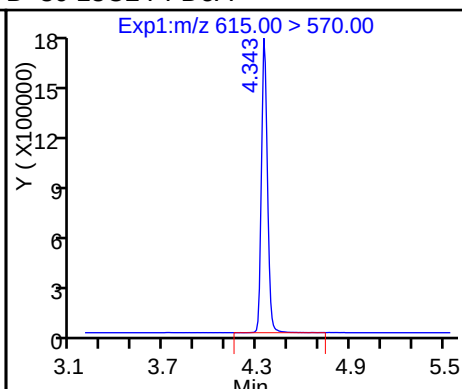
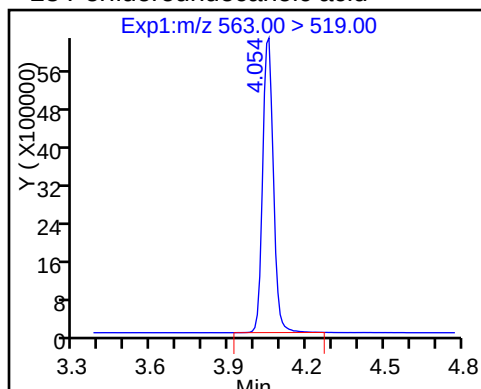
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

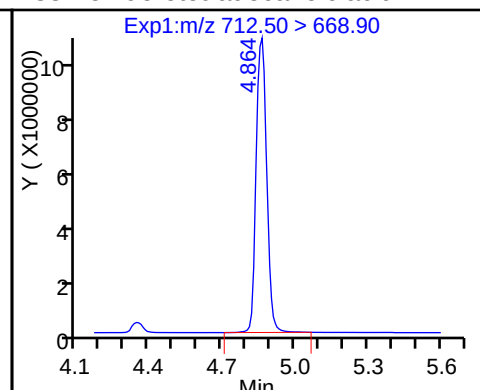
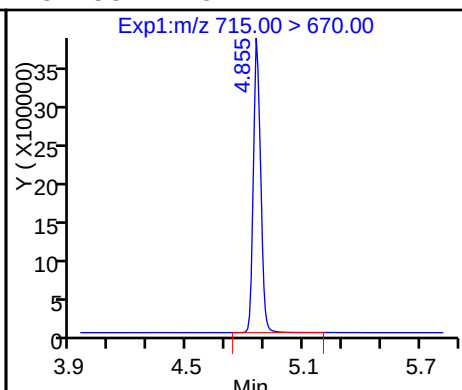
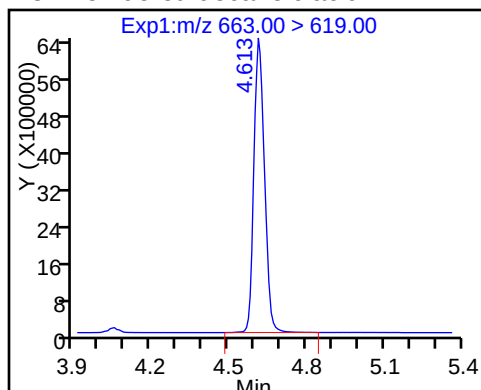
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

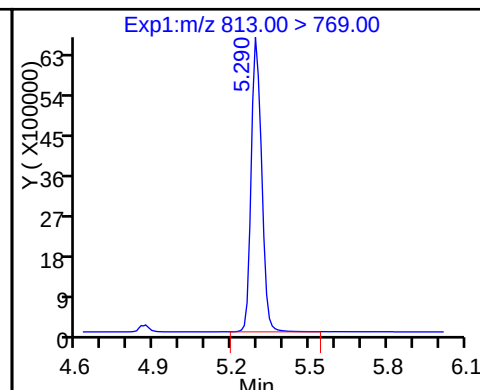
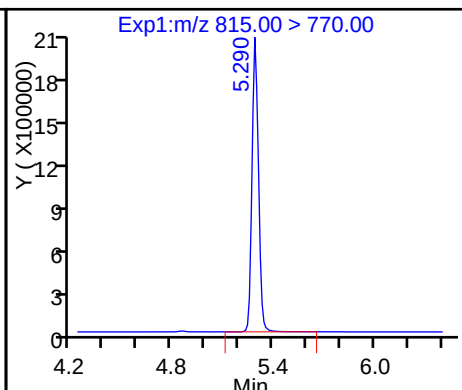
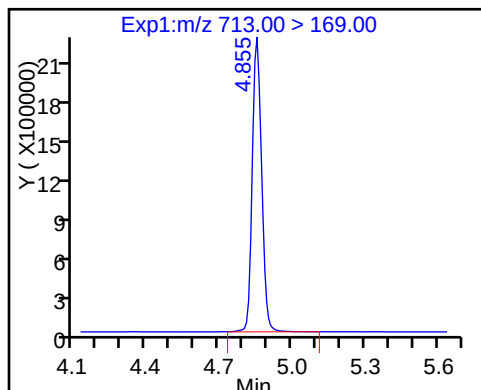
33 Perfluorotetradecanoic acid



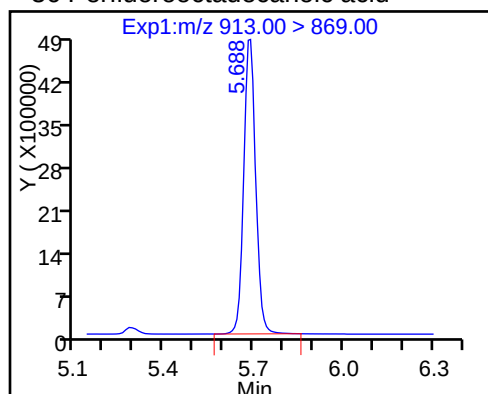
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_010.d  
 Lims ID: IC L7  
 Client ID:  
 Sample Type: IC Calib Level: 7  
 Inject. Date: 02-Dec-2016 11:14:32 ALS Bottle#: 43 Worklist Smp#: 10  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L7\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:51:39 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:42:13

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.609 | 1.615  | -0.006 |        | 14832847 | 43.6         |                 | 87.2 | 714054  |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.609 | 1.617  | -0.008 | 1.000  | 69781585 | 265.7        |                 | 66.4 | 349641  |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.910 | 1.918  | -0.008 |        | 10386976 | 38.4         |                 | 76.9 | 960901  |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.910 | 1.920  | -0.010 | 1.000  | 50360659 | 232.9        |                 | 58.2 | 296264  |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.968 | 1.961  | 0.007  | 1.000  | 41429650 | 107.3        |                 | 30.3 |         |       |
| 298.90 > 99.00                 | 1.948 | 1.961  | -0.013 | 0.990  | 44560969 |              | 0.93(0.00-0.00) | 30.3 |         |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.230 | 2.239  | -0.009 |        | 9976646  | 40.5         |                 | 81.0 | 859246  |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.230 | 2.241  | -0.011 | 1.000  | 51025463 | 267.5        |                 | 66.9 | 759942  |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.581 | 2.599  | -0.019 |        | 7479568  | 35.5         |                 | 71.1 | 874763  |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.581 | 2.600  | -0.020 | 1.000  | 45359019 | 293.2        |                 | 73.3 | 320883  |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.598 | 2.614  | -0.016 |        | 11322930 | 37.4         |                 | 79.1 | 1230464 |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.598 | 2.615  | -0.017 | 1.000  | 77870104 | 307.0        |                 | 84.3 |         |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.967 | 2.984  | -0.017 | 1.000  | 47490545 | 322.1        |                 | 80.5 | 2406009 |       |
| 413.00 > 169.00                | 2.967 | 2.984  | -0.017 | 1.000  | 33779619 |              | 1.41(0.90-1.10) | 80.5 | 3107357 |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.958 | 2.984  | -0.026 |        | 7225722  | 32.9         |                 | 65.9 | 438119  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N      | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|----------|-------|
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |          |       |
| 449.00 > 80.00                   | 2.967 | 2.986  | -0.019 | 1.000  | 59371135 | 266.1        |                 | 69.9 |          |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |          |       |
| 503.00 > 80.00                   | 3.345 | 3.365  | -0.020 |        | 9124233  | 37.3         |                 | 78.0 | 67315    |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |          |       |
| 499.00 > 80.00                   | 3.345 | 3.366  | -0.021 | 1.000  | 80249842 | 386.6        |                 | 104  | 13058140 |       |
| 499.00 > 99.00                   | 3.345 | 3.366  | -0.021 | 1.000  | 19443677 |              | 4.13(0.90-1.10) | 104  | 690162   |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |          |       |
| 463.00 > 419.00                  | 3.353 | 3.373  | -0.020 | 1.000  | 41884345 | 335.5        |                 | 83.9 | 392400   |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |          |       |
| 468.00 > 423.00                  | 3.353 | 3.374  | -0.021 |        | 6297115  | 35.4         |                 | 70.7 | 371230   |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |          |       |
| 506.00 > 78.00                   | 3.642 | 3.651  | -0.009 |        | 18384094 | 44.4         |                 | 88.8 | 592069   |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |          |       |
| 498.00 > 78.00                   | 3.660 | 3.656  | 0.004  | 1.000  | 73164187 | 212.7        |                 | 53.2 | 145203   |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |          |       |
| 513.00 > 469.00                  | 3.709 | 3.738  | -0.029 | 1.000  | 42979124 | 313.4        |                 | 78.4 | 353734   |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |          |       |
| 515.00 > 470.00                  | 3.720 | 3.738  | -0.018 |        | 7073000  | 42.6         |                 | 85.2 | 160460   |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |          |       |
| 599.00 > 80.00                   | 4.028 | 4.049  | -0.021 | 1.000  | 41362935 | 345.5        |                 | 89.6 |          |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |          |       |
| 565.00 > 520.00                  | 4.045 | 4.070  | -0.025 |        | 4373854  | 34.8         |                 | 69.5 | 211760   |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |          |       |
| 563.00 > 519.00                  | 4.045 | 4.071  | -0.026 | 1.000  | 31200994 | 336.6        |                 | 84.2 | 378305   |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |          |       |
| 615.00 > 570.00                  | 4.353 | 4.370  | -0.017 |        | 5148784  | 44.0         |                 | 88.1 | 149077   |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |          |       |
| 613.00 > 569.00                  | 4.353 | 4.370  | -0.017 | 1.000  | 32927149 | 337.8        |                 | 84.5 | 44886    |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |          | M     |
| 663.00 > 619.00                  | 4.610 | 4.636  | -0.026 | 1.000  | 34277350 | 320.0        |                 | 80.0 | 59163    | M     |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |          |       |
| 715.00 > 670.00                  | 4.860 | 4.882  | -0.022 |        | 10396514 | 43.0         |                 | 86.0 | 969333   |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |          |       |
| 712.50 > 668.90                  | 4.860 | 4.884  | -0.024 | 1.000  | 50372831 | 253.2        |                 | 63.3 | 26628    |       |
| 713.00 > 169.00                  | 4.851 | 4.884  | -0.033 | 0.998  | 12426058 |              | 4.05(0.00-0.00) | 63.3 | 473842   |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |          |       |
| 815.00 > 770.00                  | 5.300 | 5.320  | -0.020 |        | 6001714  | 46.0         |                 | 92.1 | 121116   |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |          |       |
| 813.00 > 769.00                  | 5.300 | 5.320  | -0.020 | 1.000  | 35113710 | 345.4        |                 | 86.3 | 34228    |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |          |       |
| 913.00 > 869.00                  | 5.682 | 5.720  | -0.038 | 1.000  | 31098706 | 384.1        |                 | 96.0 | 54097    |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## Reagents:

LCPFC-L7\_00019

Amount Added: 1.00

Units: mL



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_010.d

Injection Date: 02-Dec-2016 11:14:32

Instrument ID: A8\_N

Lims ID: IC L7

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 43

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

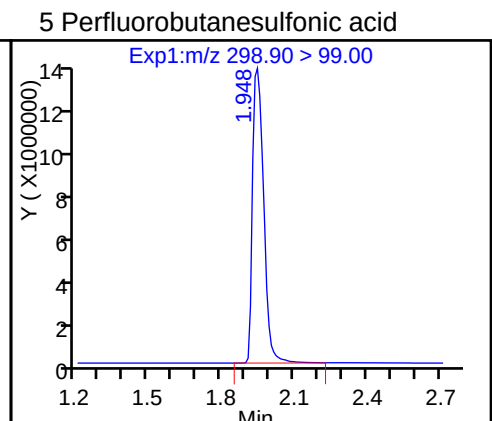
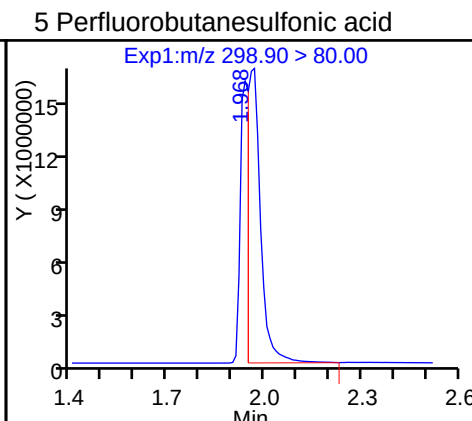
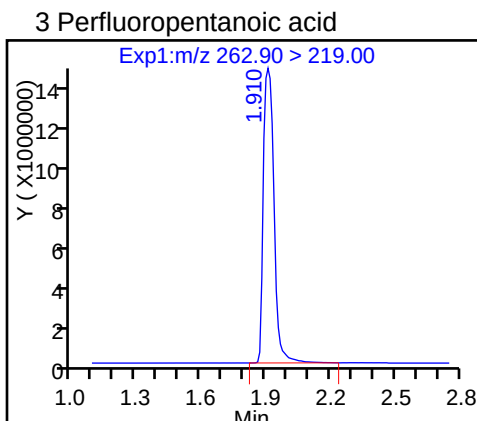
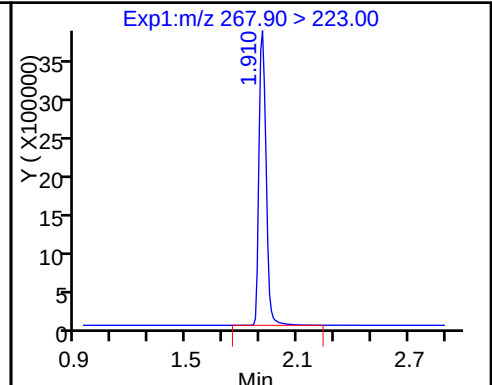
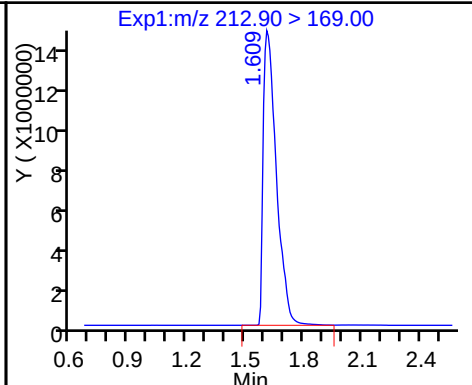
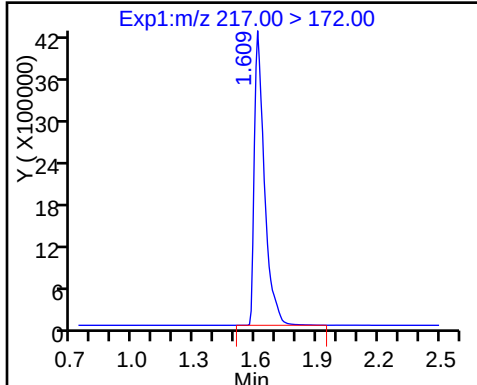
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

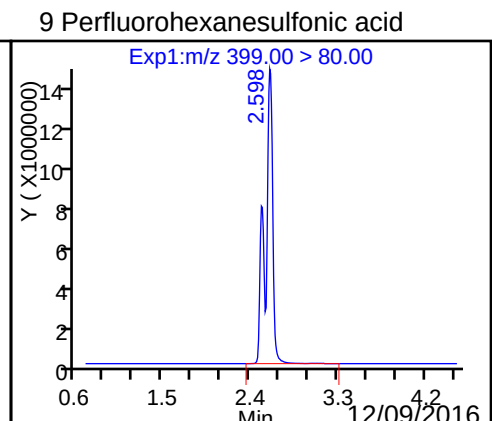
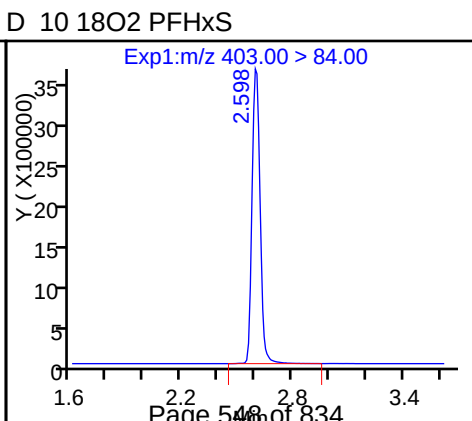
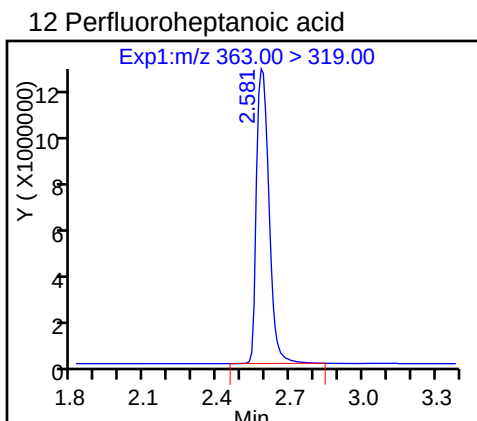
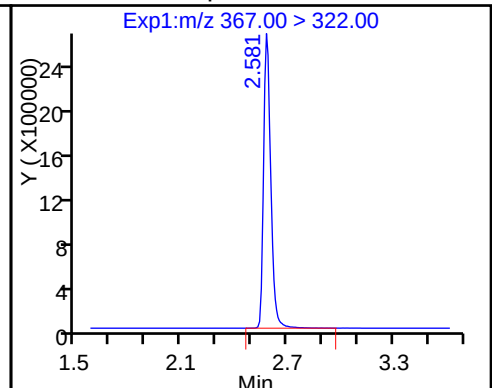
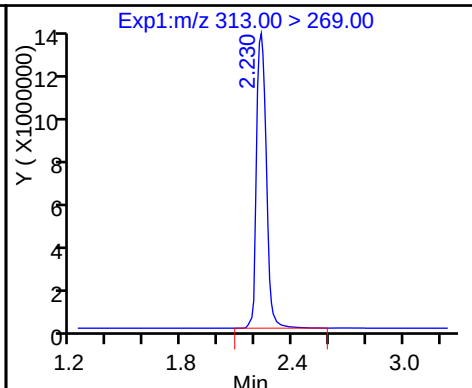
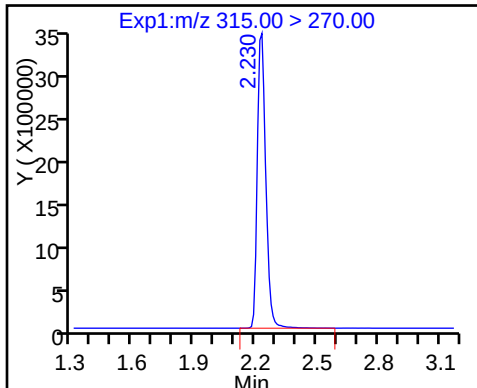
D 4 13C5-PFPeA

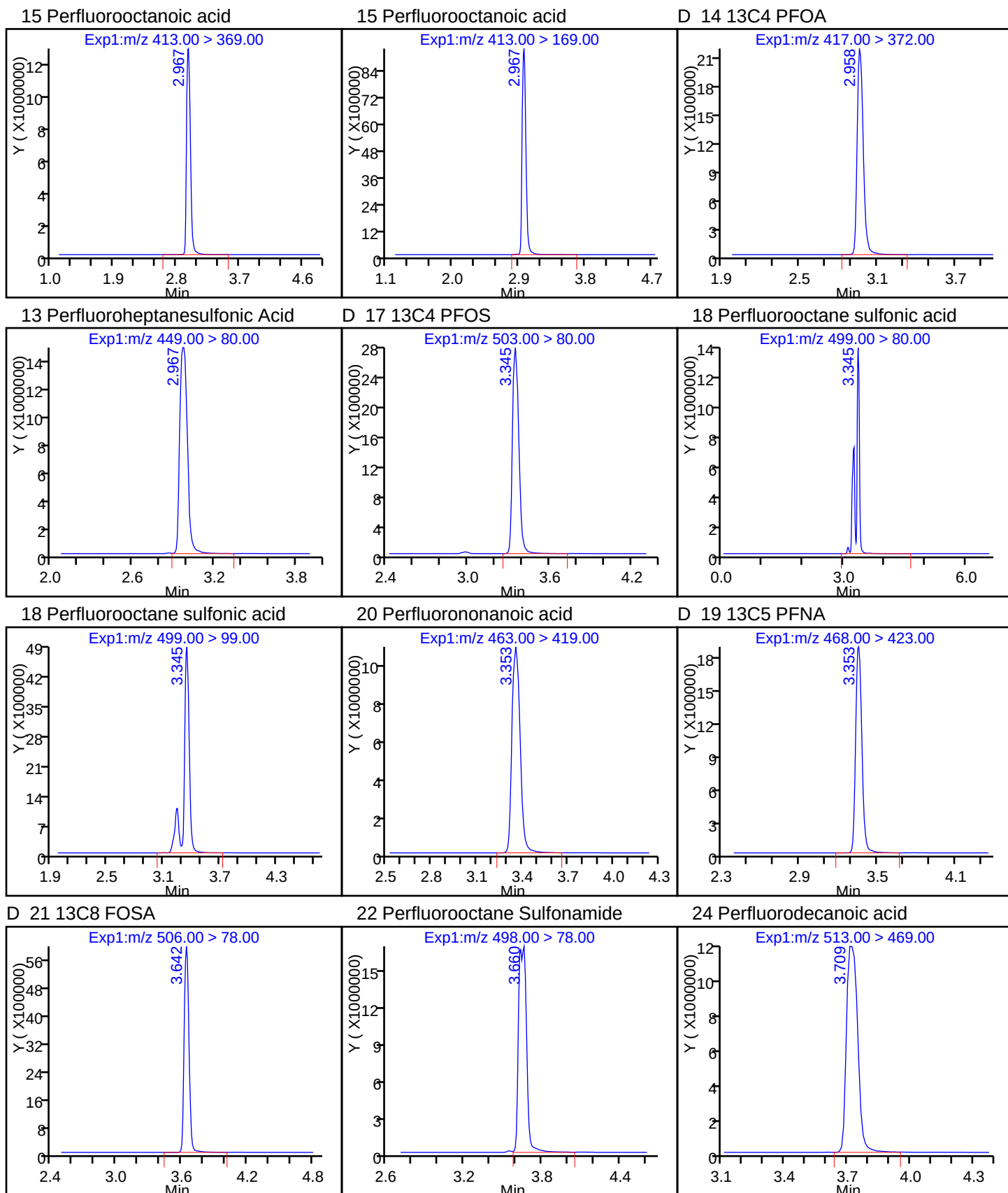


D 6 13C2 PFHxA

7 Perfluorohexanoic acid

D 11 13C4-PFHpA

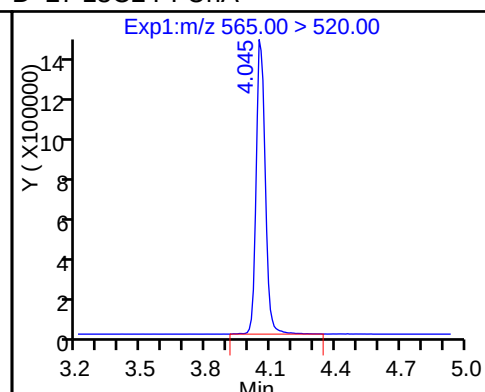
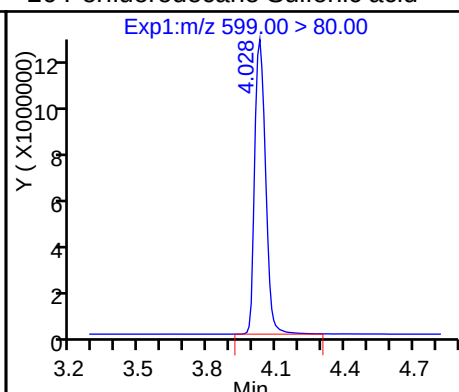
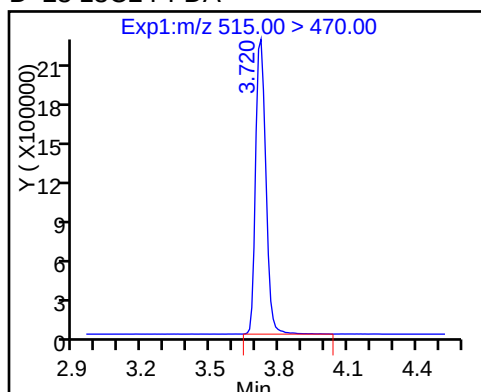




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

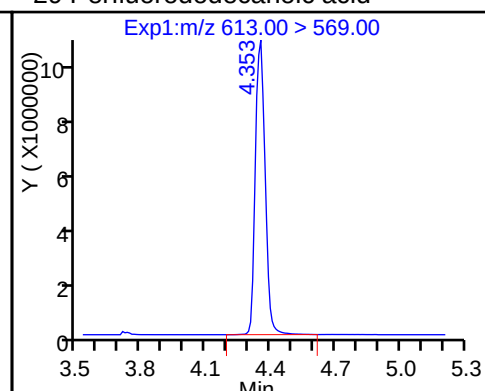
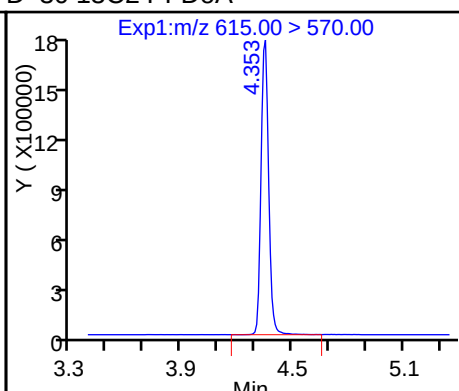
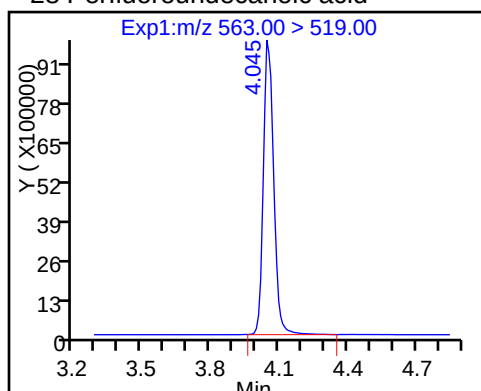
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

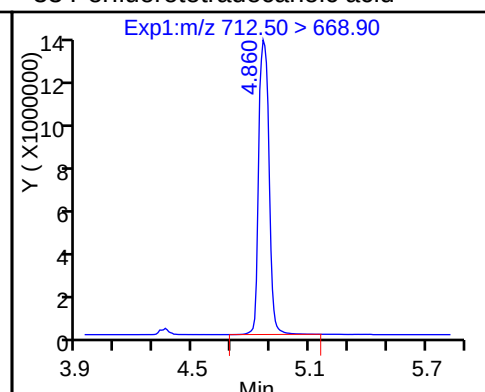
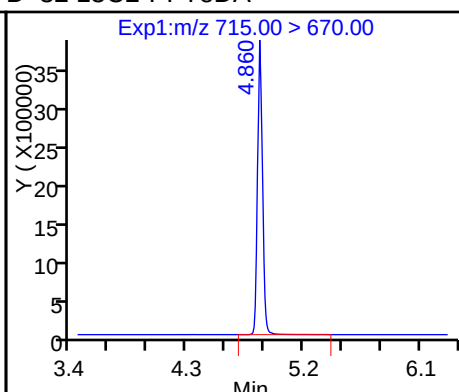
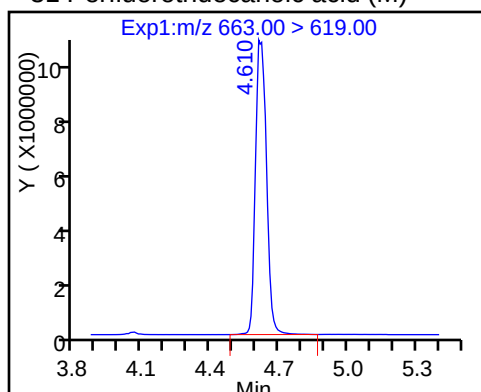
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid (M)

D 32 13C2-PFTeDA

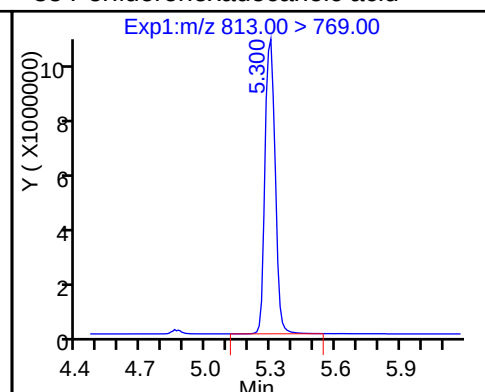
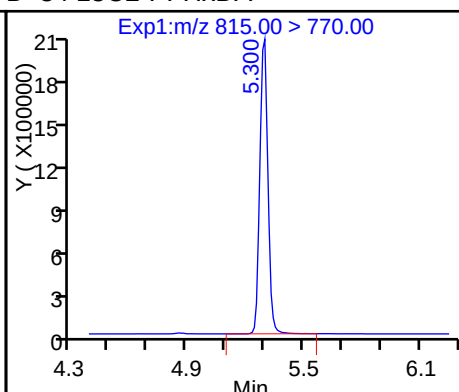
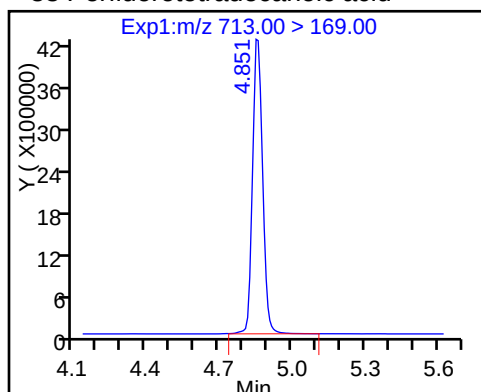
33 Perfluorotetradecanoic acid



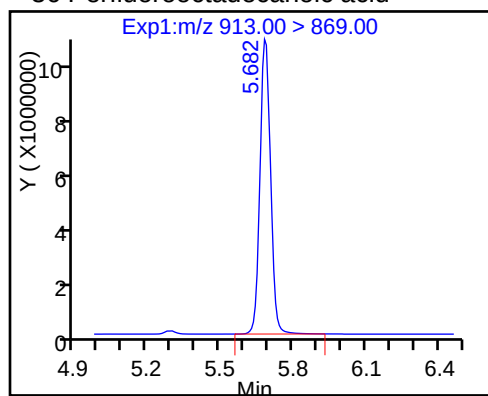
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



## TestAmerica Sacramento

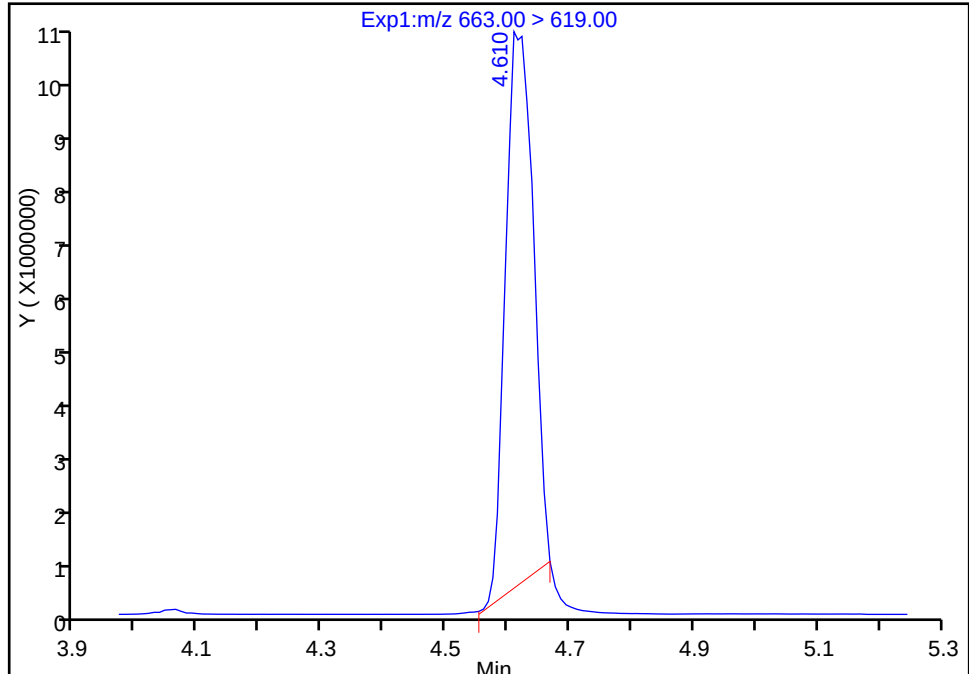
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_010.d  
Injection Date: 02-Dec-2016 11:14:32 Instrument ID: A8\_N  
Lims ID: IC L7  
Client ID:  
Operator ID: A8-PC\A8 ALS Bottle#: 43 Worklist Smp#: 10  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**31 Perfluorotridecanoic acid, CAS: 72629-94-8**

Signal: 1

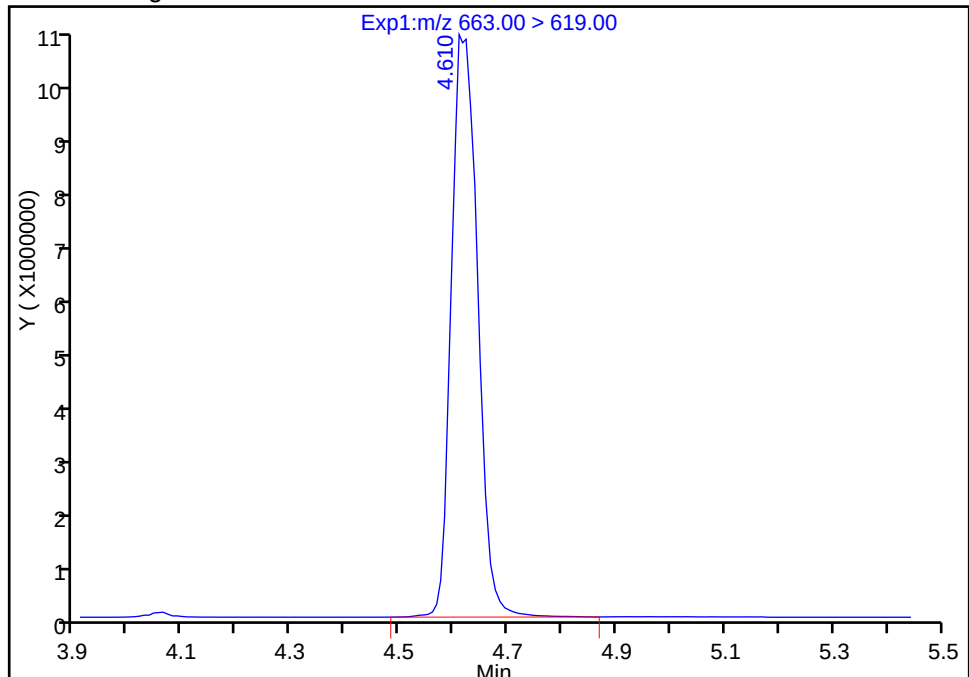
RT: 4.61  
Area: 30068675  
Amount: 293.1955  
Amount Units: ng/ml

## Processing Integration Results



RT: 4.61  
Area: 34277350  
Amount: 319.9934  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 02-Dec-2016 13:42:13

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_014.d  
 Lims ID: IC L1 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 1  
 Inject. Date: 02-Dec-2016 11:44:30 ALS Bottle#: 46 Worklist Smp#: 14  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L1 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:52:41 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:56:57

| Signal                                | RT              | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.909  | 2.913  | -0.004 | 1.000    | 51838        | 0.4953        | 104  |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.925  | 2.915  | 0.010  |          | 5925112      | 42.5          | 89.6 |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.668  | 3.674  | -0.006 | 0.997    | 44037        | 0.4434        | 92.6 |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.678  | 3.676  | 0.002  |          | 5634375      | 42.2          | 88.1 |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.843  | 3.839  | 0.004  |          | 3880040      | 48.5          | 97.0 |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.851  | 3.847  | 0.004  | 1.002    | 30895        | 0.4583        | 91.7 |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 4.011  | 4.009  | 0.002  |          | 4464530      | 50.1          | 100  |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 4.020  | 4.016  | 0.004  | 1.002    | 30016        | 0.4382        | 87.6 |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.108  | 4.105  | 0.003  |          | 4681022      | 44.0          | 88.0 |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.115  | 4.110  | 0.005  | 1.000    | 37277        | 0.5000        | 100  |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.293  | 4.290  | 0.003  |          | 4329074      | 42.5          | 85.0 |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.293  | 4.299  | -0.006 | 1.000    | 35535        | 0.4830        | 96.6 |     |       |

**Reagents:**

LCPFC2-L1\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_014.d

Injection Date: 02-Dec-2016 11:44:30

Instrument ID: A8\_N

Lims ID: IC L1 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 46

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

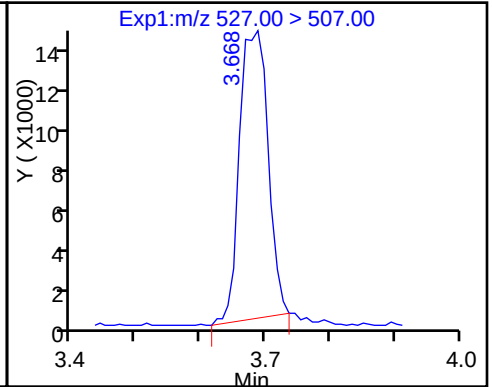
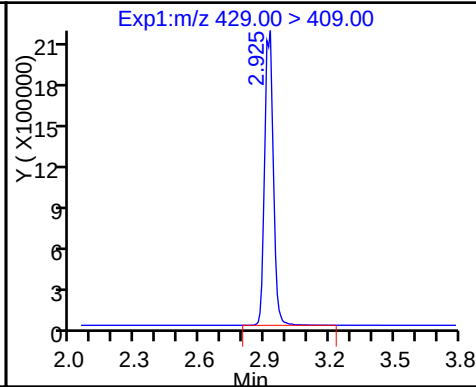
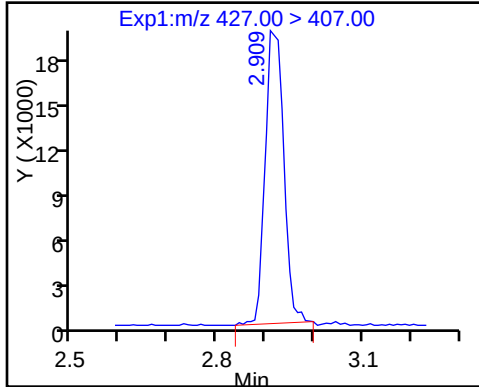
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 47 M2-6:2FTS

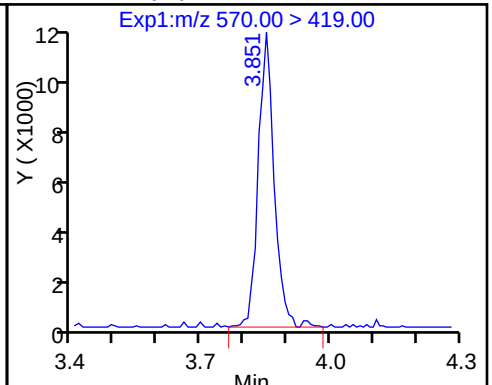
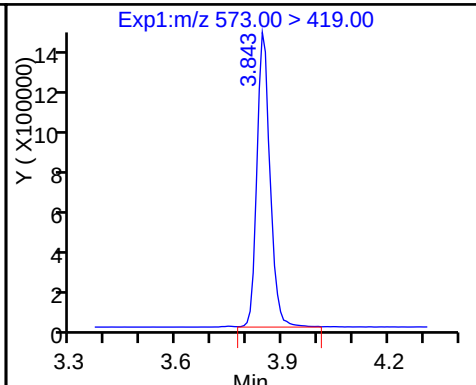
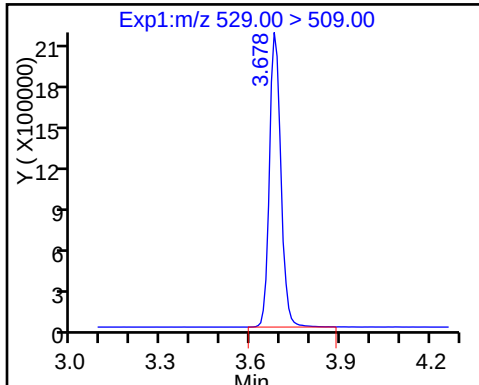
43 Sodium 1H,1H,2H,2H-perfluorooctanoate



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

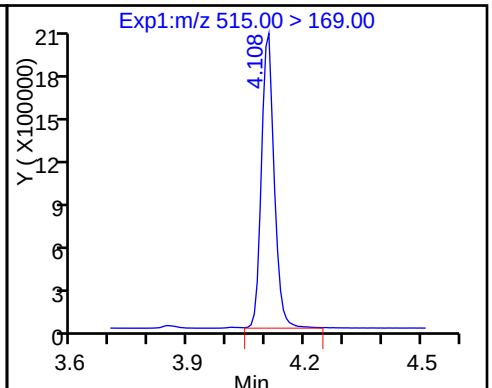
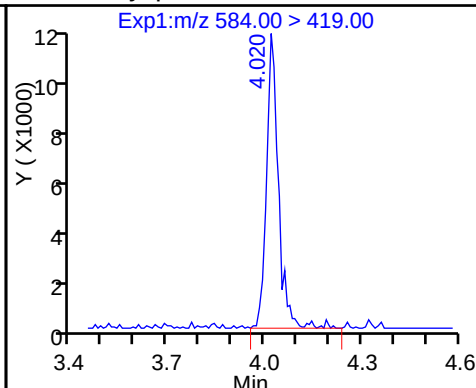
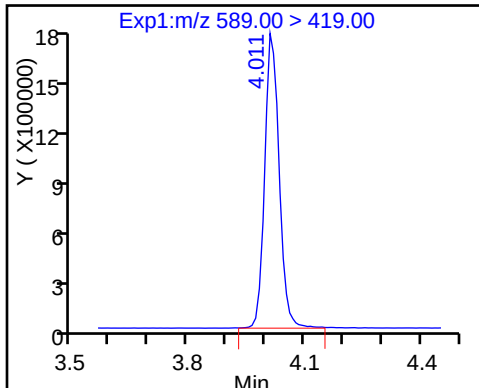
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

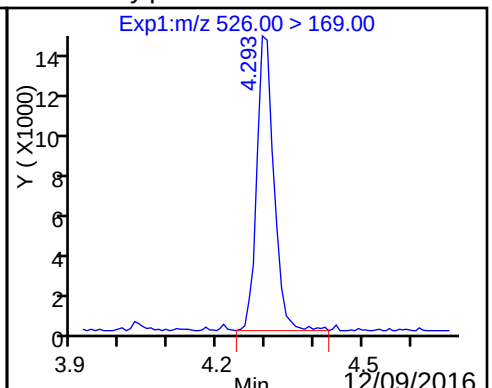
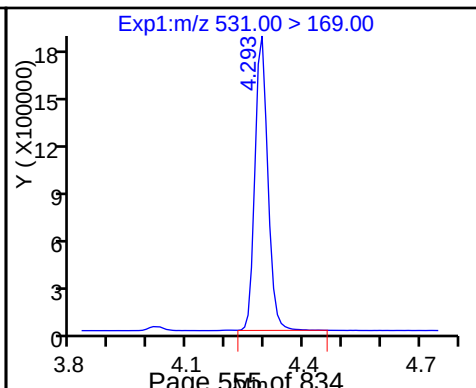
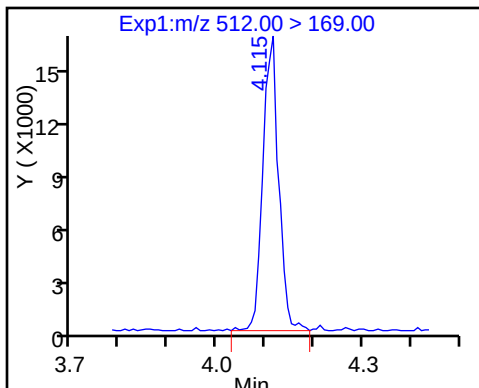
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami







TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_015.d  
 Lims ID: IC L2 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 2  
 Inject. Date: 02-Dec-2016 11:52:00 ALS Bottle#: 47 Worklist Smp#: 15  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L2 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:52:42 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:57:07

| Signal                                | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.920     | 2.913     | 0.007     | 1.000    | 88396           | 0.8738        | 92.2 |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.912     | 2.915     | -0.003    |          | 5726516         | 41.1          | 86.6 |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.684     | 3.674     | 0.010     | 1.000    | 94573           | 1.03          | 107  |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.684     | 3.676     | 0.008     |          | 5213436         | 39.1          | 81.5 |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.848     | 3.839     | 0.009     |          | 3606216         | 45.1          | 90.2 |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.857     | 3.847     | 0.010     | 1.002    | 59295           | 0.9465        | 94.6 |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 4.017     | 4.009     | 0.008     |          | 4134123         | 46.4          | 92.8 |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 4.026     | 4.016     | 0.010     | 1.002    | 56004           | 0.8830        | 88.3 |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.106     | 4.105     | 0.001     |          | 5181881         | 48.7          | 97.5 |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.114     | 4.110     | 0.004     | 1.000    | 73327           | 0.8885        | 88.8 |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.292     | 4.290     | 0.002     |          | 5048951         | 49.5          | 99.1 |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.301     | 4.299     | 0.002     | 1.000    | 78846           | 0.9189        | 91.9 |     |       |

**Reagents:**

LCPFC2-L2\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_015.d

Injection Date: 02-Dec-2016 11:52:00

Instrument ID: A8\_N

Lims ID: IC L2 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#:

47

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

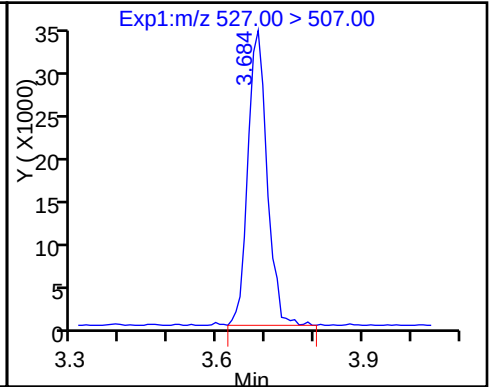
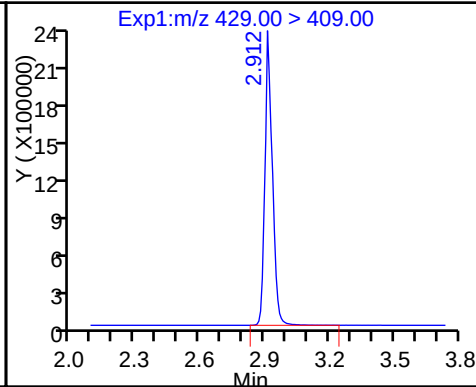
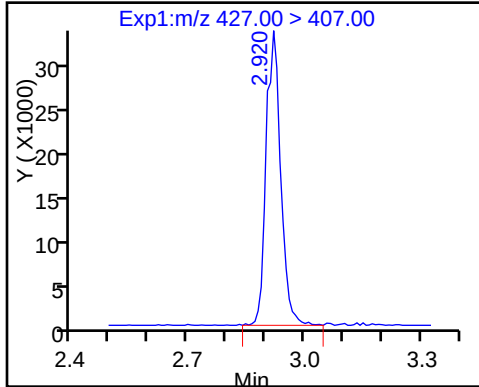
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane

D 47 M2-6:2FTS

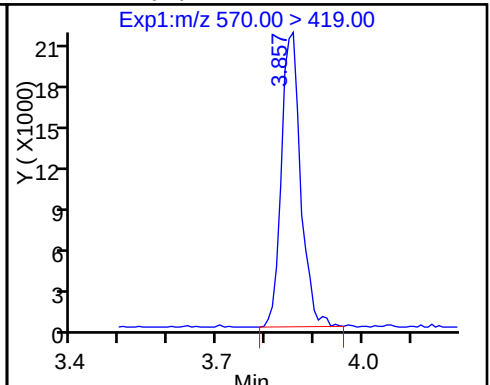
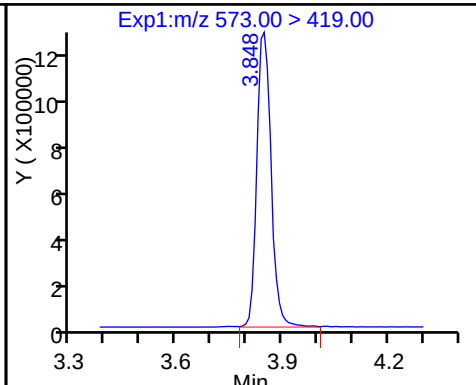
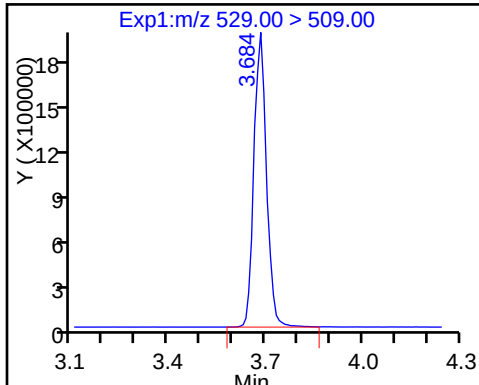
43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

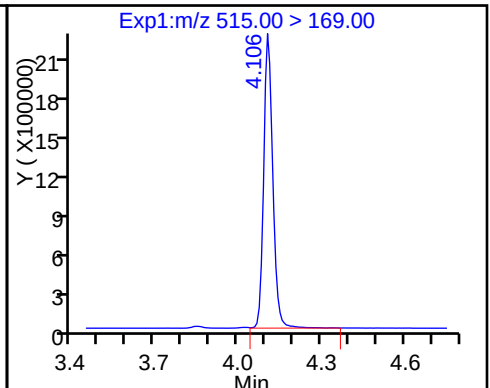
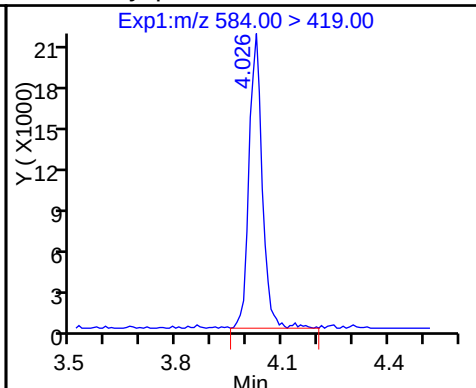
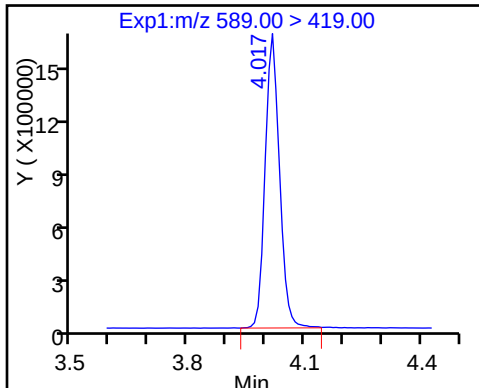
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

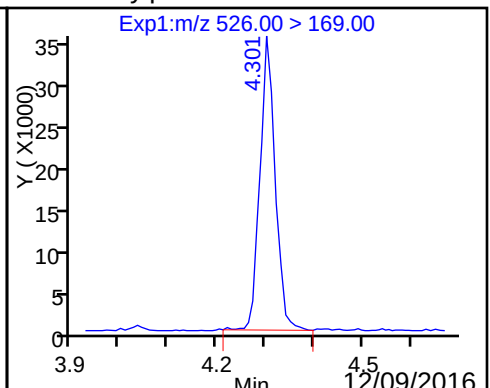
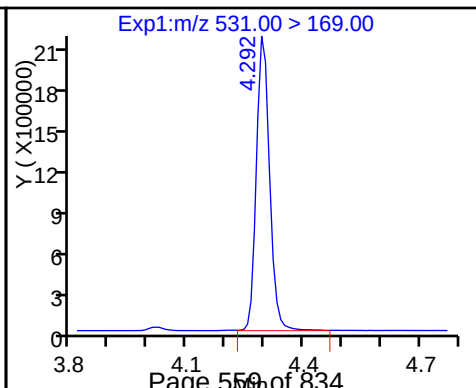
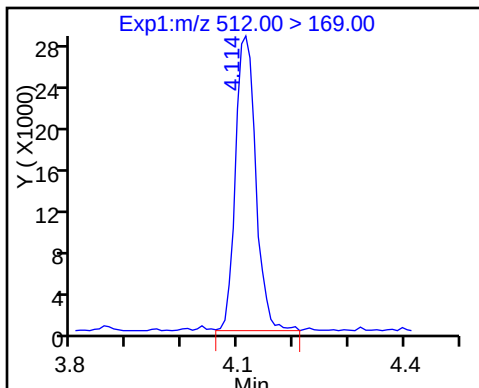
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami





TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_016.d  
 Lims ID: IC L3 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 3  
 Inject. Date: 02-Dec-2016 11:59:31 ALS Bottle#: 48 Worklist Smp#: 16  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L3 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:52:44 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:57:18

| Signal                                | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.910     | 2.913     | -0.003    | 1.000    | 492719          | 4.19          | 88.4 |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.918     | 2.915     | 0.003     |          | 6658764         | 47.8          | 101  |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.673     | 3.674     | -0.001    | 1.000    | 431909          | 4.10          | 85.7 |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.673     | 3.676     | -0.003    |          | 5971752         | 44.7          | 93.4 |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.838     | 3.839     | -0.001    |          | 4140205         | 51.8          | 104  |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.847     | 3.847     | 0.0       | 1.002    | 289882          | 4.03          | 80.6 |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 4.006     | 4.009     | -0.003    |          | 4489327         | 50.4          | 101  |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 4.015     | 4.016     | -0.001    | 1.002    | 283960          | 4.12          | 82.5 |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.104     | 4.105     | -0.001    |          | 5362314         | 50.4          | 101  |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.104     | 4.110     | -0.006    | 1.000    | 360259          | 4.22          | 84.4 |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.287     | 4.290     | -0.003    |          | 5205212         | 51.1          | 102  |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.297     | 4.299     | -0.002    | 1.000    | 365734          | 4.13          | 82.7 |     |       |

**Reagents:**

LCPFC2-L3\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_016.d

Injection Date: 02-Dec-2016 11:59:31

Instrument ID: A8\_N

Lims ID: IC L3 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 48

Worklist Smp#: 16

Injection Vol: 2.0 ul

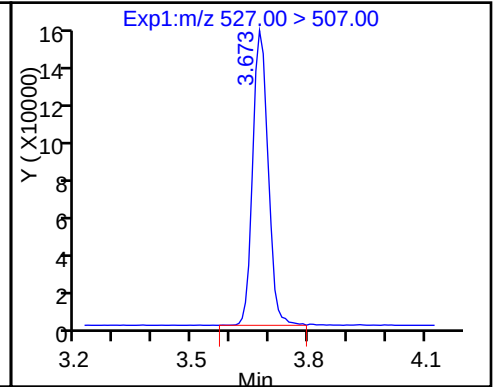
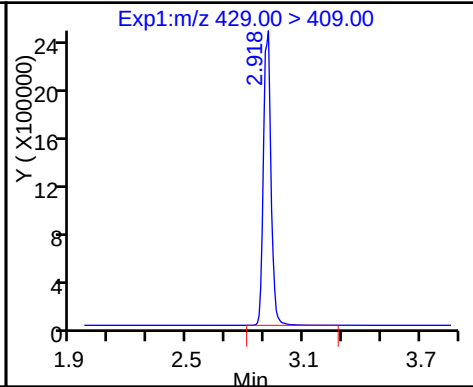
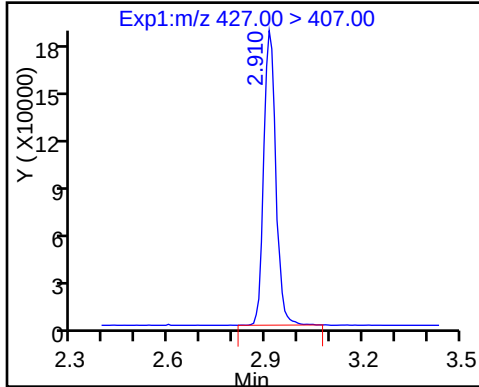
Dil. Factor: 1.0000

Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate

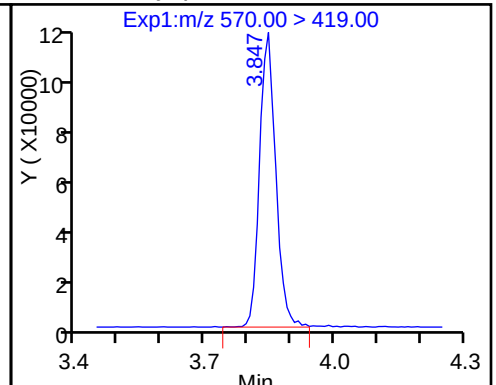
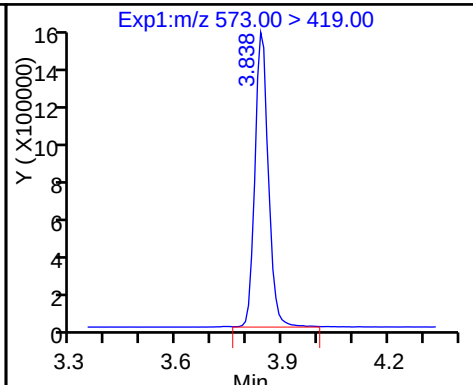
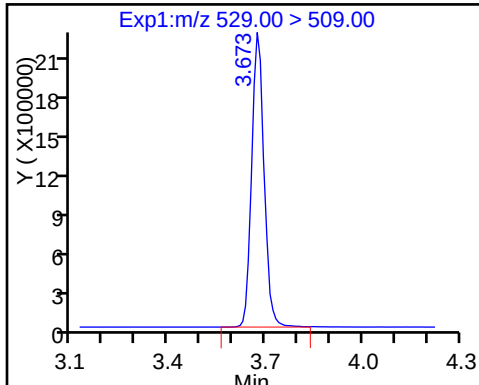
43 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate



D 42 M2-8:2FTS

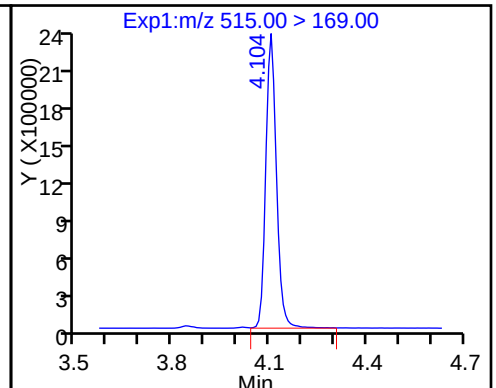
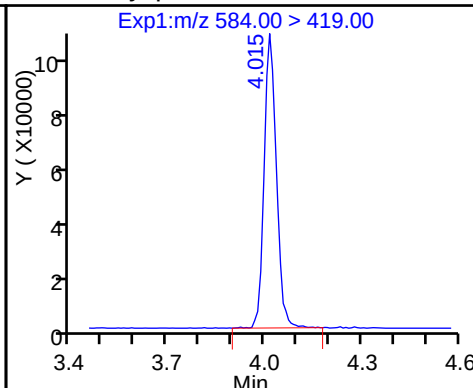
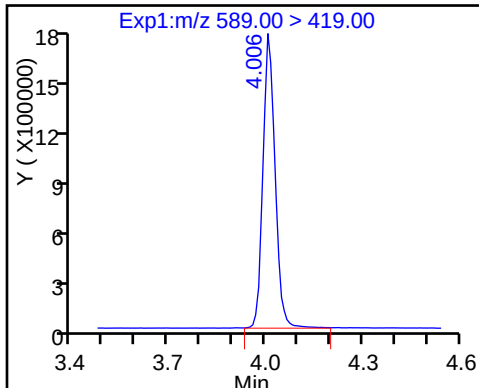
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

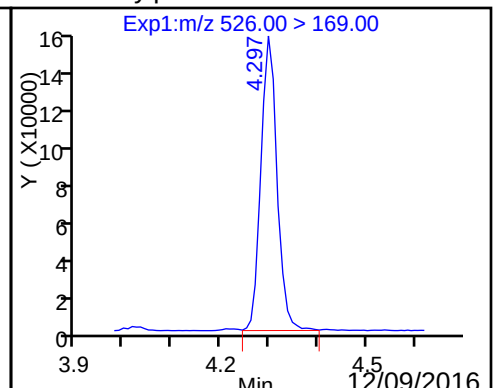
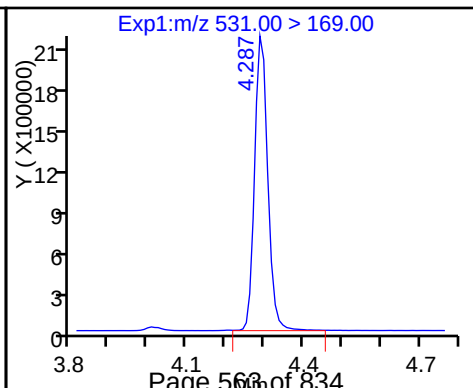
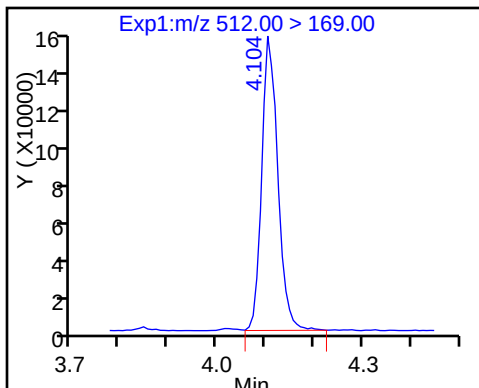
49 N-ethyl perfluorooctane sulfonamide D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide







TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_017.d  
 Lims ID: IC L4 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 4  
 Inject. Date: 02-Dec-2016 12:07:00 ALS Bottle#: 49 Worklist Smp#: 17  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L4 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:52:46 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:56:04

| Signal                                | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.914     | 2.913     | 0.001     | 1.000    | 2900008         | 20.8          | 110  |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.906     | 2.915     | -0.009    |          | 7906261         | 56.8          | 120  |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.678     | 3.674     | 0.004     | 1.000    | 2799477         | 21.5          | 112  |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.678     | 3.676     | 0.002     |          | 7389674         | 55.4          | 116  |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.843     | 3.839     | 0.004     |          | 4953346         | 61.9          | 124  |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.843     | 3.847     | -0.004    | 1.000    | 1829869         | 21.3          | 106  |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 4.011     | 4.009     | 0.002     |          | 5242030         | 58.9          | 118  |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 4.011     | 4.016     | -0.005    | 1.000    | 1881436         | 23.4          | 117  |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.104     | 4.105     | -0.001    |          | 5889991         | 55.4          | 111  |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.112     | 4.110     | 0.002     | 1.000    | 2129108         | 22.7          | 113  |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.293     | 4.290     | 0.003     |          | 5611197         | 55.1          | 110  |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.302     | 4.299     | 0.003     | 1.000    | 2187091         | 22.9          | 115  |     |       |

**Reagents:**

LCPFC2-L4\_00003

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_017.d

Injection Date: 02-Dec-2016 12:07:00

Instrument ID: A8\_N

Lims ID: IC L4 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 49

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

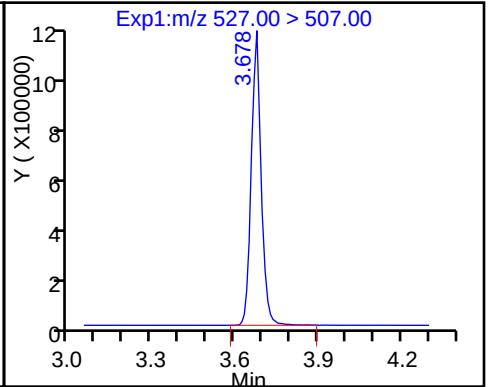
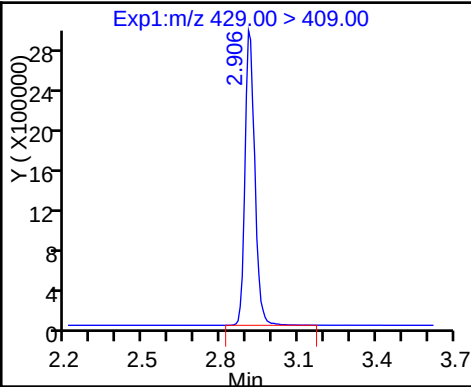
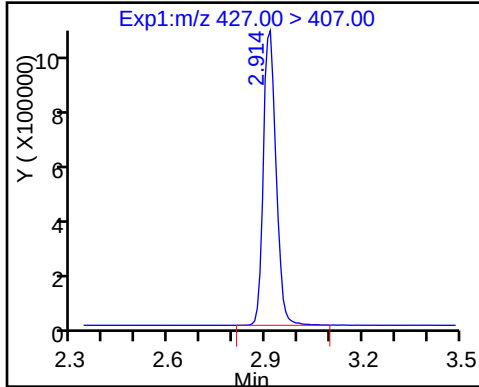
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate

D 47 M2-6:2FTS

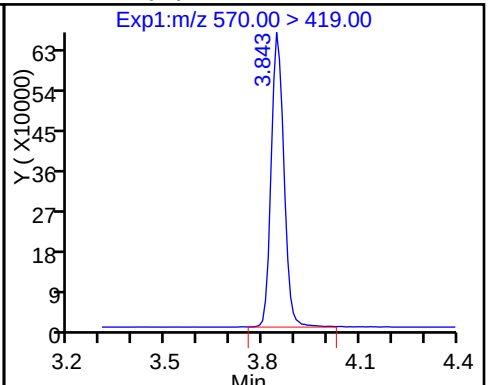
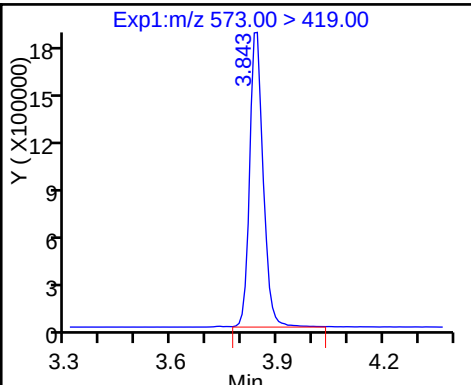
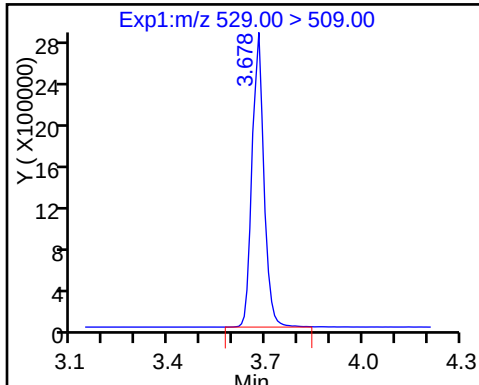
43 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

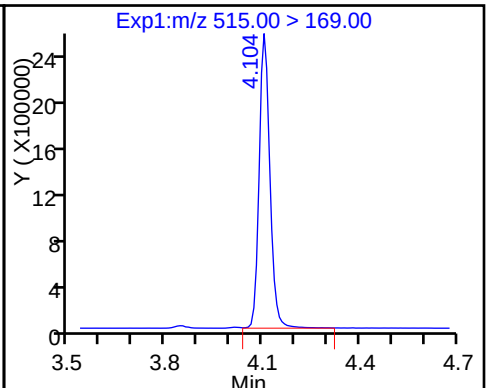
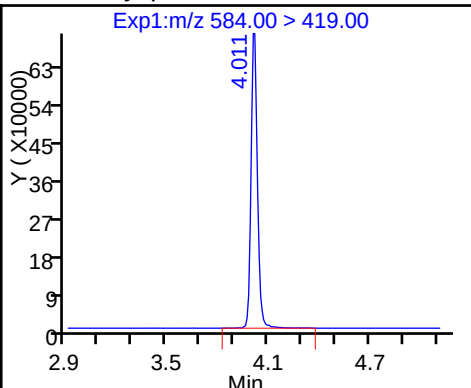
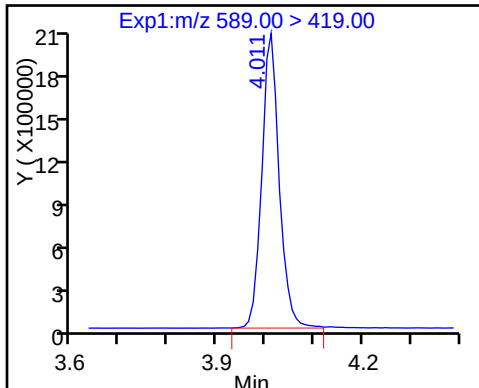
44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamide

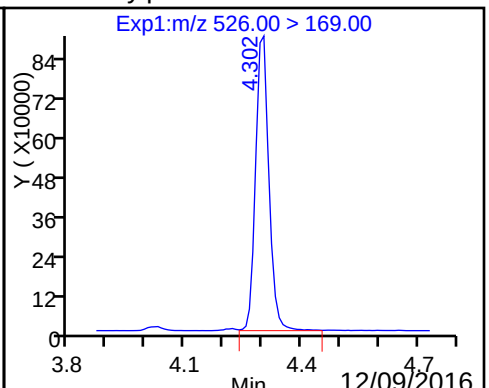
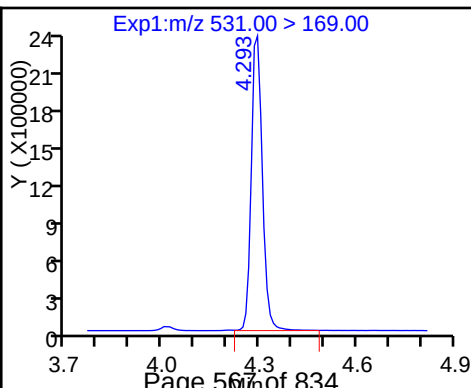
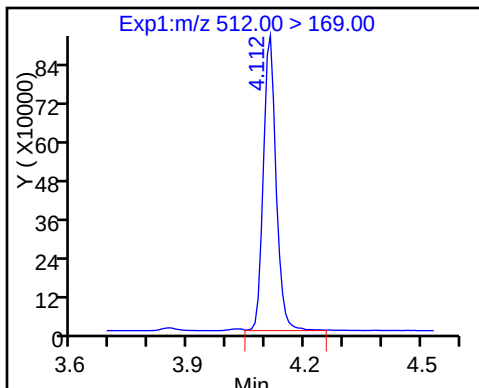
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide





TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_018.d  
 Lims ID: IC L5 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 5  
 Inject. Date: 02-Dec-2016 12:14:30 ALS Bottle#: 50 Worklist Smp#: 18  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L5 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:52:47 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:57:38

| Signal                                | RT              | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.919  | 2.913  | 0.006  | 1.000    | 5633441      | 57.1          | 120  |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.911  | 2.915  | -0.004 |          | 5586093      | 40.1          | 84.4 |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.674  | 3.674  | 0.0    | 1.000    | 5753486      | 55.8          | 116  |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.674  | 3.676  | -0.002 |          | 5851766      | 43.8          | 91.5 |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.839  | 3.839  | 0.0    |          | 3442292      | 43.0          | 86.1 |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.847  | 3.847  | 0.0    | 1.002    | 3696988      | 61.8          | 124  |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 4.007  | 4.009  | -0.002 |          | 3869672      | 43.4          | 86.9 |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 4.016  | 4.016  | 0.0    | 1.002    | 3546696      | 59.7          | 119  |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.100  | 4.105  | -0.005 |          | 4967092      | 46.7          | 93.4 |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.108  | 4.110  | -0.002 | 1.000    | 4836683      | 61.1          | 122  |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.285  | 4.290  | -0.005 |          | 4857179      | 47.7          | 95.3 |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.295  | 4.299  | -0.004 | 1.000    | 5044937      | 61.1          | 122  |     |       |

**Reagents:**

LCPFC2-L5\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_018.d

Injection Date: 02-Dec-2016 12:14:30

Instrument ID: A8\_N

Lims ID: IC L5 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 50

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

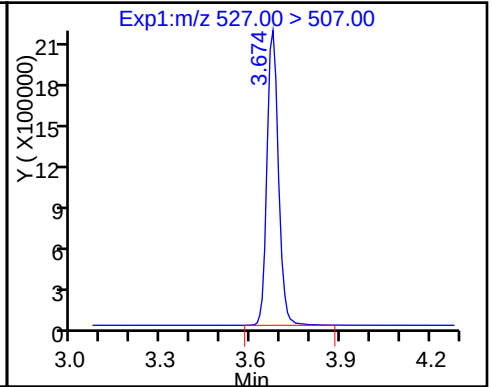
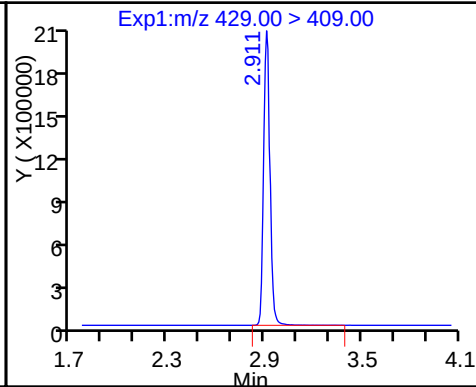
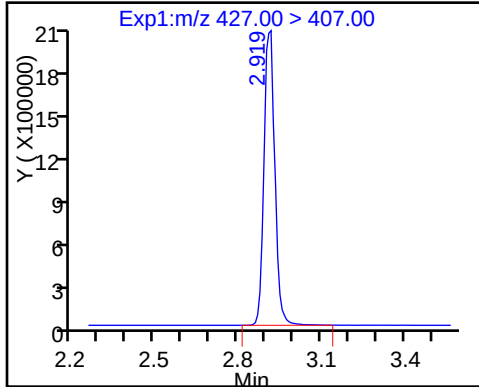
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate

D 47 M2-6:2FTS

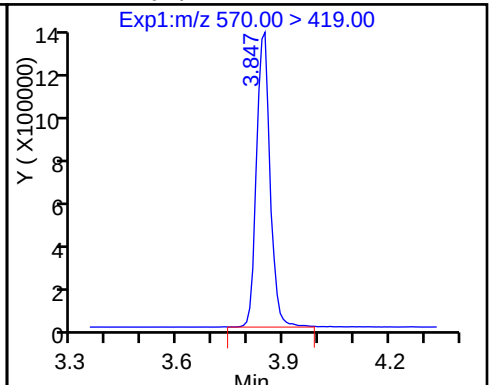
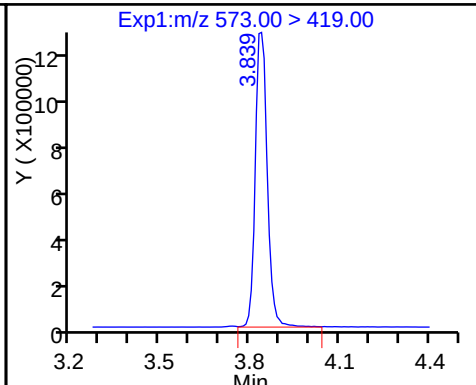
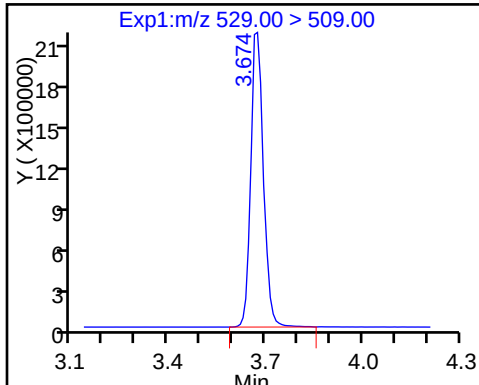
43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

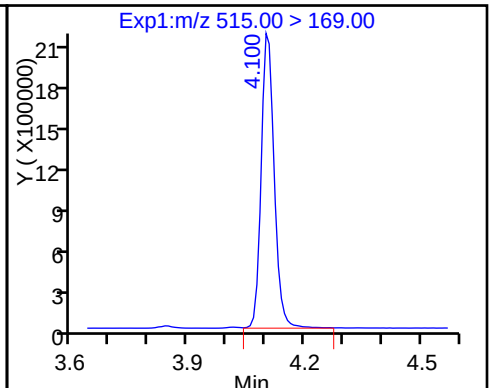
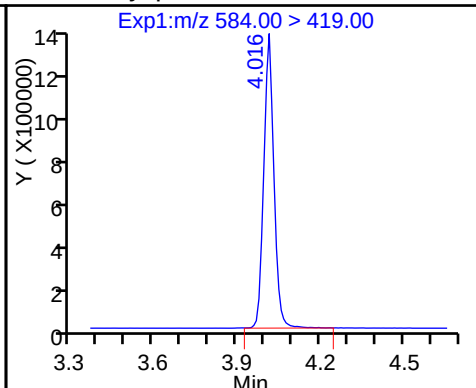
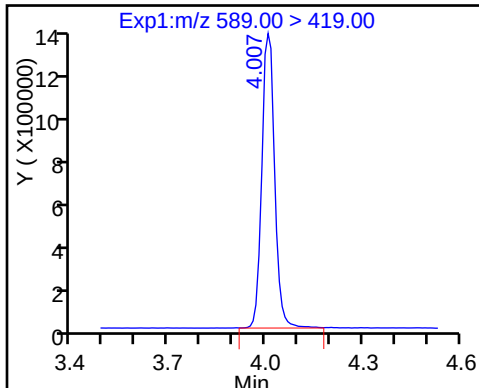
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

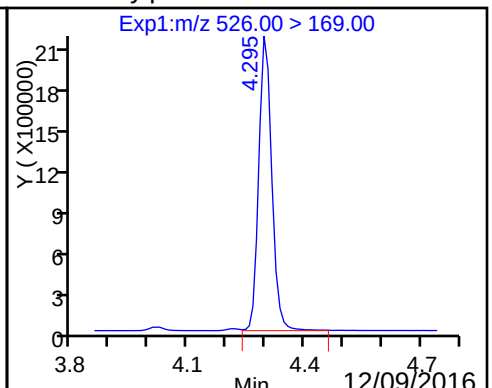
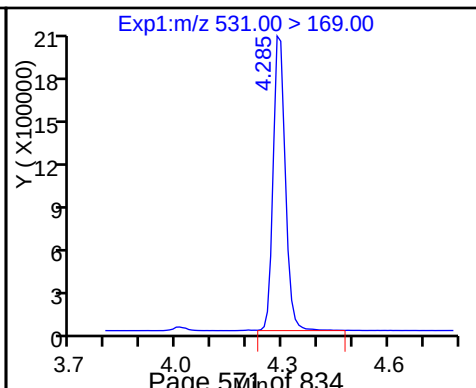
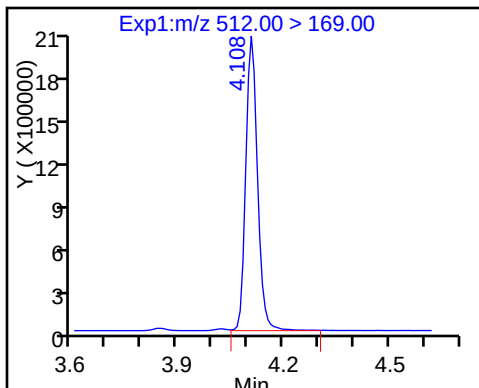
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami







TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_019.d  
 Lims ID: IC L6 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 6  
 Inject. Date: 02-Dec-2016 12:22:00 ALS Bottle#: 51 Worklist Smp#: 19  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L6 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:52:49 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:57:48

| Signal                                | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.904     | 2.913     | -0.009    | 1.000    | 20031946        | 169.7         | 89.5 |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.912     | 2.915     | -0.003    |          | 6682949         | 48.0          | 101  |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.667     | 3.674     | -0.007    | 1.000    | 19463965        | 164.3         | 85.7 |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.667     | 3.676     | -0.009    |          | 6721067         | 50.3          | 105  |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.824     | 3.839     | -0.015    |          | 4016571         | 50.2          | 100  |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.832     | 3.847     | -0.015    | 1.002    | 13773335        | 197.4         | 98.7 |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 4.000     | 4.009     | -0.009    |          | 4474975         | 50.2          | 100  |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 4.009     | 4.016     | -0.007    | 1.002    | 14065497        | 204.9         | 102  |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.102     | 4.105     | -0.003    |          | 4927555         | 46.3          | 92.7 |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.102     | 4.110     | -0.008    | 1.000    | 15814534        | 201.5         | 101  |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.286     | 4.290     | -0.004    |          | 4696896         | 46.1          | 92.2 |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.296     | 4.299     | -0.003    | 1.000    | 16550291        | 207.3         | 104  |     |       |

**Reagents:**

LCPFC2-L6\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_019.d

Injection Date: 02-Dec-2016 12:22:00

Instrument ID: A8\_N

Lims ID: IC L6 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 51

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

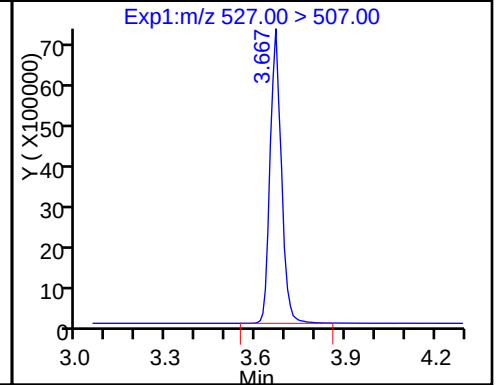
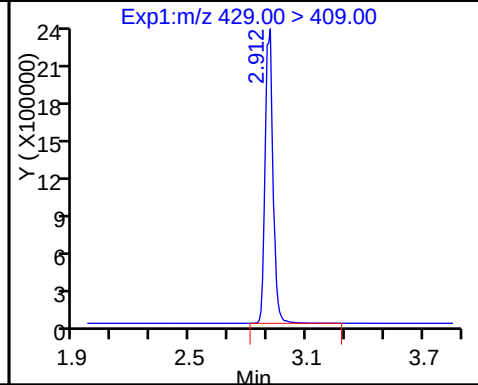
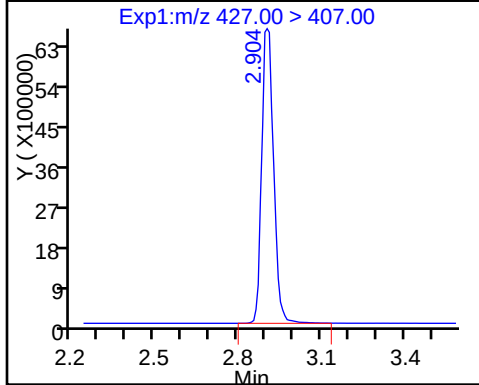
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane

D 47 M2-6:2FTS

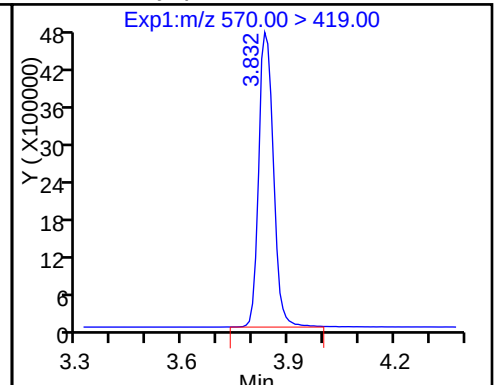
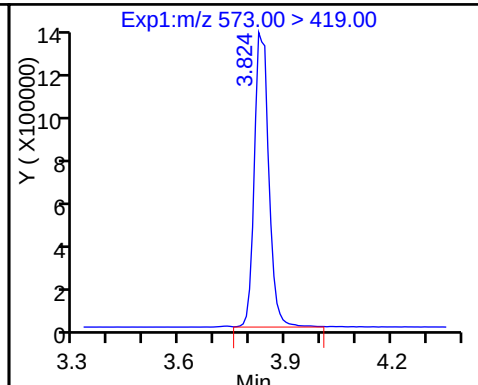
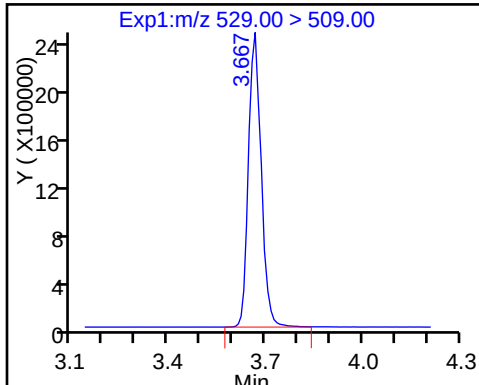
43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

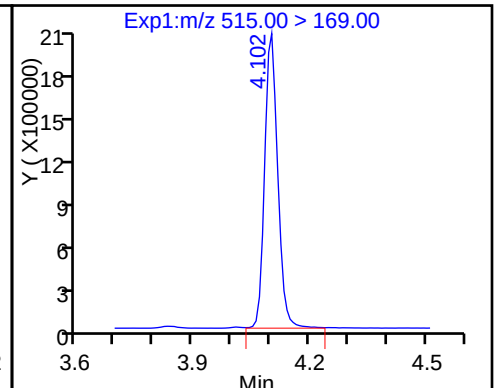
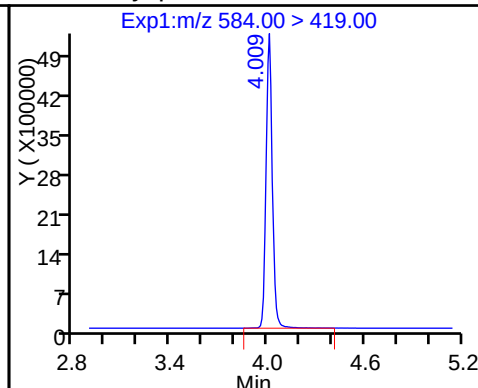
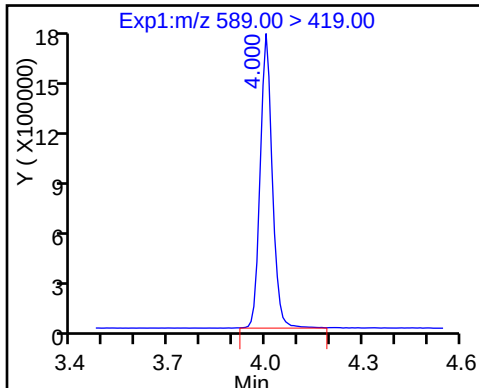
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

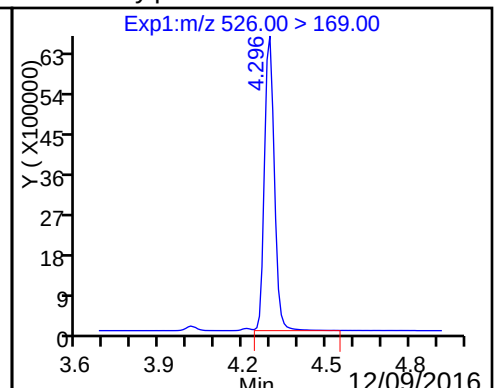
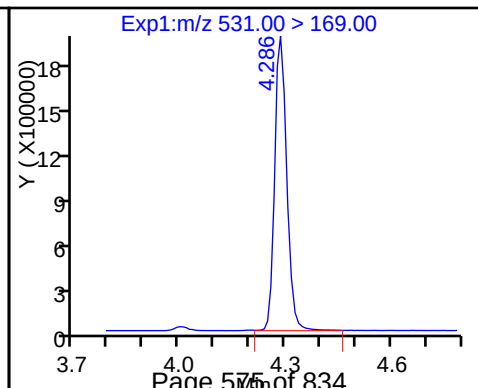
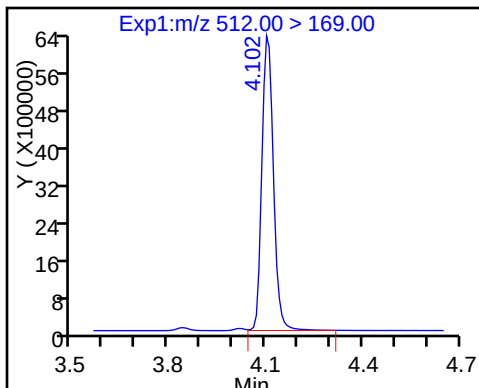
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami





TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Lims ID: IC L7 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 7  
 Inject. Date: 02-Dec-2016 12:29:29 ALS Bottle#: 52 Worklist Smp#: 20  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L7 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 14:52:50 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK011

First Level Reviewer: chandrasenas

Date: 02-Dec-2016 13:58:03

| Signal                                | RT              | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.917  | 2.913  | 0.004  | 1.000    | 37224925     | 269.4         | 71.0 |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.917  | 2.915  | 0.002  |          | 7823475      | 56.2          | 118  |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.676  | 3.674  | 0.002  | 1.000    | 37119838     | 263.9         | 68.9 |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.676  | 3.676  | 0.0    |          | 7980965      | 59.8          | 125  |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.841  | 3.839  | 0.002  |          | 3959155      | 49.5          | 99.0 |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.849  | 3.847  | 0.002  | 1.002    | 28724886     | 417.6         | 104  |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 4.009  | 4.009  | 0.0    |          | 4497788      | 50.5          | 101  |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 4.018  | 4.016  | 0.002  | 1.002    | 28356327     | 410.9         | 103  |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.110  | 4.105  | 0.005  |          | 6208758      | 58.4          | 117  |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.118  | 4.110  | 0.008  | 1.000    | 35701676     | 361.0         | 90.3 |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.299  | 4.290  | 0.009  |          | 5918873      | 58.1          | 116  |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.309  | 4.299  | 0.010  | 1.000    | 35493503     | 352.9         | 88.2 |     |       |

**Reagents:**

LCPFC2-L7\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Injection Date: 02-Dec-2016 12:29:29

Instrument ID: A8\_N

Lims ID: IC L7 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 52

Worklist Smp#: 20

Injection Vol: 2.0 ul

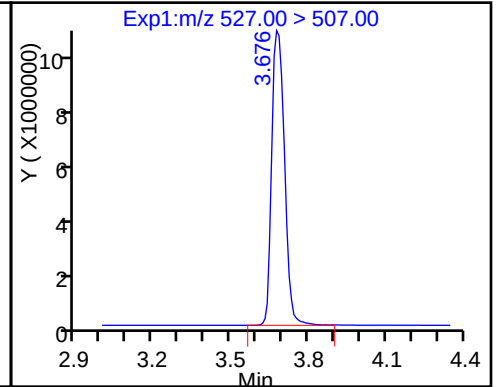
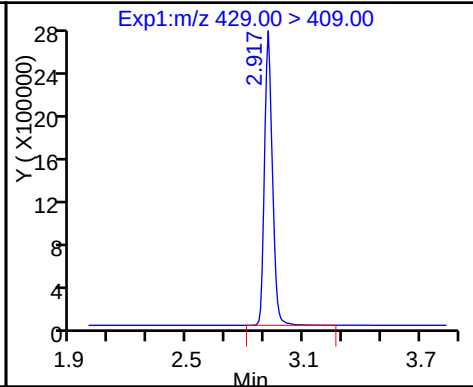
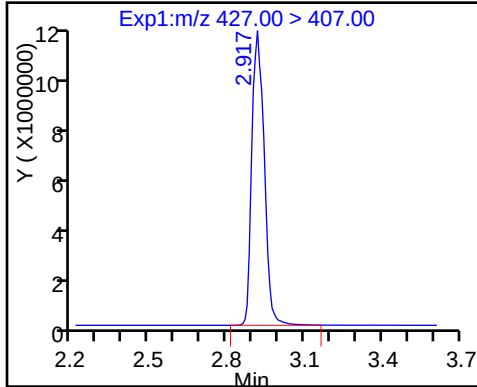
Dil. Factor: 1.0000

Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane-6-ol

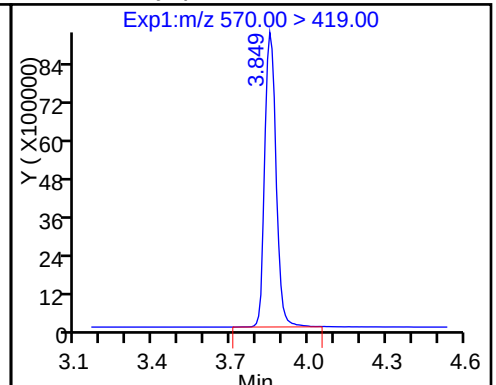
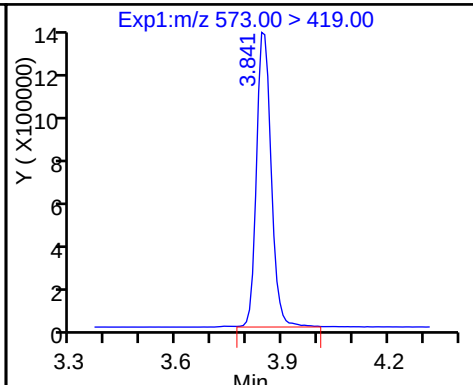
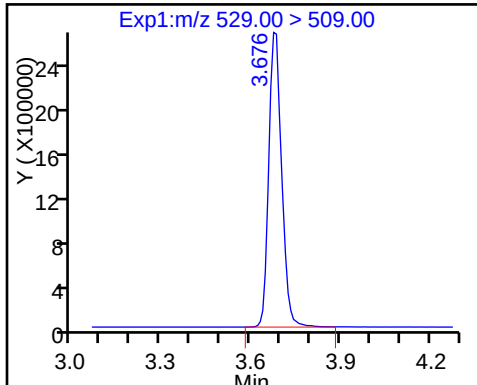
43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

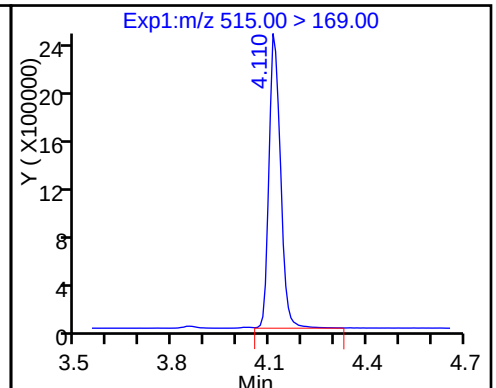
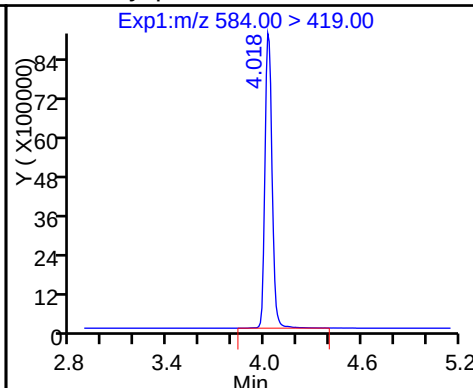
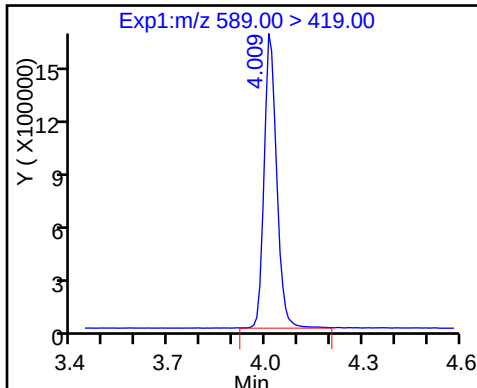
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

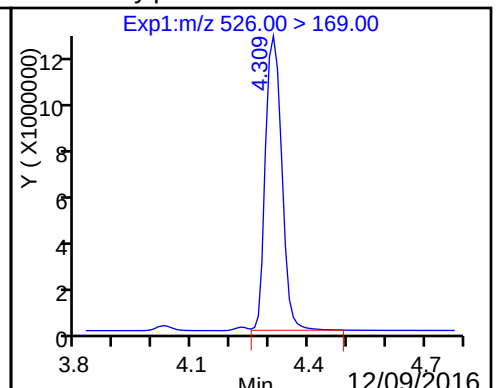
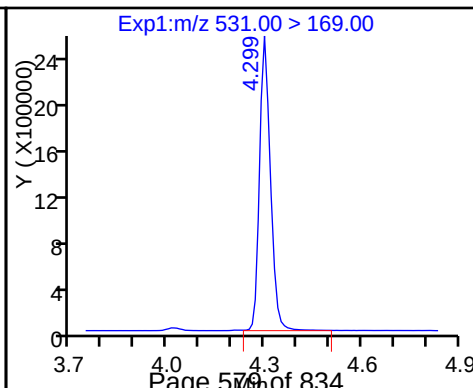
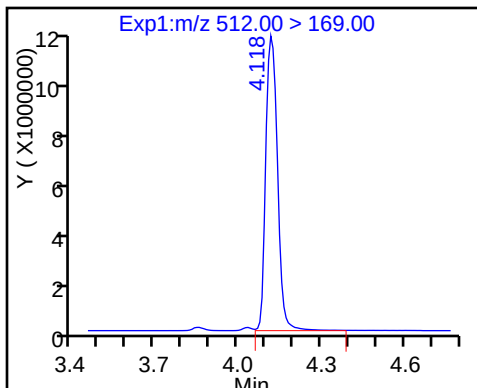
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami







FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

Calibration Files:

| LEVEL:   | LAB SAMPLE ID:   | LAB FILE ID:     |
|----------|------------------|------------------|
| Level 1  | IC 320-140564/4  | 03DEC2016A_004.d |
| Level 2  | IC 320-140564/13 | 03DEC2016A_013.d |
| Level 3  | IC 320-140564/5  | 03DEC2016A_005.d |
| Level 4  | IC 320-140564/14 | 03DEC2016A_014.d |
| Level 5  | IC 320-140564/6  | 03DEC2016A_006.d |
| Level 6  | IC 320-140564/15 | 03DEC2016A_015.d |
| Level 7  | IC 320-140564/7  | 03DEC2016A_007.d |
| Level 8  | IC 320-140564/16 | 03DEC2016A_016.d |
| Level 9  | IC 320-140564/8  | 03DEC2016A_008.d |
| Level 10 | IC 320-140564/17 | 03DEC2016A_017.d |
| Level 11 | IC 320-140564/9  | 03DEC2016A_009.d |
| Level 12 | IC 320-140564/18 | 03DEC2016A_018.d |

| ANALYTE                               | LVL 1<br>LVL 11 | LVL 2<br>LVL 12 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | LVL 8 | LVL 9 | LVL 10 | RT WINDOW     | AVG RT |
|---------------------------------------|-----------------|-----------------|-------|-------|-------|-------|-------|-------|-------|--------|---------------|--------|
| Perfluorobutanoic acid (PFBA)         | 1.582<br>1.574  |                 | 1.574 |       | 1.574 |       | 1.582 |       | 1.574 |        | 1.327 - 1.827 | 1.577  |
| Perfluoropentanoic acid (PFPeA)       | 1.868<br>1.858  |                 | 1.858 |       | 1.858 |       | 1.868 |       | 1.858 |        | 1.611 - 2.111 | 1.861  |
| Perfluorobutanesulfonic acid (PFBS)   | 1.906<br>1.896  |                 | 1.897 |       | 1.897 |       | 1.907 |       | 1.897 |        | 1.720 - 2.080 | 1.900  |
| Perfluorohexanoic acid (PFHxA)        | 2.170<br>2.157  |                 | 2.164 |       | 2.163 |       | 2.171 |       | 2.160 |        | 1.914 - 2.414 | 2.164  |
| Perfluoroheptanoic acid (PFHpA)       | 2.521<br>2.501  |                 | 2.512 |       | 2.516 |       | 2.512 |       | 2.510 |        | 2.262 - 2.762 | 2.512  |
| Perfluorohexanesulfonic acid (PFHxS)  | ++++<br>2.526   |                 | 2.535 |       | 2.531 |       | 2.527 |       | 2.525 |        | 2.281 - 2.781 | 2.529  |
| 6:2FTS                                |                 | ++++<br>2.838   |       | 2.830 |       | 2.838 |       | 2.840 |       | 2.830  | 2.586 - 3.086 | 2.835  |
| Perfluorooctanoic acid (PFOA)         | ++++<br>2.868   |                 | 2.894 |       | 2.880 |       | 2.894 |       | 2.884 |        | 2.637 - 3.137 | 2.884  |
| Perfluoroheptanesulfonic Acid (PFHpS) | 2.902<br>2.884  |                 | 2.886 |       | 2.888 |       | 2.886 |       | 2.884 |        | 2.638 - 3.138 | 2.888  |
| Perfluorooctane Sulfonate (PFOS)      | ++++<br>3.249   |                 | 3.259 |       | 3.255 |       | 3.259 |       | 3.257 |        | 3.008 - 3.508 | 3.256  |
| Perfluorononanoic acid (PFNA)         | 3.275<br>3.249  |                 | 3.268 |       | 3.263 |       | 3.267 |       | 3.257 |        | 3.013 - 3.513 | 3.263  |
| Perfluorooctane Sulfonamide (FOSA)    | 3.581<br>3.571  |                 | 3.573 |       | 3.576 |       | 3.573 |       | 3.570 |        | 3.324 - 3.824 | 3.574  |
| 8:2FTS                                |                 | 3.601<br>3.589  |       | 3.579 |       | 3.588 |       | 3.592 |       | 3.579  | 3.338 - 3.838 | 3.588  |
| Perfluorodecanoic acid (PFDA)         | 3.632<br>3.613  |                 | 3.632 |       | 3.618 |       | 3.623 |       | 3.620 |        | 3.373 - 3.873 | 3.623  |

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

| ANALYTE                                                    | LVL 1<br>LVL 11 | LVL 2<br>LVL 12 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | LVL 8 | LVL 9 | LVL 10 | RT WINDOW     | AVG RT |
|------------------------------------------------------------|-----------------|-----------------|-------|-------|-------|-------|-------|-------|-------|--------|---------------|--------|
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) |                 | 3.774<br>3.752  |       | 3.760 |       | 3.760 |       | 3.756 |       | 3.750  | 3.509 - 4.009 | 3.759  |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)  |                 | 3.931<br>3.927  |       | 3.935 |       | 3.926 |       | 3.931 |       | 3.925  | 3.679 - 4.179 | 3.929  |
| Perfluorodecanesulfonic acid (PFDS)                        | 3.945<br>3.921  |                 | 3.944 |       | 3.938 |       | 3.939 |       | 3.928 |        | 3.686 - 4.186 | 3.936  |
| Perfluoroundecanoic acid (PFUnA)                           | 3.971<br>3.947  |                 | 3.953 |       | 3.956 |       | 3.956 |       | 3.946 |        | 3.705 - 4.205 | 3.955  |
| MeFOSA                                                     |                 | 4.063<br>4.061  |       | 4.051 |       | 4.051 |       | 4.063 |       | 4.051  | 3.807 - 4.307 | 4.057  |
| N-EtFOSA-M                                                 |                 | 4.253<br>4.249  |       | 4.239 |       | 4.240 |       | 4.244 |       | 4.245  | 3.995 - 4.495 | 4.245  |
| Perfluorododecanoic acid (PFDoA)                           | 4.261<br>4.236  |                 | 4.254 |       | 4.253 |       | 4.253 |       | 4.242 |        | 4.000 - 4.500 | 4.250  |
| Perfluorotridecanoic Acid (PFTriA)                         | 4.535<br>4.501  |                 | 4.515 |       | 4.521 |       | 4.524 |       | 4.510 |        | 4.268 - 4.768 | 4.518  |
| Perfluorotetradecanoic acid (PFTeA)                        | 4.778<br>4.746  |                 | 4.770 |       | 4.761 |       | 4.764 |       | 4.750 |        | 4.511 - 5.011 | 4.762  |
| Perfluoro-n-hexadecanoic acid (PFHxDA)                     | 5.208<br>5.160  |                 | 5.196 |       | 5.191 |       | 5.187 |       | 5.177 |        | 4.936 - 5.436 | 5.187  |
| Perfluoro-n-octadecanoic acid (PFODA)                      | 5.584<br>5.536  |                 | 5.565 |       | 5.561 |       | 5.563 |       | 5.547 |        | 5.309 - 5.809 | 5.559  |
| 13C4 PFBA                                                  | 1.582<br>1.565  |                 | 1.574 |       | 1.574 |       | 1.574 |       | 1.574 |        | 1.324 - 1.824 | 1.574  |
| 13C5-PFPeA                                                 | 1.868<br>1.858  |                 | 1.858 |       | 1.858 |       | 1.868 |       | 1.858 |        | 1.611 - 2.111 | 1.861  |
| 13C2 PFHxA                                                 | 2.179<br>2.157  |                 | 2.164 |       | 2.163 |       | 2.162 |       | 2.160 |        | 1.914 - 2.414 | 2.164  |
| 13C4-PFHpA                                                 | 2.521<br>2.501  |                 | 2.512 |       | 2.508 |       | 2.512 |       | 2.510 |        | 2.261 - 2.761 | 2.511  |
| 18O2 PFHxS                                                 | 2.544<br>2.518  |                 | 2.535 |       | 2.531 |       | 2.535 |       | 2.525 |        | 2.281 - 2.781 | 2.531  |
| M2-6:2FTS                                                  |                 | 2.840<br>2.838  |       | 2.830 |       | 2.838 |       | 2.840 |       | 2.830  | 2.586 - 3.086 | 2.836  |
| 13C4 PFOA                                                  | 2.886<br>2.868  |                 | 2.886 |       | 2.880 |       | 2.886 |       | 2.876 |        | 2.630 - 3.130 | 2.880  |
| 13C4 PFOS                                                  | 3.267<br>3.249  |                 | 3.259 |       | 3.263 |       | 3.259 |       | 3.257 |        | 3.009 - 3.509 | 3.259  |
| 13C5 PFNA                                                  | 3.275<br>3.249  |                 | 3.268 |       | 3.263 |       | 3.267 |       | 3.257 |        | 3.013 - 3.513 | 3.263  |
| 13C8 FOSA                                                  | 3.581<br>3.562  |                 | 3.565 |       | 3.576 |       | 3.573 |       | 3.570 |        | 3.321 - 3.821 | 3.571  |
| M2-8:2FTS                                                  |                 | 3.601<br>3.589  |       | 3.579 |       | 3.596 |       | 3.592 |       | 3.587  | 3.341 - 3.841 | 3.591  |

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

| ANALYTE      | LVL 1<br>LVL 11 | LVL 2<br>LVL 12 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | LVL 8 | LVL 9 | LVL 10 | RT WINDOW     | AVG RT |
|--------------|-----------------|-----------------|-------|-------|-------|-------|-------|-------|-------|--------|---------------|--------|
| 13C2 PFDA    | 3.640<br>3.621  |                 | 3.624 |       | 3.627 |       | 3.623 |       | 3.620 |        | 3.376 - 3.876 | 3.626  |
| d3-NMeFOSAA  |                 | 3.765<br>3.752  |       | 3.760 |       | 3.751 |       | 3.756 |       | 3.750  | 3.506 - 4.006 | 3.756  |
| d5-NEtFOSAA  |                 | 3.931<br>3.919  |       | 3.918 |       | 3.918 |       | 3.931 |       | 3.917  | 3.672 - 4.172 | 3.922  |
| 13C2 PFUnA   | 3.971<br>3.947  |                 | 3.961 |       | 3.956 |       | 3.965 |       | 3.946 |        | 3.708 - 4.208 | 3.958  |
| d-N-MeFOSA-M |                 | 4.054<br>4.052  |       | 4.051 |       | 4.051 |       | 4.055 |       | 4.042  | 3.801 - 4.301 | 4.051  |
| d-N-EtFOSA-M |                 | 4.244<br>4.239  |       | 4.231 |       | 4.240 |       | 4.244 |       | 4.236  | 3.989 - 4.489 | 4.239  |
| 13C2 PFDoA   | 4.261<br>4.236  |                 | 4.262 |       | 4.253 |       | 4.253 |       | 4.242 |        | 4.001 - 4.501 | 4.251  |
| 13C2-PFTeDA  | 4.778<br>4.738  |                 | 4.762 |       | 4.761 |       | 4.764 |       | 4.750 |        | 4.509 - 5.009 | 4.759  |
| 13C2-PFHxDA  | 5.208<br>5.171  |                 | 5.196 |       | 5.180 |       | 5.187 |       | 5.177 |        | 4.936 - 5.436 | 5.187  |

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

Calibration Files:

| LEVEL:   | LAB SAMPLE ID:   | LAB FILE ID:     |
|----------|------------------|------------------|
| Level 1  | IC 320-140564/4  | 03DEC2016A_004.d |
| Level 2  | IC 320-140564/13 | 03DEC2016A_013.d |
| Level 3  | IC 320-140564/5  | 03DEC2016A_005.d |
| Level 4  | IC 320-140564/14 | 03DEC2016A_014.d |
| Level 5  | IC 320-140564/6  | 03DEC2016A_006.d |
| Level 6  | IC 320-140564/15 | 03DEC2016A_015.d |
| Level 7  | IC 320-140564/7  | 03DEC2016A_007.d |
| Level 8  | IC 320-140564/16 | 03DEC2016A_016.d |
| Level 9  | IC 320-140564/8  | 03DEC2016A_008.d |
| Level 10 | IC 320-140564/17 | 03DEC2016A_017.d |
| Level 11 | IC 320-140564/9  | 03DEC2016A_009.d |
| Level 12 | IC 320-140564/18 | 03DEC2016A_018.d |

| ANALYTE    | CF                         |                          |                            |                           | CURVE<br>TYPE | COEFFICIENT |            |    | # | MIN CF | %RSD | # | MAX<br>%RSD | R^2<br>OR COD | # | MIN R^2<br>OR COD |
|------------|----------------------------|--------------------------|----------------------------|---------------------------|---------------|-------------|------------|----|---|--------|------|---|-------------|---------------|---|-------------------|
|            | LVL 1                      | LVL 2                    | LVL 3                      | LVL 4                     |               | B           | M1         | M2 |   |        |      |   |             |               |   |                   |
|            | LVL 5                      | LVL 6                    | LVL 7                      | LVL 8                     |               |             |            |    |   |        |      |   |             |               |   |                   |
|            | LVL 9                      | LVL 10                   | LVL 11                     | LVL 12                    |               |             |            |    |   |        |      |   |             |               |   |                   |
| 13C4 PFBA  | 310185<br>395986<br>320580 |                          | 331347<br>365089<br>291784 |                           | Ave           |             | 335828.500 |    |   |        | 11.4 |   | 50.0        |               |   |                   |
| 13C5-PFPeA | 254875<br>312687<br>249553 |                          | 258388<br>288538<br>223232 |                           | Ave           |             | 264545.467 |    |   |        | 11.9 |   | 50.0        |               |   |                   |
| 13C2 PFHxA | 230194<br>279196<br>219710 |                          | 235263<br>254328<br>206225 |                           | Ave           |             | 237485.877 |    |   |        | 10.9 |   | 50.0        |               |   |                   |
| 13C4-PFHpA | 200488<br>249965<br>193077 |                          | 209795<br>229496<br>161658 |                           | Ave           |             | 207413.233 |    |   |        | 14.7 |   | 50.0        |               |   |                   |
| 18O2 PFHxS | 293993<br>367326<br>302399 |                          | 309858<br>340372<br>260105 |                           | Ave           |             | 312342.301 |    |   |        | 12.0 |   | 50.0        |               |   |                   |
| M2-6:2FTS  |                            | 91389<br>101069<br>97657 |                            | 86632<br>132540<br>123901 | Ave           |             | 105531.519 |    |   |        | 17.5 |   | 50.0        |               |   |                   |
| 13C4 PFOA  | 219399<br>265152<br>198189 |                          | 227804<br>241383<br>163620 |                           | Ave           |             | 219257.923 |    |   |        | 16.1 |   | 50.0        |               |   |                   |

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

| ANALYTE      | CF                         |                          |                            |                           | CURVE<br>TYPE | COEFFICIENT |            |    | # | MIN CF | %RSD | # | MAX<br>%RSD | R^2<br>OR COD | # | MIN R^2<br>OR COD |
|--------------|----------------------------|--------------------------|----------------------------|---------------------------|---------------|-------------|------------|----|---|--------|------|---|-------------|---------------|---|-------------------|
|              | LVL 1<br>LVL 5<br>LVL 9    | LVL 2<br>LVL 6<br>LVL 10 | LVL 3<br>LVL 7<br>LVL 11   | LVL 4<br>LVL 8<br>LVL 12  |               | B           | M1         | M2 |   |        |      |   |             |               |   |                   |
| 13C4 PFOS    | 228339<br>292548<br>236006 |                          | 232908<br>275934<br>210320 |                           | Ave           |             | 246009.066 |    |   |        | 12.7 |   | 50.0        |               |   |                   |
| 13C5 PFNA    | 162836<br>202161<br>157087 |                          | 167249<br>178407<br>130751 |                           | Ave           |             | 166415.157 |    |   |        | 14.2 |   | 50.0        |               |   |                   |
| 13C8 FOSA    | 382785<br>462525<br>385863 |                          | 396984<br>446533<br>338985 |                           | Ave           |             | 402279.103 |    |   |        | 11.3 |   | 50.0        |               |   |                   |
| M2-8:2FTS    |                            | 89009<br>92918<br>86527  |                            | 81776<br>112285<br>120341 | Ave           |             | 97142.4774 |    |   |        | 15.9 |   | 50.0        |               |   |                   |
| 13C2 PFDA    | 153345<br>184278<br>148117 |                          | 157229<br>175727<br>128207 |                           | Ave           |             | 157817.020 |    |   |        | 12.7 |   | 50.0        |               |   |                   |
| d3-NMeFOSAA  |                            | 66435<br>73365<br>62459  |                            | 67366<br>86475<br>79076   | Ave           |             | 72529.4733 |    |   |        | 12.4 |   | 50.0        |               |   |                   |
| d5-NEtFOSAA  |                            | 76443<br>81901<br>68389  |                            | 76375<br>93004<br>81834   | Ave           |             | 79657.5967 |    |   |        | 10.3 |   | 50.0        |               |   |                   |
| 13C2 PFUnA   | 116625<br>141738<br>112505 |                          | 121719<br>129709<br>90276  |                           | Ave           |             | 118762.217 |    |   |        | 14.6 |   | 50.0        |               |   |                   |
| d-N-MeFOSA-M |                            | 93925<br>110531<br>95888 |                            | 97701<br>123254<br>109309 | Ave           |             | 105101.257 |    |   |        | 10.8 |   | 50.0        |               |   |                   |
| d-N-EtFOSA-M |                            | 87118<br>101086<br>93356 |                            | 94000<br>114956<br>104475 | Ave           |             | 99165.2500 |    |   |        | 9.9  |   | 50.0        |               |   |                   |
| 13C2 PFDoA   | 107060<br>131990<br>106770 |                          | 108978<br>121360<br>96346  |                           | Ave           |             | 112083.837 |    |   |        | 11.2 |   | 50.0        |               |   |                   |
| 13C2-PFTeDA  | 220709<br>269763<br>220622 |                          | 228021<br>257560<br>190365 |                           | Ave           |             | 231173.483 |    |   |        | 12.4 |   | 50.0        |               |   |                   |
| 13C2-PFHxDA  | 122044<br>151839<br>117867 |                          | 129673<br>147280<br>109649 |                           | Ave           |             | 129725.210 |    |   |        | 12.9 |   | 50.0        |               |   |                   |

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

## FORM VI

## CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) NCalibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

| 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            | LVL 2           | LVL 3  | LVL 4  | LVL 5  |               | B           | M1     | M2 |   |         |      |   |             |               |   |                   |
|                                       | LVL 6<br>LVL 11  | LVL 7<br>LVL 12 | LVL 8  | LVL 9  | LVL 10 |               |             |        |    |   |         |      |   |             |               |   |                   |
| Perfluorobutanoic acid (PFBA)         | 285568<br>214032 | 350423          | 286663 | 280973 | 351800 | AveID         |             | 0.8740 |    |   |         | 8.8  |   | 35.0        |               |   |                   |
| Perfluoropentanoic acid (PFPeA)       | 300210<br>177640 | 305783          | 267561 | 251941 | 316000 | AveID         |             | 1.0148 |    |   |         | 12.2 |   | 35.0        |               |   |                   |
| Perfluorobutanesulfonic acid (PFBS)   | 504086<br>300541 | 615867          | 490253 | 486734 | 626278 | AveID         |             | 1.5960 |    |   |         | 14.4 |   | 50.0        |               |   |                   |
| Perfluorohexanoic acid (PFHxA)        | 235776<br>165590 | 261205          | 221801 | 208409 | 271706 | AveID         |             | 0.9531 |    |   |         | 8.6  |   | 35.0        |               |   |                   |
| Perfluoroheptanoic acid (PFHpA)       | 221302<br>150068 | 245911          | 215700 | 198314 | 250864 | AveID         |             | 1.0271 |    |   |         | 5.9  |   | 35.0        |               |   |                   |
| Perfluorohexanesulfonic acid (PFHxS)  | ++++<br>259457   | 382897          | 373893 | 318646 | 405919 | AveID         |             | 1.0976 |    |   |         | 7.2  |   | 35.0        |               |   |                   |
| 6:2FTS                                | 74414            | ++++<br>95077   | 114411 | 73191  | 96558  | AveID         |             | 0.8401 |    |   |         | 11.7 |   | 35.0        |               |   |                   |
| Perfluorooctanoic acid (PFOA)         | ++++<br>154270   | 264619          | 266474 | 208682 | 291075 | AveID         |             | 1.0719 |    |   |         | 7.8  |   | 35.0        |               |   |                   |
| Perfluoroheptanesulfonic Acid (PFHpS) | 288964<br>206923 | 350751          | 264304 | 290052 | 344790 | AveID         |             | 1.1771 |    |   |         | 9.2  |   | 50.0        |               |   |                   |
| Perfluorooctane Sulfonate (PFOS)      | ++++<br>232098   | 303437          | 248775 | 257626 | 311027 | AveID         |             | 1.0852 |    |   |         | 1.7  |   | 35.0        |               |   |                   |
| Perfluorononanoic acid (PFNA)         | 173474<br>124497 | 190216          | 158219 | 153501 | 196312 | AveID         |             | 0.9963 |    |   |         | 5.5  |   | 35.0        |               |   |                   |
| Perfluorooctane Sulfonamide (FOSA)    | 370100<br>253291 | 455589          | 375193 | 365380 | 452435 | AveID         |             | 0.9341 |    |   |         | 10.2 |   | 35.0        |               |   |                   |

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

## CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-23783-1Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_NGC Column: AcquityID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 12/03/2016 13:48Calibration End Date: 12/03/2016 15:33Calibration ID: 26875

| 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<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5<br>LVL 10 |               | B           | M1     | M2 |   |         |      |   |             |               |   |                   |
| 8:2FTS                                                        | 68103                    | 78395<br>87944           | 105918         | 66735          | 89333           | AveID         |             | 0.8560 |    |   |         | 14.0 |   | 35.0        |               |   |                   |
| Perfluorodecanoic acid (PFDA)                                 | 156640<br>117857         | 171719                   | 147102         | 143186         | 173721          | AveID         |             | 0.9605 |    |   |         | 3.8  |   | 35.0        |               |   |                   |
| N-methyl perfluorooctane<br>sulfonamidoacetic acid (NMeFOSAA) | 52006                    | 47238<br>67834           | 82772          | 53845          | 69682           | AveID         |             | 0.8583 |    |   |         | 18.3 |   | 35.0        |               |   |                   |
| N-ethyl perfluorooctane<br>sulfonamidoacetic acid (NEtFOSAA)  | 53051                    | 50866<br>65238           | 81472          | 49948          | 65231           | AveID         |             | 0.7657 |    |   |         | 17.0 |   | 35.0        |               |   |                   |
| Perfluorodecanesulfonic acid (PFDS)                           | 142463<br>129604         | 184058                   | 155987         | 152444         | 180118          | AveID         |             | 0.6398 |    |   |         | 3.9  |   | 50.0        |               |   |                   |
| Perfluoroundecanoic acid (PFUnA)                              | 154250<br>89091          | 133679                   | 130643         | 111061         | 140855          | AveID         |             | 1.0657 |    |   |         | 12.2 |   | 35.0        |               |   |                   |
| MeFOSA                                                        | 71380                    | 74884<br>88180           | 109492         | 72155          | 93127           | AveID         |             | 0.8080 |    |   |         | 14.0 |   | 35.0        |               |   |                   |
| N-EtFOSA-M                                                    | 73063                    | 72158<br>91173           | 110071         | 72107          | 94707           | AveID         |             | 0.8605 |    |   |         | 12.9 |   | 35.0        |               |   |                   |
| Perfluorododecanoic acid (PFDoA)                              | 106404<br>88867          | 120759                   | 100943         | 100016         | 121390          | AveID         |             | 0.9490 |    |   |         | 3.8  |   | 35.0        |               |   |                   |
| Perfluorotridecanoic Acid (PFTriA)                            | 106898<br>87470          | 118653                   | 100348         | 100682         | 125535          | AveID         |             | 0.9498 |    |   |         | 3.6  |   | 50.0        |               |   |                   |
| Perfluorotetradecanoic acid (PFTeA)                           | 219098<br>152968         | 234056                   | 215694         | 192030         | 235101          | AveID         |             | 1.8536 |    |   |         | 8.9  |   | 50.0        |               |   |                   |
| Perfluoro-n-hexadecanoic acid (PFHxDA)                        | 254818<br>94562          | 143517                   | 184956         | 107642         | 153296          | L1ID          | 0.7490      | 0.9930 |    |   |         |      |   |             | 0.9980        |   | 0.9900            |
| Perfluoro-n-octadecanoic acid (PFODA)                         | 100080<br>89220          | 110258                   | 119152         | 114581         | 134794          | AveID         |             | 0.9929 |    |   |         | 8.1  |   | 50.0        |               |   |                   |

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.



FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

Calibration Files:

| LEVEL:   | LAB SAMPLE ID:   | LAB FILE ID:     |
|----------|------------------|------------------|
| Level 1  | IC 320-140564/4  | 03DEC2016A_004.d |
| Level 2  | IC 320-140564/13 | 03DEC2016A_013.d |
| Level 3  | IC 320-140564/5  | 03DEC2016A_005.d |
| Level 4  | IC 320-140564/14 | 03DEC2016A_014.d |
| Level 5  | IC 320-140564/6  | 03DEC2016A_006.d |
| Level 6  | IC 320-140564/15 | 03DEC2016A_015.d |
| Level 7  | IC 320-140564/7  | 03DEC2016A_007.d |
| Level 8  | IC 320-140564/16 | 03DEC2016A_016.d |
| Level 9  | IC 320-140564/8  | 03DEC2016A_008.d |
| Level 10 | IC 320-140564/17 | 03DEC2016A_017.d |
| Level 11 | IC 320-140564/9  | 03DEC2016A_009.d |
| Level 12 | IC 320-140564/18 | 03DEC2016A_018.d |

| ANALYTE    | CURVE TYPE | RESPONSE                 |                          |                |                |                 | CONCENTRATION (NG/ML)    |                          |                |                |                 |
|------------|------------|--------------------------|--------------------------|----------------|----------------|-----------------|--------------------------|--------------------------|----------------|----------------|-----------------|
|            |            | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5<br>LVL 10 | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5<br>LVL 10 |
| 13C4 PFBA  | Ave        | 15509259<br>14589192     | 18254473                 | 16567343       | 16029004       | 19799279        | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 13C5-PFPeA | Ave        | 12743752<br>11161582     | 14426922                 | 12919402       | 12477636       | 15634346        | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 13C2 PFHxA | Ave        | 11509685<br>10311260     | 12716423                 | 11763139       | 10985481       | 13959775        | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 13C4-PFHpA | Ave        | 10024418<br>8082881      | 11474824                 | 10489748       | 9653835        | 12498264        | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 18O2 PFHxS | Ave        | 13905891<br>12302944     | 16099619                 | 14656306       | 14303487       | 17374498        | 47.3<br>47.3             | 47.3                     | 47.3           | 47.3           | 47.3            |
| M2-6:2FTS  | Ave        | 4800798<br>5885296       | 4340981                  | 6295656        | 4115043        | 4638709         | 47.5<br>47.5             | 47.5                     | 47.5           | 47.5           | 47.5            |
| 13C4 PFOA  | Ave        | 10969960<br>8181000      | 12069172                 | 11390215       | 9909434        | 13257596        | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 13C4 PFOS  | Ave        | 10914613<br>10053294     | 13189624                 | 11132983       | 11281105       | 13983781        | 47.8<br>47.8             | 47.8                     | 47.8           | 47.8           | 47.8            |

FORM VI  
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA  
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

| ANALYTE      | CURVE<br>TYPE | RESPONSE                 |                          |                |                |                 | CONCENTRATION (NG/ML)    |                          |                |                |                 |
|--------------|---------------|--------------------------|--------------------------|----------------|----------------|-----------------|--------------------------|--------------------------|----------------|----------------|-----------------|
|              |               | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5<br>LVL 10 | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5<br>LVL 10 |
| 13C5 PFNA    | Ave           | 8141793<br>6537549       | 8920352                  | 8362456        | 7854327        | 10108070        | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 13C8 FOSA    | Ave           | 19139237<br>16949269     | 22326638                 | 19849207       | 19293148       | 23126232        | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| M2-8:2FTS    | Ave           | 4450751                  | 4263521<br>5764339       | 5378444        | 3917070        | 4144623         | 47.9<br>47.9             | 47.9                     | 47.9           | 47.9           | 47.9            |
| 13C2 PFDA    | Ave           | 7667226<br>6410340       | 8786342                  | 7861453        | 7405870        | 9213875         | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| d3-NMeFOSAA  | Ave           | 3668263                  | 3321758<br>3953776       | 4323749        | 3368323        | 3122973         | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| d5-NEtFOSAA  | Ave           | 4095032                  | 3822164<br>4091711       | 4650188        | 3818745        | 3419439         | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 13C2 PFUnA   | Ave           | 5831263<br>4513820       | 6485474                  | 6085968        | 5625237        | 7086903         | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| d-N-MeFOSA-M | Ave           | 5526561                  | 4696243<br>5465444       | 6162693        | 4885054        | 4794382         | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| d-N-EtFOSA-M | Ave           | 5054297                  | 4355916<br>5223764       | 5747792        | 4699997        | 4667809         | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 13C2 PFDoA   | Ave           | 5353024<br>4817286       | 6067987                  | 5448882        | 5338479        | 6599493         | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 13C2-PFTeDA  | Ave           | 11035471<br>9518260      | 12877999                 | 11401035       | 11031119       | 13488161        | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |
| 13C2-PFHxDA  | Ave           | 6102203<br>5482429       | 7363997                  | 6483658        | 5893329        | 7591947         | 50.0<br>50.0             | 50.0                     | 50.0           | 50.0           | 50.0            |

Curve Type Legend:

Ave = Average

## RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

## Calibration Files:

| LEVEL:   | LAB SAMPLE ID:   | LAB FILE ID:     |
|----------|------------------|------------------|
| Level 1  | IC 320-140564/4  | 03DEC2016A_004.d |
| Level 2  | IC 320-140564/13 | 03DEC2016A_013.d |
| Level 3  | IC 320-140564/5  | 03DEC2016A_005.d |
| Level 4  | IC 320-140564/14 | 03DEC2016A_014.d |
| Level 5  | IC 320-140564/6  | 03DEC2016A_006.d |
| Level 6  | IC 320-140564/15 | 03DEC2016A_015.d |
| Level 7  | IC 320-140564/7  | 03DEC2016A_007.d |
| Level 8  | IC 320-140564/16 | 03DEC2016A_016.d |
| Level 9  | IC 320-140564/8  | 03DEC2016A_008.d |
| Level 10 | IC 320-140564/17 | 03DEC2016A_017.d |
| Level 11 | IC 320-140564/9  | 03DEC2016A_009.d |
| Level 12 | IC 320-140564/18 | 03DEC2016A_018.d |

| ANALYTE                              | IS<br>REF | CURVE<br>TYPE | RESPONSE           |                  |         |          |         | CONCENTRATION (NG/ML) |                 |       |       |        |
|--------------------------------------|-----------|---------------|--------------------|------------------|---------|----------|---------|-----------------------|-----------------|-------|-------|--------|
|                                      |           |               | LVL 1              | LVL 2            | LVL 3   | LVL 4    | LVL 5   | LVL 1                 | LVL 2           | LVL 3 | LVL 4 | LVL 5  |
|                                      |           |               | LVL 6<br>LVL 11    | LVL 7<br>LVL 12  | LVL 8   | LVL 9    | LVL 10  | LVL 6<br>LVL 11       | LVL 7<br>LVL 12 | LVL 8 | LVL 9 | LVL 10 |
| Perfluorobutanoic acid (PFBA)        |           | AveID         | 142784<br>42806432 | 7008467          | 286663  | 14048645 | 1758998 | 0.500<br>200          | 20.0            | 1.00  | 50.0  | 5.00   |
| Perfluoropentanoic acid (PFPeA)      |           | AveID         | 150105<br>35527936 | 6115663          | 267561  | 12597041 | 1580002 | 0.500<br>200          | 20.0            | 1.00  | 50.0  | 5.00   |
| Perfluorobutanesulfonic acid (PFBS)  |           | AveID         | 222806<br>53135654 | 10888534         | 433384  | 21513660 | 2768149 | 0.442<br>177          | 17.7            | 0.884 | 44.2  | 4.42   |
| Perfluorohexanoic acid (PFHxA)       |           | AveID         | 117888<br>33117925 | 5224102          | 221801  | 10420431 | 1358530 | 0.500<br>200          | 20.0            | 1.00  | 50.0  | 5.00   |
| Perfluoroheptanoic acid (PFHpA)      |           | AveID         | 110651<br>30013620 | 4918226          | 215700  | 9915679  | 1254320 | 0.500<br>200          | 20.0            | 1.00  | 50.0  | 5.00   |
| Perfluorohexanesulfonic acid (PFHxS) |           | AveID         | ++++<br>47221104   | 6968734          | 340243  | 14498414 | 1846932 | ++++<br>182           | 18.2            | 0.910 | 45.5  | 4.55   |
| 6:2FTS                               |           | AveID         | 352721             | ++++<br>18026595 | 2169230 | 69385    | 4576863 | 4.74                  | ++++<br>190     | 19.0  | 0.948 | 47.4   |
| Perfluorooctanoic acid (PFOA)        |           | AveID         | ++++<br>30853962   | 5292388          | 266474  | 10434085 | 1455373 | ++++<br>200           | 20.0            | 1.00  | 50.0  | 5.00   |

## RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-23783-1Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_NGC Column: AcquityID: 2.1 (mm)Heated Purge: (Y/N) NCalibration Start Date: 12/03/2016 13:48Calibration End Date: 12/03/2016 15:33Calibration ID: 26875

| ANALYTE                                                    | IS<br>REF | CURVE<br>TYPE | RESPONSE                 |                          |                |                |                 | CONCENTRATION (NG/ML)    |                          |                |                |                 |
|------------------------------------------------------------|-----------|---------------|--------------------------|--------------------------|----------------|----------------|-----------------|--------------------------|--------------------------|----------------|----------------|-----------------|
|                                                            |           |               | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5<br>LVL 10 | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5<br>LVL 10 |
| Perfluoroheptanesulfonic Acid (PFHpS)                      |           | AveID         | 137547<br>39398056       | 6678298                  | 251617         | 13806464       | 1641199         | 0.476<br>190             | 19.0                     | 0.952          | 47.6           | 4.76            |
| Perfluorooctane Sulfonate (PFOS)                           |           | AveID         | ++++<br>43077470         | 5631788                  | 230863         | 11953842       | 1443163         | ++++<br>186              | 18.6                     | 0.928          | 46.4           | 4.64            |
| Perfluorononanoic acid (PFNA)                              |           | AveID         | 86737<br>24899337        | 3804327                  | 158219         | 7675034        | 981559          | 0.500<br>200             | 20.0                     | 1.00           | 50.0           | 5.00            |
| Perfluorooctane Sulfonamide (FOSA)                         |           | AveID         | 185050<br>50658186       | 9111782                  | 375193         | 18269014       | 2262174         | 0.500<br>200             | 20.0                     | 1.00           | 50.0           | 5.00            |
| 8:2FTS                                                     |           | AveID         | 326213                   | 37551<br>16850029        | 2029390        | 63932          | 4279048         | 4.79                     | 0.479<br>192             | 19.2           | 0.958          | 47.9            |
| Perfluorodecanoic acid (PFDA)                              |           | AveID         | 78320<br>23571490        | 3434382                  | 147102         | 7159278        | 868604          | 0.500<br>200             | 20.0                     | 1.00           | 50.0           | 5.00            |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) |           | AveID         | 23619<br>260030          | 13566790                 | 1655435        | 53845          | 3484088         | 5.00                     | 0.500<br>200             | 20.0           | 1.00           | 50.0            |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)  |           | AveID         | 265257                   | 25433<br>13047697        | 1629443        | 49948          | 3261537         | 5.00                     | 0.500<br>200             | 20.0           | 1.00           | 50.0            |
| Perfluorodecanesulfonic acid (PFDS)                        |           | AveID         | 68667<br>24987612        | 3548629                  | 150371         | 7347809        | 868168          | 0.482<br>193             | 19.3                     | 0.964          | 48.2           | 4.82            |
| Perfluoroundecanoic acid (PFUnA)                           |           | AveID         | 77125<br>17818228        | 2673576                  | 130643         | 5553051        | 704273          | 0.500<br>200             | 20.0                     | 1.00           | 50.0           | 5.00            |
| MeFOSA                                                     |           | AveID         | 37442<br>356898          | 17635948                 | 2189848        | 72155          | 4656344         | 5.00                     | 0.500<br>200             | 20.0           | 1.00           | 50.0            |
| N-EtFOSA-M                                                 |           | AveID         | 365313                   | 36079<br>18234509        | 2201423        | 72107          | 4735360         | 5.00                     | 0.500<br>200             | 20.0           | 1.00           | 50.0            |
| Perfluorododecanoic acid (PFDoA)                           |           | AveID         | 53202<br>17773370        | 2415187                  | 100943         | 5000795        | 606951          | 0.500<br>200             | 20.0                     | 1.00           | 50.0           | 5.00            |

## RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1 Analy Batch No.: 140564

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

| ANALYTE                                | IS<br>REF | CURVE<br>TYPE | RESPONSE                 |                          |                |                |                 | CONCENTRATION (NG/ML)    |                          |                |                |                 |
|----------------------------------------|-----------|---------------|--------------------------|--------------------------|----------------|----------------|-----------------|--------------------------|--------------------------|----------------|----------------|-----------------|
|                                        |           |               | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5<br>LVL 10 | LVL 1<br>LVL 6<br>LVL 11 | LVL 2<br>LVL 7<br>LVL 12 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5<br>LVL 10 |
| Perfluorotridecanoic Acid (PFTriA)     |           | AveID         | 53449<br>17494025        | 2373060                  | 100348         | 5034109        | 627673          | 0.500<br>200             | 20.0                     | 1.00           | 50.0           | 5.00            |
| Perfluorotetradecanoic acid (PFTeA)    |           | AveID         | 109549<br>30593527       | 4681126                  | 215694         | 9601518        | 1175506         | 0.500<br>200             | 20.0                     | 1.00           | 50.0           | 5.00            |
| Perfluoro-n-hexadecanoic acid (PFHxDA) |           | L1ID          | 127409<br>18912385       | 2870345                  | 184956         | 5382109        | 766480          | 0.500<br>200             | 20.0                     | 1.00           | 50.0           | 5.00            |
| Perfluoro-n-octadecanoic acid (PFODA)  |           | AveID         | 50040<br>17844066        | 2205153                  | 119152         | 5729058        | 673971          | 0.500<br>200             | 20.0                     | 1.00           | 50.0           | 5.00            |

## Curve Type Legend:

AveID = Average isotope dilution  
L1ID = Linear 1/conc IsoDil

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_004.d  
 Lims ID: IC L1  
 Client ID:  
 Sample Type: IC Calib Level: 1  
 Inject. Date: 03-Dec-2016 13:48:41 ALS Bottle#: 37 Worklist Smp#: 4  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L1\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:24:05 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:42:37

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
|--------|----|--------|--------|--------|----------|--------------|---------------|------|-----|-------|

D 2 13C4 PFBA

217.00 > 172.00 1.582 1.574 0.008 15509259 46.2 92.4 1670611

1 Perfluorobutyric acid

212.90 > 169.00 1.582 1.577 0.005 1.000 142784 0.5267 105 902

3 Perfluoropentanoic acid

262.90 > 219.00 1.868 1.861 0.007 1.000 150105 0.5803 116 1311

D 4 13C5-PFPeA

267.90 > 223.00 1.868 1.861 0.007 12743752 48.2 96.3 785537

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.906 1.900 0.006 1.000 222806 0.4748 107

298.90 > 99.00 1.906 1.900 0.006 1.000 90815 2.45(0.00-0.00) 107

7 Perfluorohexanoic acid

313.00 > 269.00 2.170 2.164 0.006 1.000 117888 0.5373 107 2866

D 6 13C2 PFHxA

315.00 > 270.00 2.179 2.164 0.015 11509685 48.5 96.9 1035144

D 11 13C4-PFHpA

367.00 > 322.00 2.521 2.511 0.010 10024418 48.3 96.7 941002

12 Perfluoroheptanoic acid

363.00 > 319.00 2.521 2.512 0.009 1.000 110651 0.5374 107 1512

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.544 2.531 0.013 1.000 195583 0.6061 133

D 10 18O2 PFHxS

403.00 > 84.00 2.544 2.531 0.013 13905891 44.5 94.1 1599849

D 14 13C4 PFOA

417.00 > 372.00 2.886 2.880 0.006 10969960 50.0 100 702523

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 413.00 > 369.00                  | 2.902 | 2.887  | 0.015  | 1.000  | 176658   | 0.7512       |                 | 150  | 2006   |       |
| 413.00 > 169.00                  | 2.902 | 2.887  | 0.015  | 1.000  | 83124    |              | 2.13(0.90-1.10) | 150  | 4894   |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |        |       |
| 449.00 > 80.00                   | 2.902 | 2.888  | 0.014  | 1.000  | 137547   | 0.5117       |                 | 108  |        |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 499.00 > 80.00                   | 3.267 | 3.258  | 0.009  | 1.000  | 118203   | 0.4770       |                 | 103  | 15866  |       |
| 499.00 > 99.00                   | 3.250 | 3.258  | -0.008 | 0.995  | 0        |              | 0.00(0.90-1.10) | 103  |        |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.267 | 3.259  | 0.008  |        | 10914613 | 44.4         |                 | 92.8 | 963774 |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                  | 3.275 | 3.263  | 0.012  |        | 8141793  | 48.9         |                 | 97.8 | 521938 |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 463.00 > 419.00                  | 3.275 | 3.263  | 0.012  | 1.000  | 86737    | 0.5346       |                 | 107  | 1741   | M     |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                   | 3.581 | 3.571  | 0.010  |        | 19139237 | 47.6         |                 | 95.2 | 555083 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                   | 3.581 | 3.574  | 0.007  | 1.000  | 185050   | 0.5175       |                 | 104  | 16767  |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                  | 3.632 | 3.623  | 0.009  | 1.000  | 78320    | 0.5318       |                 | 106  | 2431   |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                  | 3.640 | 3.626  | 0.014  |        | 7667226  | 48.6         |                 | 97.2 | 219644 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                   | 3.945 | 3.936  | 0.009  | 1.000  | 68667    | 0.4701       |                 | 97.5 |        |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                  | 3.971 | 3.955  | 0.016  | 1.000  | 77125    | 0.6205       |                 | 124  | 2113   | M     |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                  | 3.971 | 3.958  | 0.013  |        | 5831263  | 49.1         |                 | 98.2 | 341809 |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 613.00 > 569.00                  | 4.261 | 4.250  | 0.011  | 1.000  | 53202    | 0.5236       |                 | 105  | 752    |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                  | 4.261 | 4.251  | 0.010  |        | 5353024  | 47.8         |                 | 95.5 | 191441 |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                  | 4.535 | 4.518  | 0.017  | 1.000  | 53449    | 0.5256       |                 | 105  | 91.0   |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                  | 4.778 | 4.759  | 0.019  |        | 11035471 | 47.7         |                 | 95.5 | 488569 |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |        |       |
| 712.50 > 668.90                  | 4.778 | 4.761  | 0.017  | 1.000  | 109549   | 0.5520       |                 | 110  | 60.5   |       |
| 713.00 > 169.00                  | 4.770 | 4.761  | 0.009  | 0.998  | 20451    |              | 5.36(0.00-0.00) | 110  | 3502   |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |        |       |
| 815.00 > 770.00                  | 5.208 | 5.186  | 0.022  |        | 6102203  | 47.0         |                 | 94.1 | 113568 |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 813.00 > 769.00                  | 5.208 | 5.186  | 0.022  | 1.000  | 127409   | 0.4441       |                 | 88.8 | 179    |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 913.00 > 869.00                  | 5.584 | 5.559  | 0.025  | 1.000  | 50040    | 0.4708       |                 | 94.2 | 82.2   |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## Reagents:

LCPFC-L1\_00021

Amount Added: 1.00

Units: mL



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_004.d

Injection Date: 03-Dec-2016 13:48:41

Instrument ID: A8\_N

Lims ID: IC L1

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 37

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

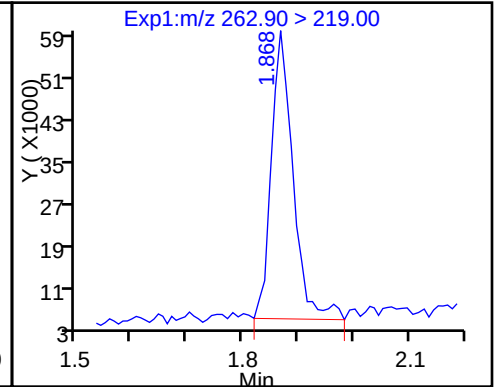
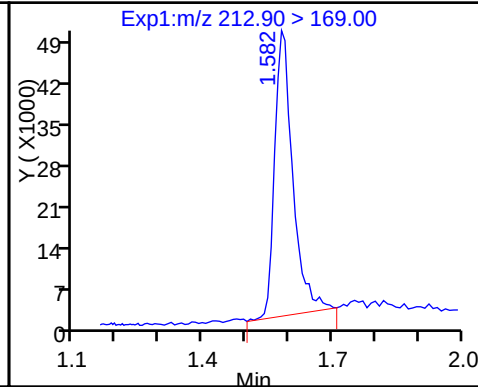
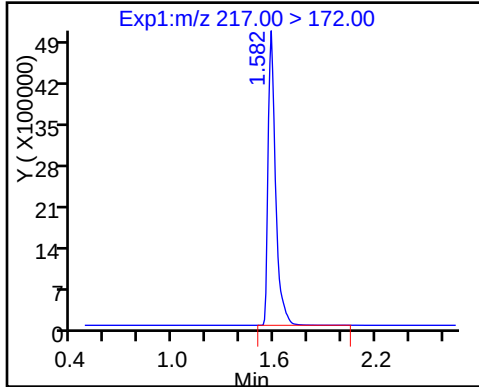
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

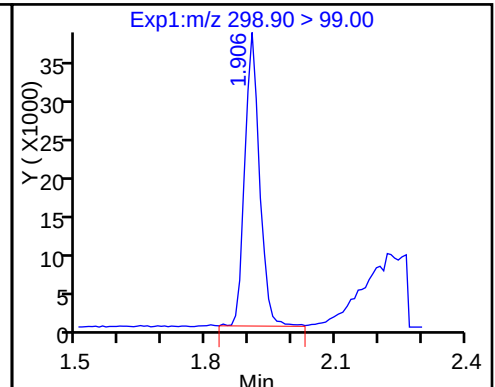
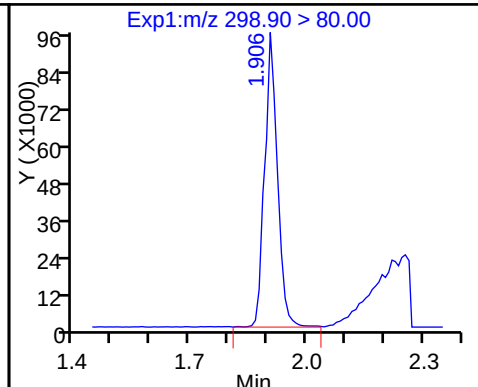
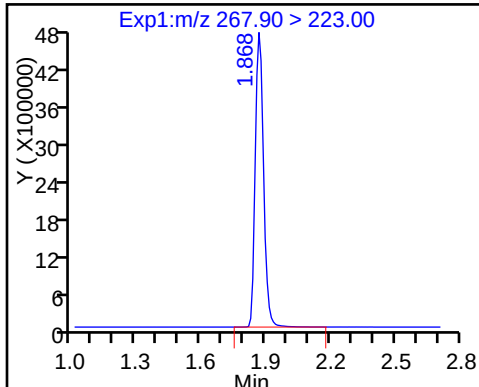
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

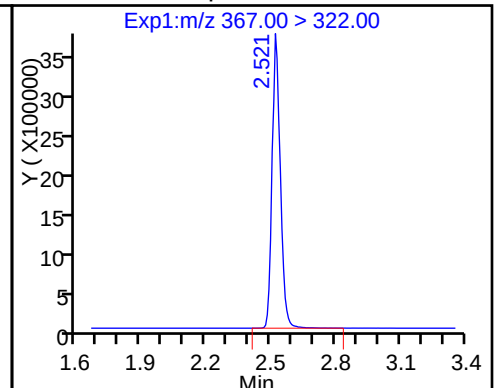
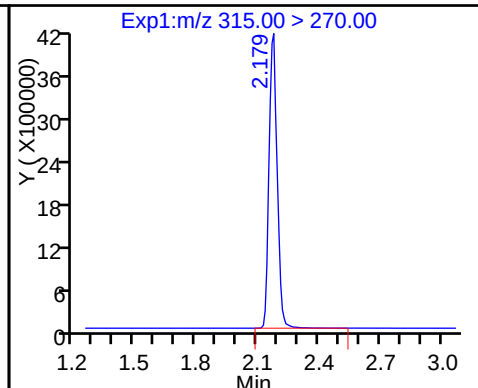
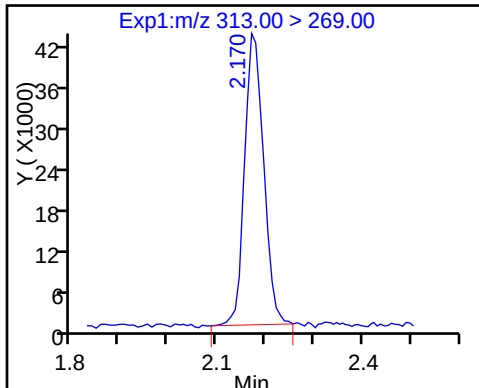
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

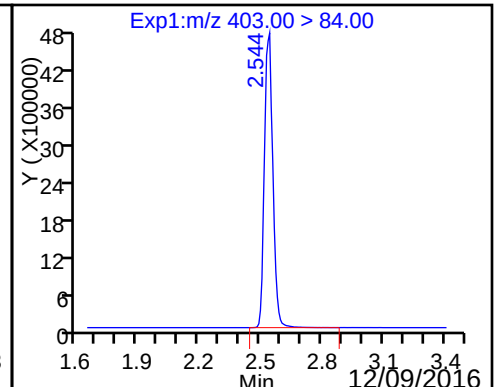
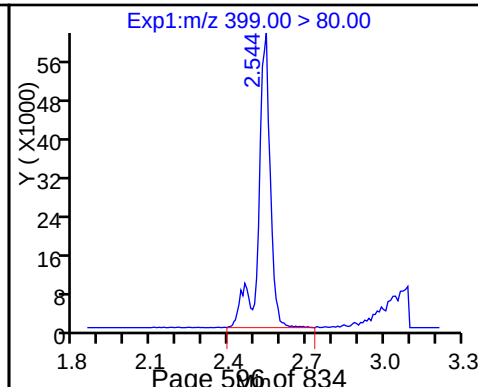
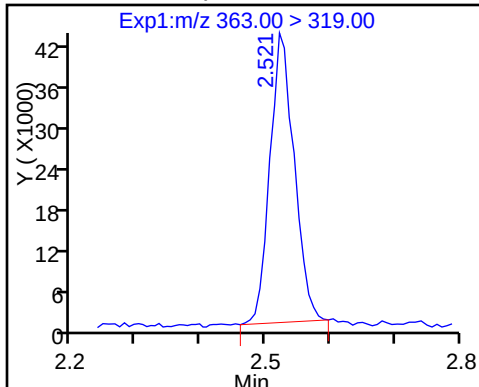
D 11 13C4-PFHpA



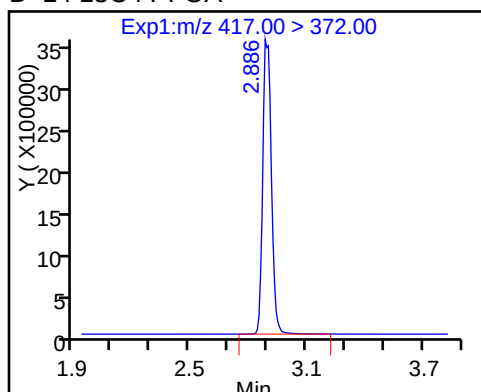
12 Perfluoroheptanoic acid

9 Perfluorohexanesulfonic acid

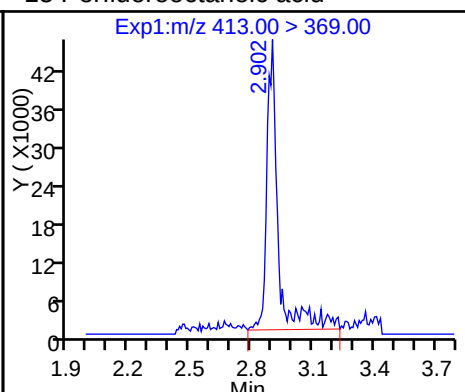
D 10 18O2 PFHxS



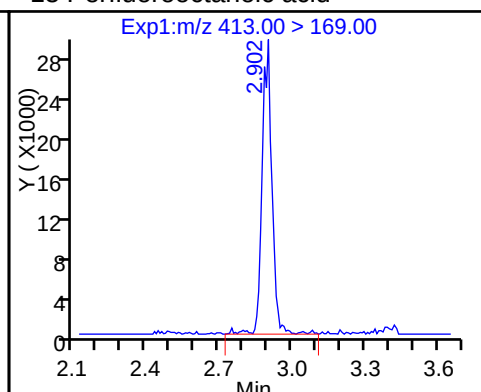
## D 14 13C4 PFOA



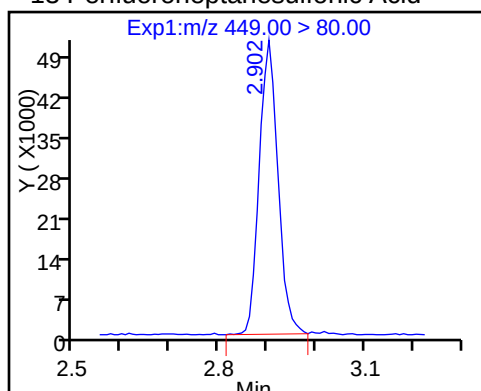
## 15 Perfluorooctanoic acid



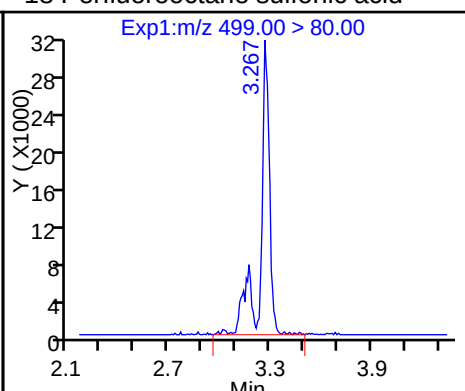
## 15 Perfluorooctanoic acid



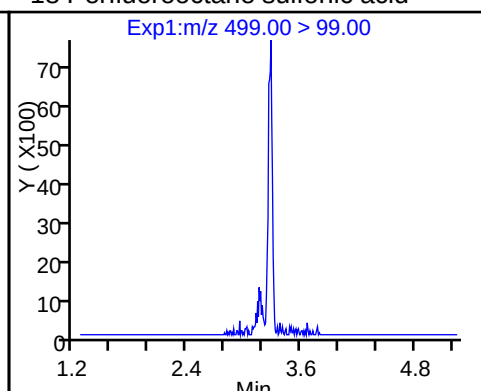
## 13 Perfluoroheptanesulfonic Acid



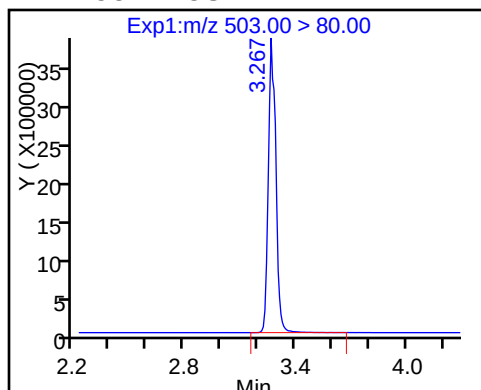
## 18 Perfluorooctane sulfonic acid



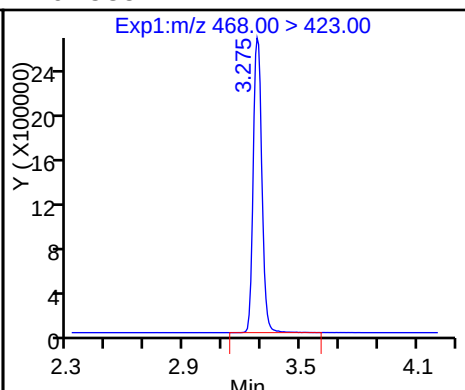
## 18 Perfluorooctane sulfonic acid



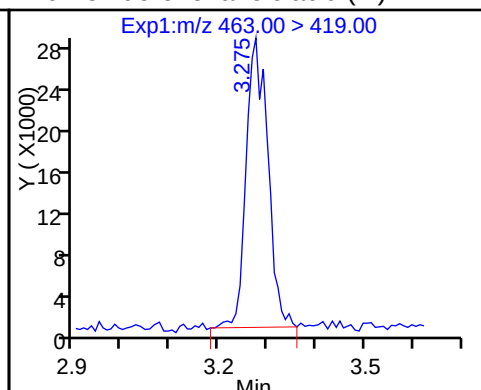
## D 17 13C4 PFOS



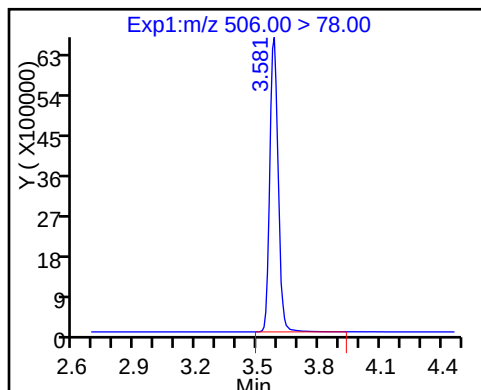
## D 19 13C5 PFNA



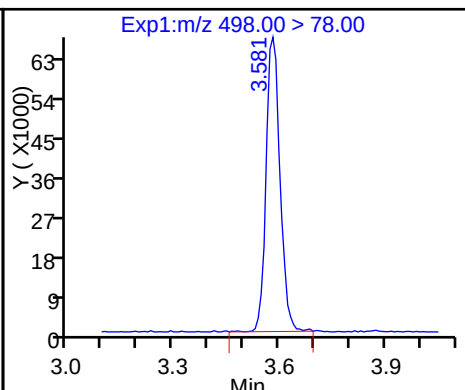
## 20 Perfluorononanoic acid (M)



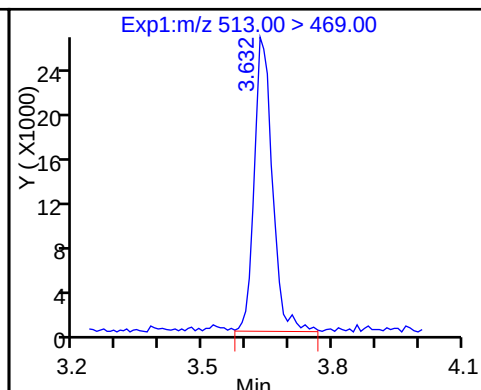
## D 21 13C8 FOSA



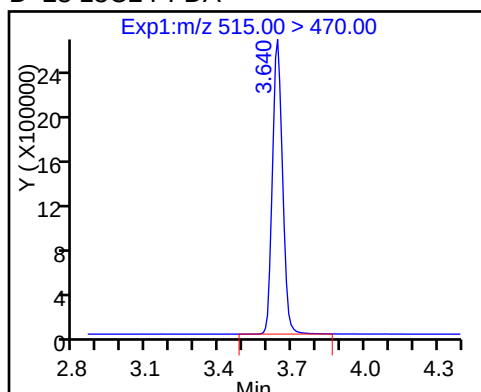
## 22 Perfluorooctane Sulfonamide



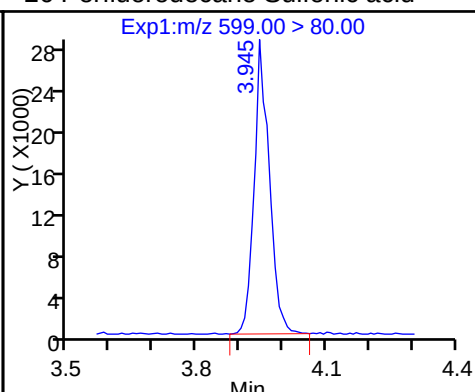
## 24 Perfluorodecanoic acid



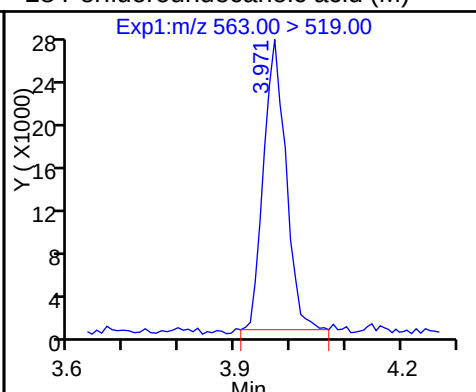
## D 23 13C2 PFDA



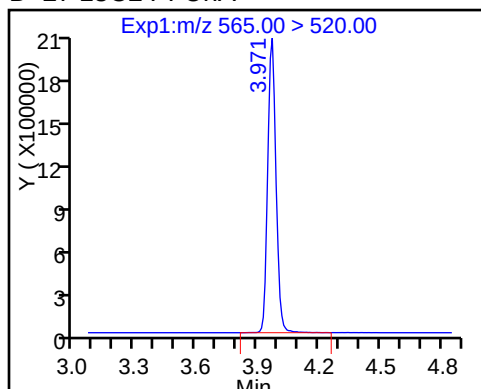
## 26 Perfluorodecane Sulfonic acid



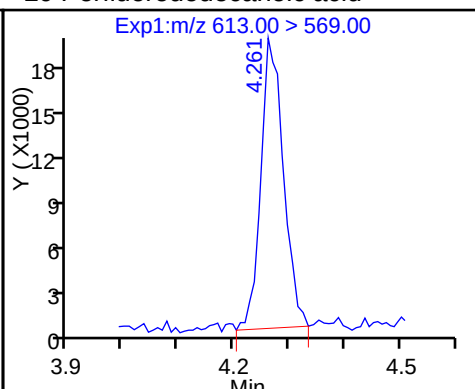
## 28 Perfluoroundecanoic acid (M)



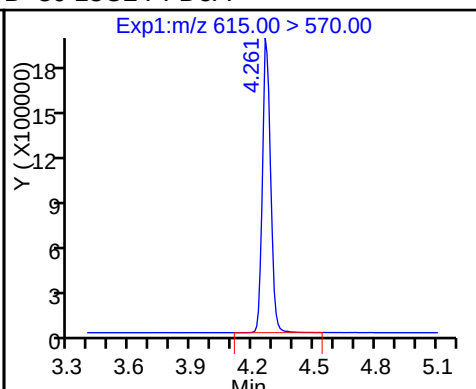
## D 27 13C2 PFUnA



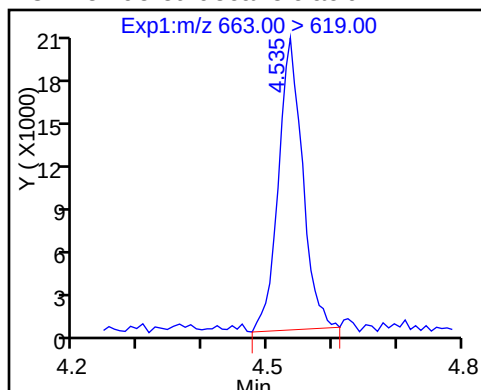
## 29 Perfluorododecanoic acid



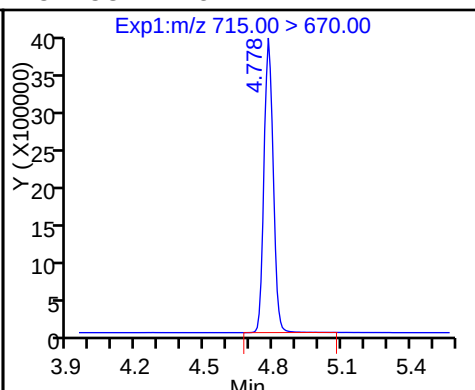
## D 30 13C2 PFDa



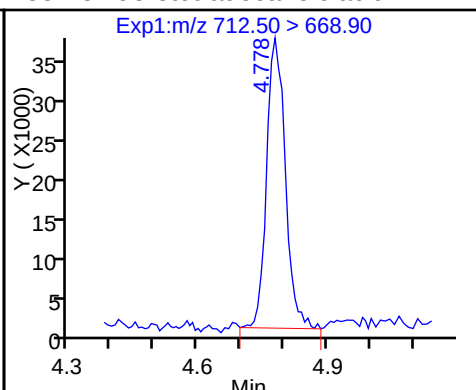
## 31 Perfluorotridecanoic acid



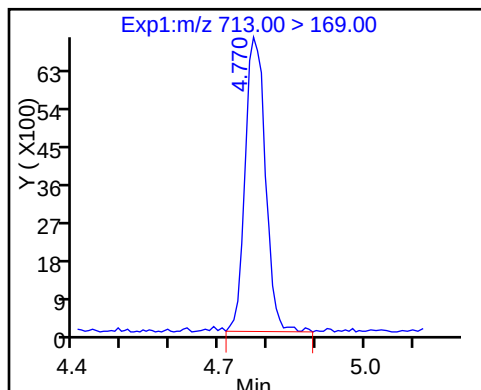
## D 32 13C2-PFTeDA



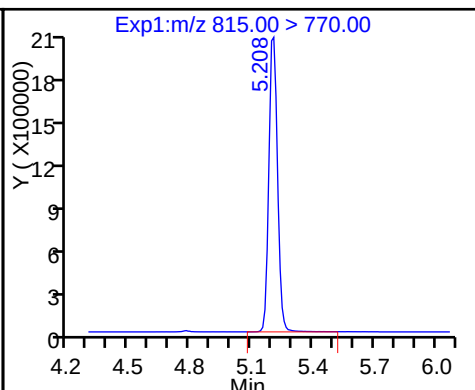
## 33 Perfluorotetradecanoic acid



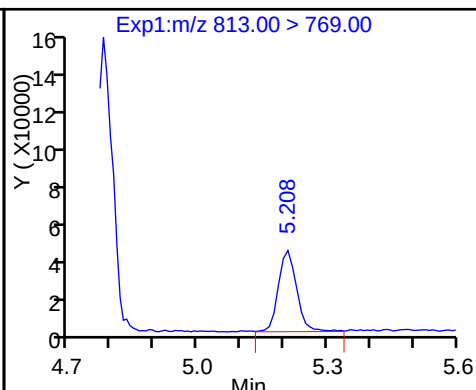
## 33 Perfluorotetradecanoic acid



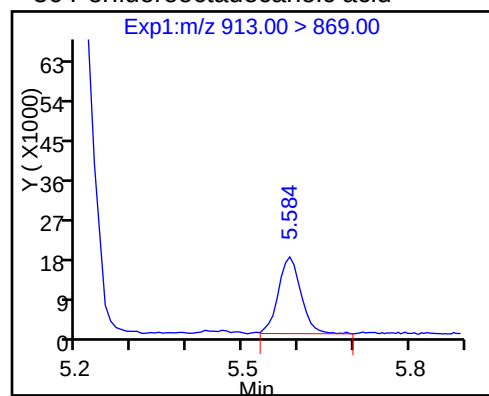
## D 34 13C2-PFHxDA



## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



## TestAmerica Sacramento

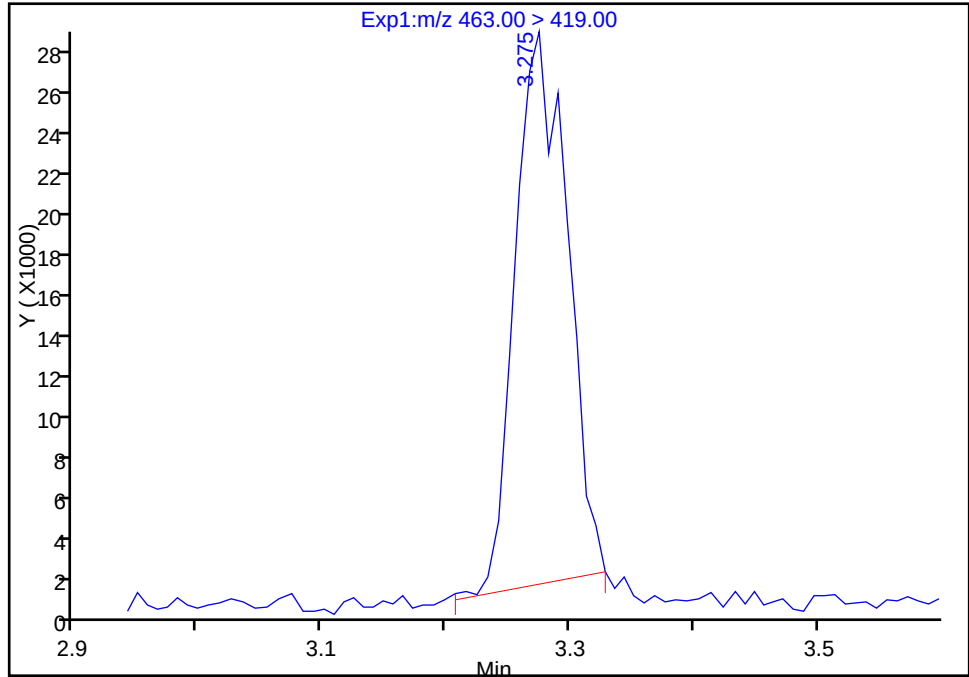
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_004.d  
Injection Date: 03-Dec-2016 13:48:41 Instrument ID: A8\_N  
Lims ID: IC L1  
Client ID:  
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**20 Perfluorononanoic acid, CAS: 375-95-1**

Signal: 1

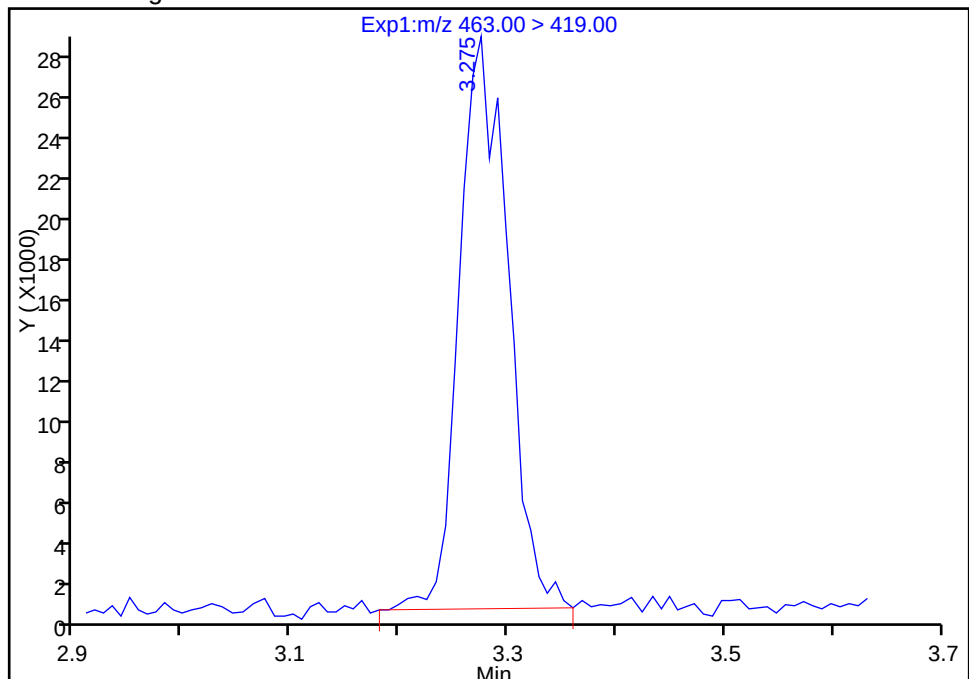
RT: 3.28  
Area: 78587  
Amount: 0.492646  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.28  
Area: 86737  
Amount: 0.534631  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 09:42:37

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

## TestAmerica Sacramento

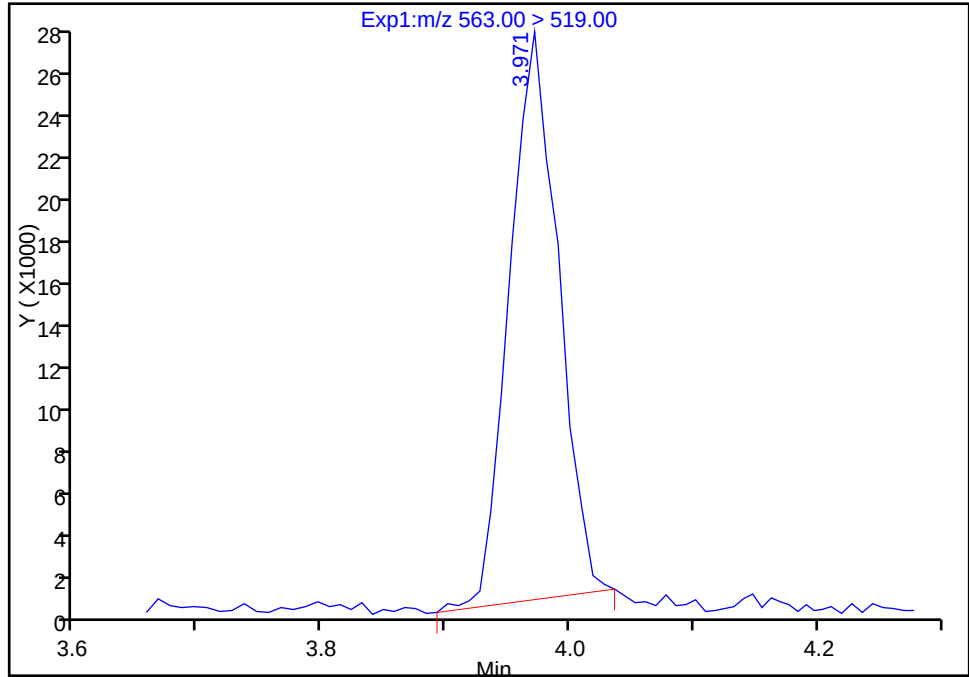
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_004.d  
Injection Date: 03-Dec-2016 13:48:41 Instrument ID: A8\_N  
Lims ID: IC L1  
Client ID:  
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**28 Perfluoroundecanoic acid, CAS: 2058-94-8**

Signal: 1

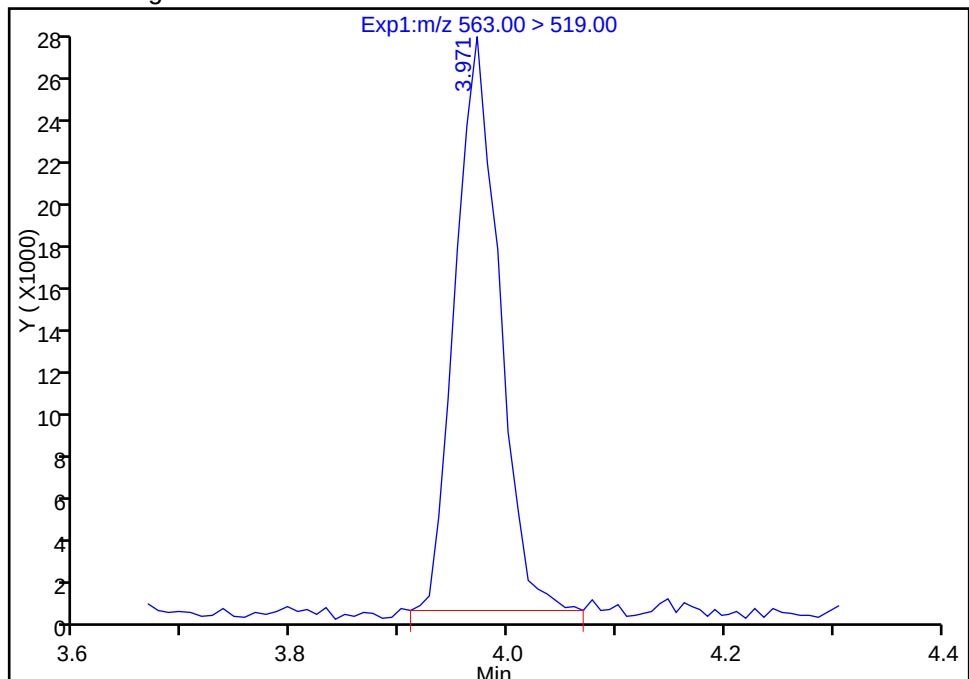
RT: 3.97  
Area: 74499  
Amount: 0.603647  
Amount Units: ng/ml

## Processing Integration Results



RT: 3.97  
Area: 77125  
Amount: 0.620524  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 09:42:37

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_005.d  
 Lims ID: IC L2  
 Client ID:  
 Sample Type: IC Calib Level: 2  
 Inject. Date: 03-Dec-2016 13:56:13 ALS Bottle#: 38 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L2\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:24:08 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:43:09

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
|--------|----|--------|--------|--------|----------|--------------|---------------|------|-----|-------|

D 2 13C4 PFBA

217.00 > 172.00 1.574 1.574 0.0 16567343 49.3 98.7 1253121

1 Perfluorobutyric acid

212.90 > 169.00 1.574 1.577 -0.003 1.000 286663 0.9899 99.0 1783

3 Perfluoropentanoic acid

262.90 > 219.00 1.858 1.861 -0.003 1.000 267561 1.02 102 2233

D 4 13C5-PFPeA

267.90 > 223.00 1.858 1.861 -0.003 12919402 48.8 97.7 738841

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.897 1.900 -0.003 1.000 433384 0.8763 99.1

298.90 > 99.00 1.897 1.900 -0.003 1.000 173533 2.50(0.00-0.00) 99.1

7 Perfluorohexanoic acid

313.00 > 269.00 2.164 2.164 0.0 1.000 221801 0.9891 98.9 4857

D 6 13C2 PFHxA

315.00 > 270.00 2.164 2.164 0.0 11763139 49.5 99.1 702628

D 11 13C4-PFHpA

367.00 > 322.00 2.512 2.511 0.001 10489748 50.6 101 757325

12 Perfluoroheptanoic acid

363.00 > 319.00 2.512 2.512 0.0 1.000 215700 1.00 100 2505

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.535 2.531 0.004 1.000 340243 1.00 110

D 10 18O2 PFHxS

403.00 > 84.00 2.535 2.531 0.004 14656306 46.9 99.2 569002

D 14 13C4 PFOA

417.00 > 372.00 2.886 2.880 0.006 11390215 51.9 104 1255788

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec  | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|--------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |       |        |       |
| 413.00 > 369.00                  | 2.894 | 2.887  | 0.007  | 1.000  | 266474   | 1.09         |                 | 109   | 2568   |       |
| 413.00 > 169.00                  | 2.886 | 2.887  | -0.001 | 0.997  | 153584   |              | 1.74(0.90-1.10) | 109   | 8517   |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |       |        |       |
| 449.00 > 80.00                   | 2.886 | 2.888  | -0.002 | 1.000  | 251617   | 0.9178       |                 | 96.4  |        |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |       |        |       |
| 499.00 > 80.00                   | 3.259 | 3.258  | 0.001  | 1.000  | 230863   | 0.9134       |                 | 98.4  | 60496  |       |
| 499.00 > 99.00                   | 3.268 | 3.258  | 0.010  | 1.003  | 49554    |              | 4.66(0.90-1.10) | 98.4  | 7390   |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |       |        |       |
| 503.00 > 80.00                   | 3.259 | 3.259  | 0.0    |        | 11132983 | 45.3         |                 | 94.7  | 553508 |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |       |        |       |
| 468.00 > 423.00                  | 3.268 | 3.263  | 0.005  |        | 8362456  | 50.3         |                 | 101   | 686636 |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |       |        |       |
| 463.00 > 419.00                  | 3.268 | 3.263  | 0.005  | 1.000  | 158219   | 0.9495       |                 | 94.9  | 2139   |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |       |        |       |
| 506.00 > 78.00                   | 3.565 | 3.571  | -0.006 |        | 19849207 | 49.3         |                 | 98.7  | 435087 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |       |        |       |
| 498.00 > 78.00                   | 3.573 | 3.574  | -0.001 | 1.000  | 375193   | 1.01         |                 | 101   | 37696  |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |       |        |       |
| 513.00 > 469.00                  | 3.632 | 3.623  | 0.009  | 1.000  | 147102   | 0.9741       |                 | 97.4  | 6264   |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |       |        |       |
| 515.00 > 470.00                  | 3.624 | 3.626  | -0.002 |        | 7861453  | 49.8         |                 | 99.6  | 210924 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |       |        |       |
| 599.00 > 80.00                   | 3.944 | 3.936  | 0.008  | 1.000  | 150371   | 1.01         |                 | 105   |        |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |       |        |       |
| 563.00 > 519.00                  | 3.953 | 3.955  | -0.003 | 1.000  | 130643   | 1.01         |                 | 101   | 3153   |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |       |        |       |
| 565.00 > 520.00                  | 3.961 | 3.958  | 0.003  |        | 6085968  | 51.2         |                 | 102   | 355525 |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |       |        |       |
| 613.00 > 569.00                  | 4.254 | 4.250  | 0.004  | 1.000  | 100943   | 0.9761       |                 | 97.6  | 1508   |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |       |        |       |
| 615.00 > 570.00                  | 4.262 | 4.251  | 0.011  |        | 5448882  | 48.6         |                 | 97.2  | 155924 |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |       |        |       |
| 663.00 > 619.00                  | 4.515 | 4.518  | -0.003 | 1.000  | 100348   | 0.9695       |                 | 96.9  | 172    |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |       |        |       |
| 715.00 > 670.00                  | 4.762 | 4.759  | 0.003  |        | 11401035 | 49.3         |                 | 98.6  | 776058 |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |       |        |       |
| 712.50 > 668.90                  | 4.770 | 4.761  | 0.009  | 1.000  | 215694   | 1.07         |                 | 107   | 105    |       |
| 713.00 > 169.00                  | 4.762 | 4.761  | 0.001  | 0.998  | 35526    |              | 6.07(0.00-0.00) | 107   | 12035  |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |       |        |       |
| 815.00 > 770.00                  | 5.196 | 5.186  | 0.010  |        | 6483658  | 50.0         |                 | 100.0 | 170445 |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |       |        |       |
| 813.00 > 769.00                  | 5.196 | 5.186  | 0.010  | 1.000  | 184956   | 0.9549       |                 | 95.5  | 215    |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |       |        |       |
| 913.00 > 869.00                  | 5.565 | 5.559  | 0.006  | 1.000  | 119152   | 1.10         |                 | 110   | 244    |       |



**Reagents:**

LCPFC-L2\_00022

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_005.d

Injection Date: 03-Dec-2016 13:56:13

Instrument ID: A8\_N

Lims ID: IC L2

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 38

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

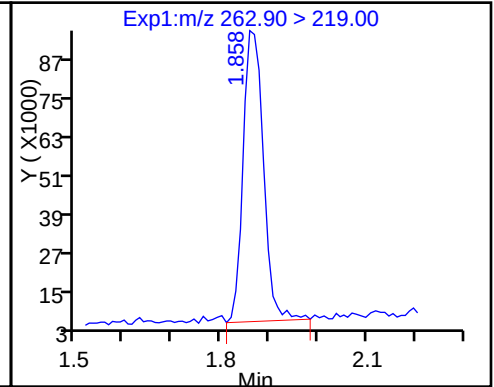
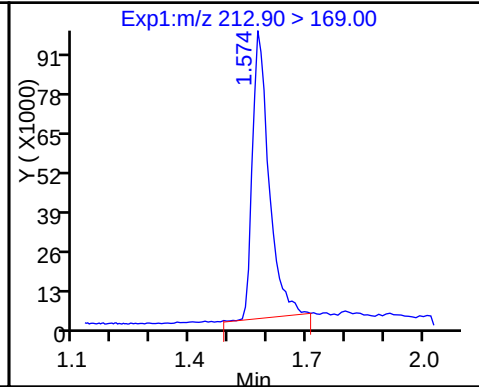
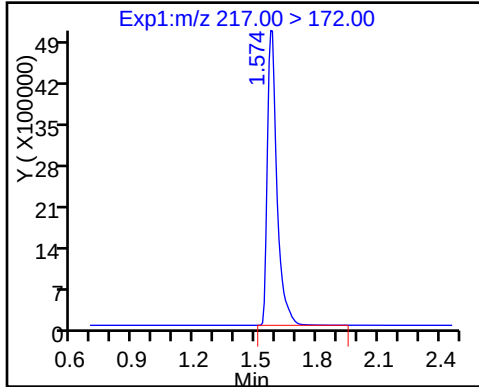
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

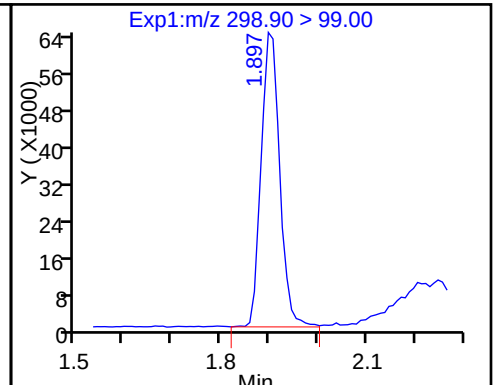
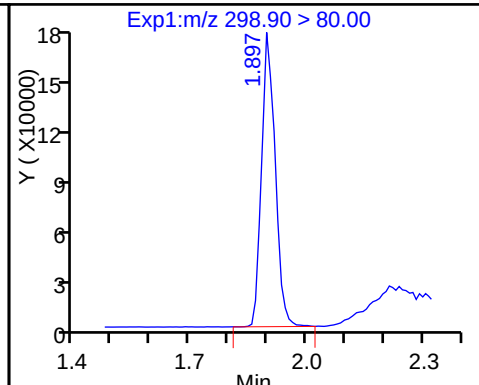
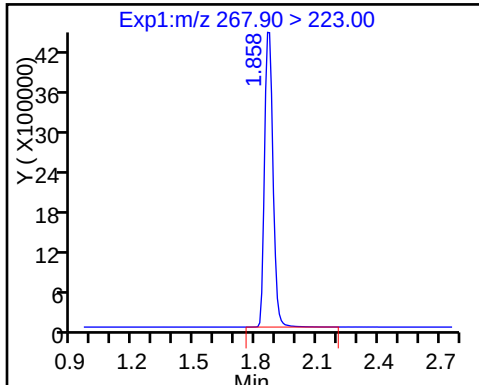
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

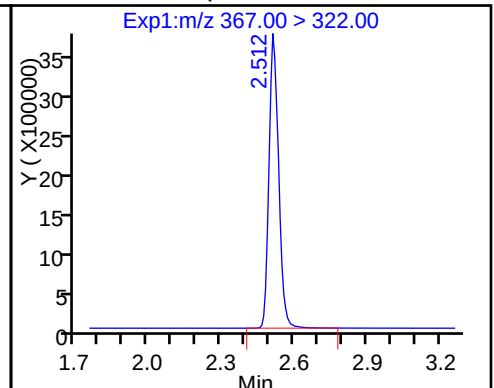
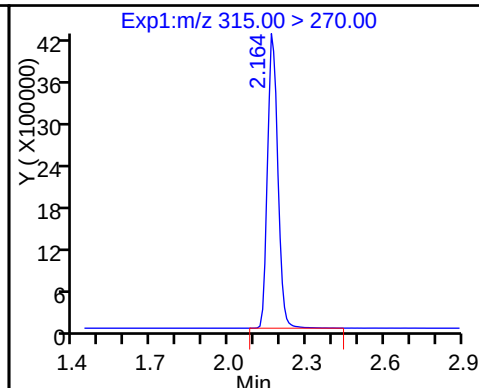
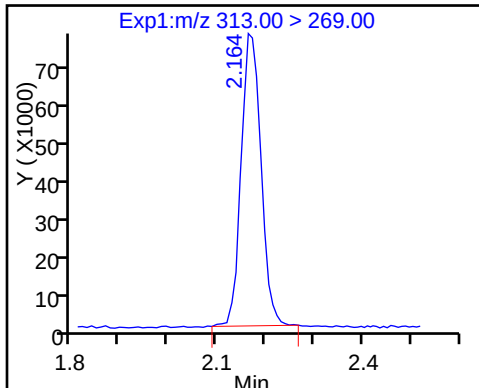
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

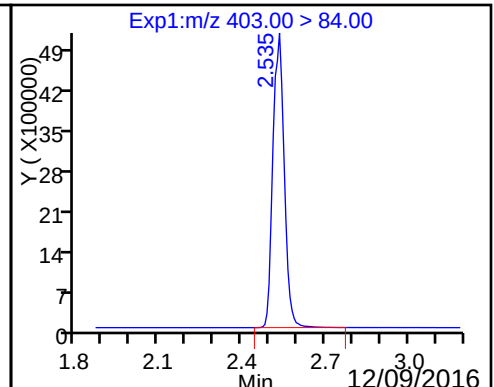
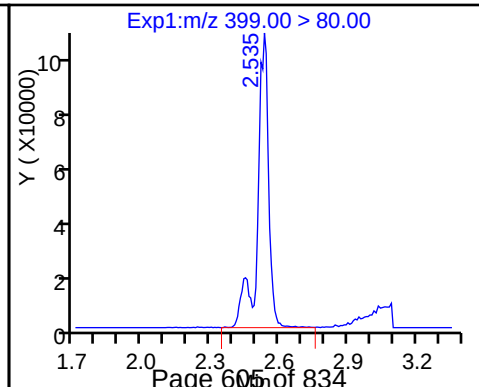
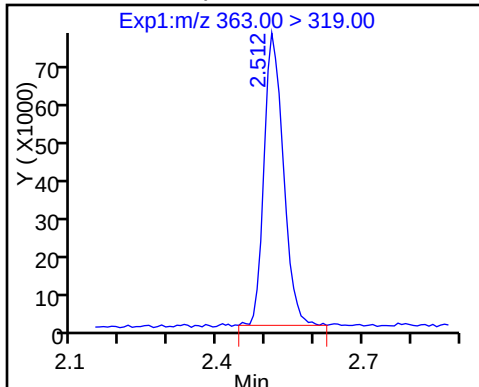
D 11 13C4-PFHpA



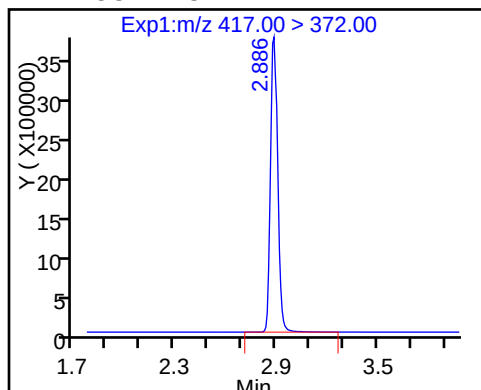
12 Perfluoroheptanoic acid

9 Perfluorohexanesulfonic acid

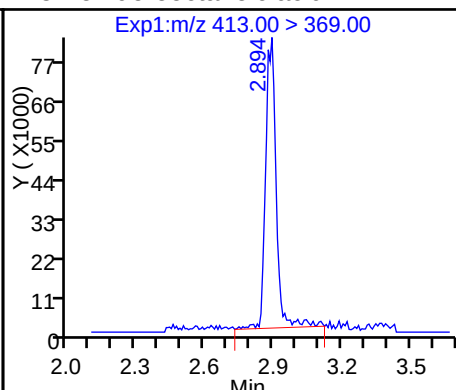
D 10 18O2 PFHxS



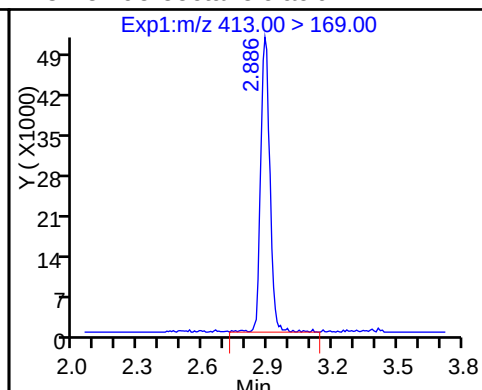
## D 14 13C4 PFOA



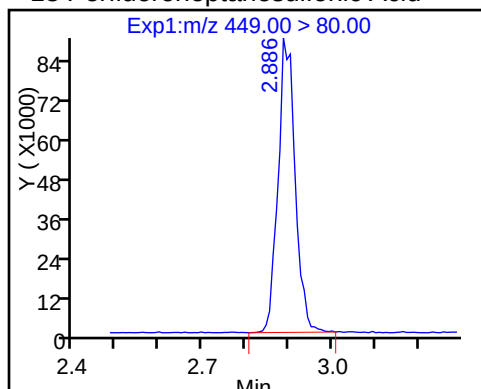
## 15 Perfluorooctanoic acid



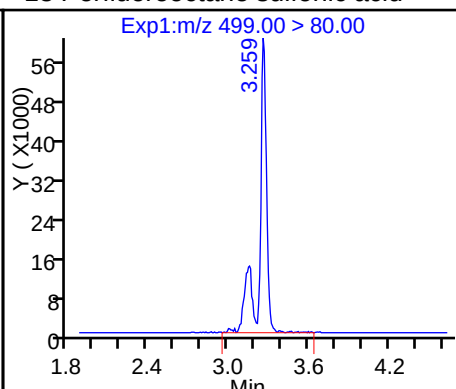
## 15 Perfluorooctanoic acid



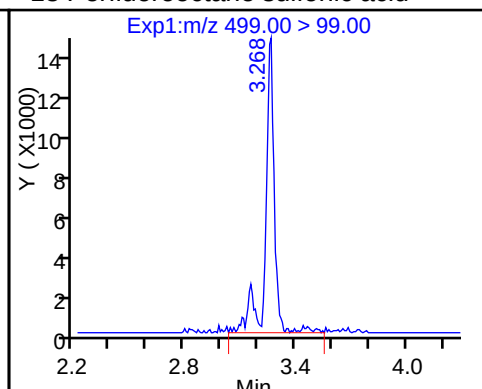
## 13 Perfluoroheptanesulfonic Acid



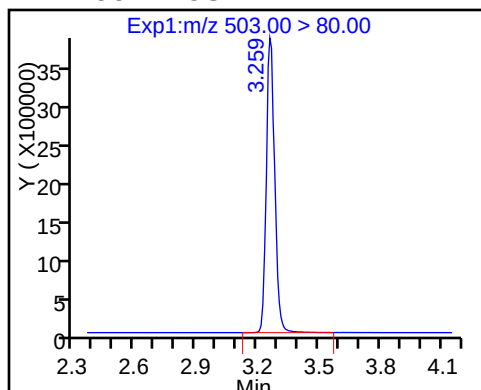
## 18 Perfluorooctane sulfonic acid



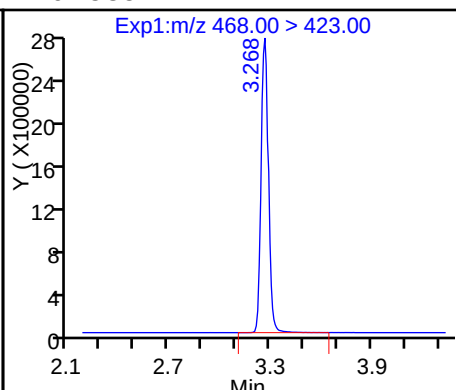
## 18 Perfluorooctane sulfonic acid



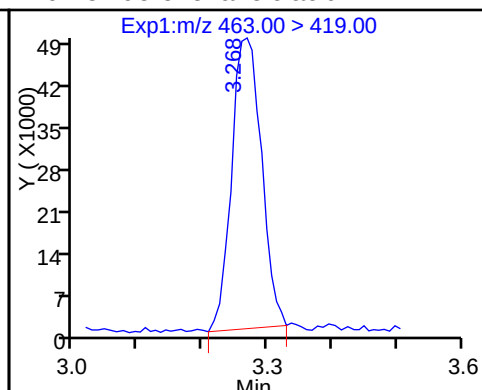
## D 17 13C4 PFOS



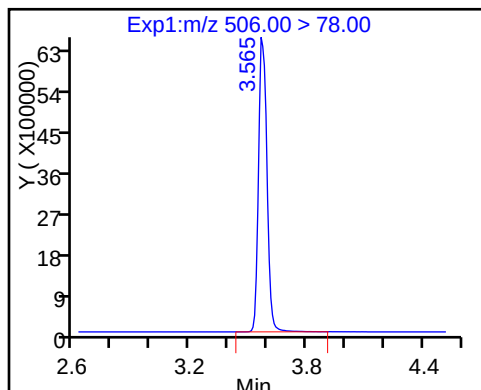
## D 19 13C5 PFNA



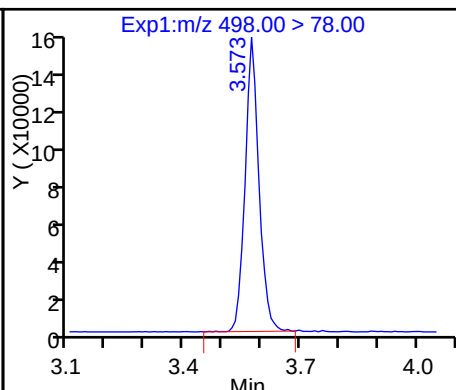
## 20 Perfluorononanoic acid



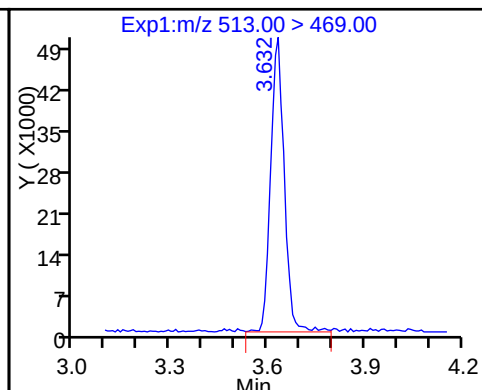
## D 21 13C8 FOSA



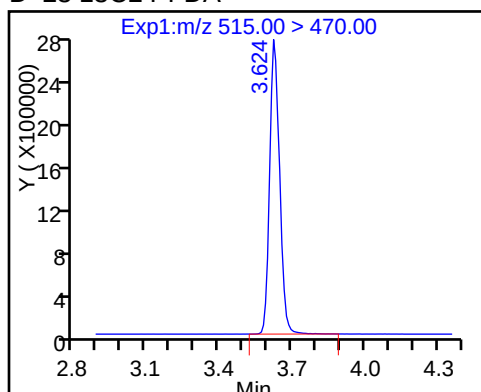
## 22 Perfluorooctane Sulfonamide



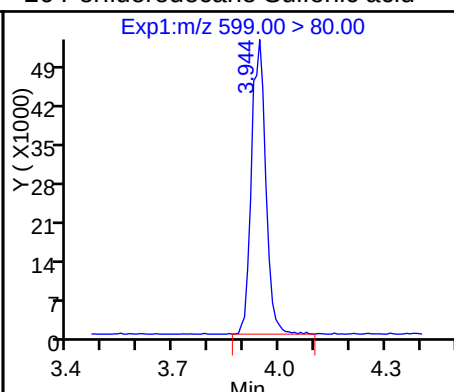
## 24 Perfluorodecanoic acid



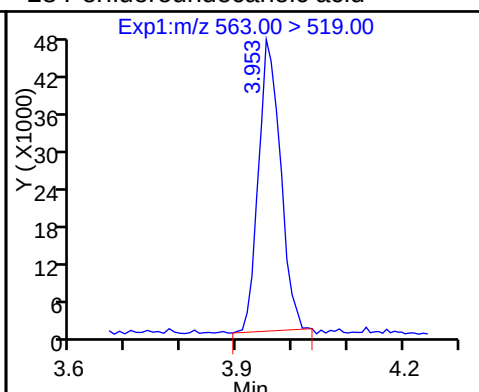
## D 23 13C2 PFDA



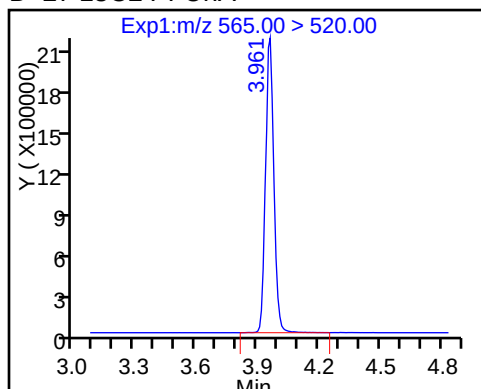
## 26 Perfluorodecane Sulfonic acid



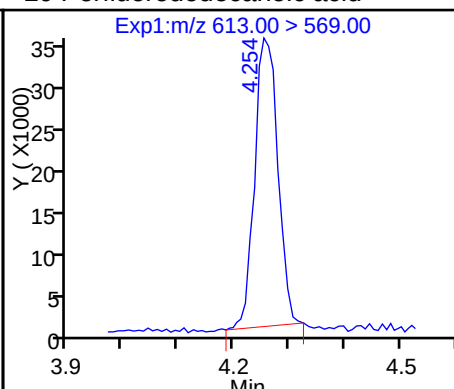
## 28 Perfluoroundecanoic acid



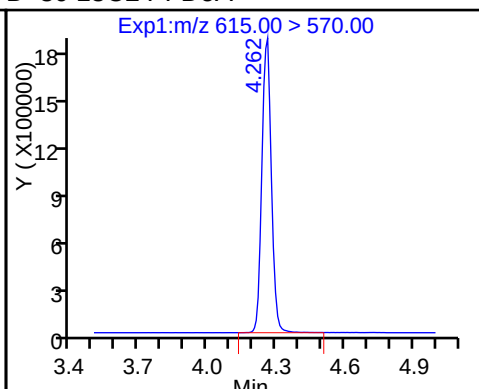
## D 27 13C2 PFUnA



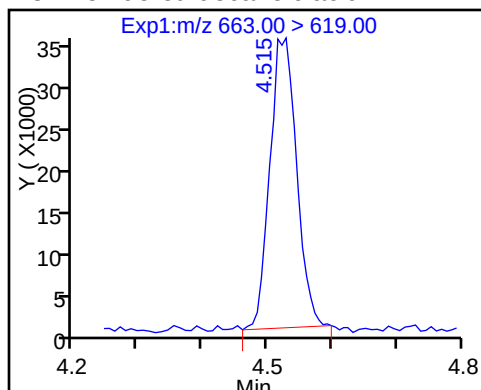
## 29 Perfluorododecanoic acid



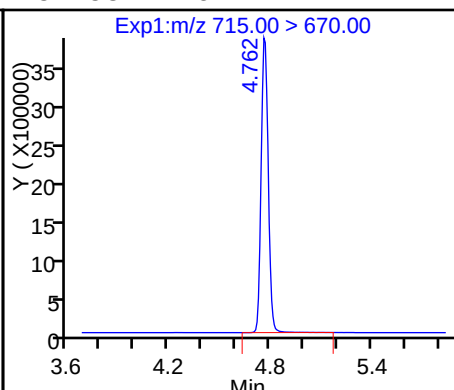
## D 30 13C2 PFDa



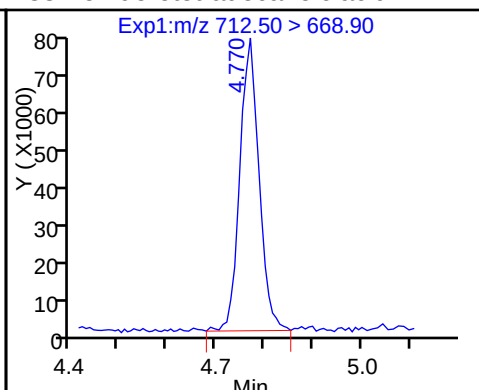
## 31 Perfluorotridecanoic acid



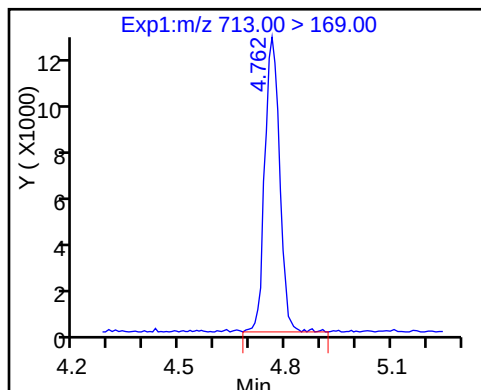
## D 32 13C2-PFTeDA



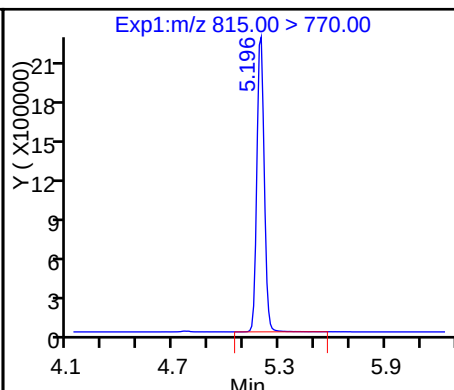
## 33 Perfluorotetradecanoic acid



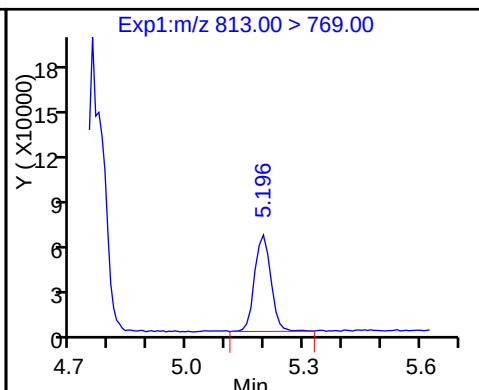
## 33 Perfluorotetradecanoic acid



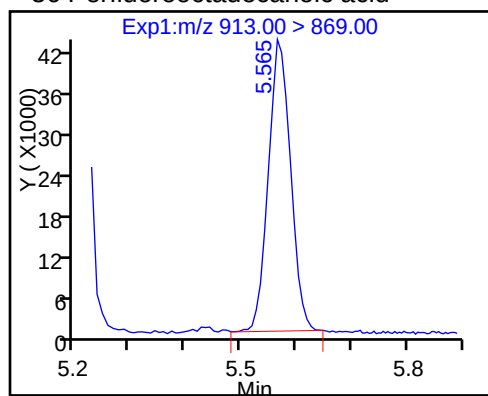
## D 34 13C2-PFHxDA



## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_006.d  
 Lims ID: IC L3  
 Client ID:  
 Sample Type: IC Calib Level: 3  
 Inject. Date: 03-Dec-2016 14:03:44 ALS Bottle#: 39 Worklist Smp#: 6  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L3\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:24:10 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:43:24

| Signal                         | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |           |           |           |          |                 |                 |      |         |       |
| 217.00 > 172.00                | 1.574 | 1.574     | 0.0       |           | 19799279 | 59.0            |                 | 118  | 1507463 |       |
| 1 Perfluorobutyric acid        |       |           |           |           |          |                 |                 |      |         |       |
| 212.90 > 169.00                | 1.574 | 1.577     | -0.003    | 1.000     | 1758998  | 5.08            |                 | 102  | 10276   |       |
| 3 Perfluoropentanoic acid      |       |           |           |           |          |                 |                 |      |         |       |
| 262.90 > 219.00                | 1.858 | 1.861     | -0.003    | 1.000     | 1580002  | 4.98            |                 | 99.6 | 13754   |       |
| D 4 13C5-PFPeA                 |       |           |           |           |          |                 |                 |      |         |       |
| 267.90 > 223.00                | 1.858 | 1.861     | -0.003    |           | 15634346 | 59.1            |                 | 118  | 910049  |       |
| 5 Perfluorobutanesulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                 | 1.897 | 1.900     | -0.003    | 1.000     | 2768149  | 4.72            |                 | 107  |         |       |
| 298.90 > 99.00                 | 1.897 | 1.900     | -0.003    | 1.000     | 1152600  |                 | 2.40(0.00-0.00) | 107  |         |       |
| 7 Perfluorohexanoic acid       |       |           |           |           |          |                 |                 |      |         |       |
| 313.00 > 269.00                | 2.163 | 2.164     | -0.001    | 1.000     | 1358530  | 5.11            |                 | 102  | 38617   |       |
| D 6 13C2 PFHxA                 |       |           |           |           |          |                 |                 |      |         |       |
| 315.00 > 270.00                | 2.163 | 2.164     | -0.001    |           | 13959775 | 58.8            |                 | 118  | 866927  |       |
| D 11 13C4-PFHpA                |       |           |           |           |          |                 |                 |      |         |       |
| 367.00 > 322.00                | 2.508 | 2.511     | -0.003    |           | 12498264 | 60.3            |                 | 121  | 1070818 |       |
| 12 Perfluoroheptanoic acid     |       |           |           |           |          |                 |                 |      |         |       |
| 363.00 > 319.00                | 2.516 | 2.512     | 0.004     | 1.000     | 1254320  | 4.89            |                 | 97.7 | 16816   |       |
| 9 Perfluorohexanesulfonic acid |       |           |           |           |          |                 |                 |      |         |       |
| 399.00 > 80.00                 | 2.531 | 2.531     | 0.0       | 1.000     | 1846932  | 4.58            |                 | 101  |         |       |
| D 10 18O2 PFHxS                |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                 | 2.531 | 2.531     | 0.0       |           | 17374498 | 55.6            |                 | 118  | 872275  |       |
| D 14 13C4 PFOA                 |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                | 2.880 | 2.880     | 0.0       |           | 13257596 | 60.5            |                 | 121  | 935997  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                  | 2.880 | 2.887  | -0.007 | 1.000  | 1455373  | 5.12         |                 | 102  | 23006   |       |
| 413.00 > 169.00                  | 2.888 | 2.887  | 0.001  | 1.003  | 828495   |              | 1.76(0.90-1.10) | 102  | 49224   |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |         |       |
| 449.00 > 80.00                   | 2.888 | 2.888  | 0.0    | 1.000  | 1641199  | 4.77         |                 | 100  |         |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 499.00 > 80.00                   | 3.255 | 3.258  | -0.003 | 1.000  | 1443163  | 4.55         |                 | 98.0 | 374092  |       |
| 499.00 > 99.00                   | 3.255 | 3.258  | -0.003 | 1.000  | 319030   |              | 4.52(0.90-1.10) | 98.0 | 32937   |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |         |       |
| 503.00 > 80.00                   | 3.263 | 3.259  | 0.004  |        | 13983781 | 56.8         |                 | 119  | 604878  |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |         |       |
| 468.00 > 423.00                  | 3.263 | 3.263  | 0.0    |        | 10108070 | 60.7         |                 | 121  | 545062  |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 463.00 > 419.00                  | 3.263 | 3.263  | 0.0    | 1.000  | 981559   | 4.87         |                 | 97.5 | 16647   |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |         |       |
| 506.00 > 78.00                   | 3.576 | 3.571  | 0.005  |        | 23126232 | 57.5         |                 | 115  | 745838  |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |         |       |
| 498.00 > 78.00                   | 3.576 | 3.574  | 0.002  | 1.000  | 2262174  | 5.24         |                 | 105  | 133644  |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 513.00 > 469.00                  | 3.618 | 3.623  | -0.005 | 1.000  | 868604   | 4.91         |                 | 98.1 | 29437   |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |         |       |
| 515.00 > 470.00                  | 3.627 | 3.626  | 0.001  |        | 9213875  | 58.4         |                 | 117  | 291561  |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 599.00 > 80.00                   | 3.938 | 3.936  | 0.002  | 1.000  | 868168   | 4.64         |                 | 96.2 |         |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 563.00 > 519.00                  | 3.956 | 3.955  | 0.001  | 1.000  | 704273   | 4.66         |                 | 93.2 | 19079   |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |         |       |
| 565.00 > 520.00                  | 3.956 | 3.958  | -0.002 |        | 7086903  | 59.7         |                 | 119  | 336150  |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 613.00 > 569.00                  | 4.253 | 4.250  | 0.003  | 1.000  | 606951   | 4.85         |                 | 96.9 | 11284   |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |         |       |
| 615.00 > 570.00                  | 4.253 | 4.251  | 0.002  |        | 6599493  | 58.9         |                 | 118  | 172819  |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 663.00 > 619.00                  | 4.521 | 4.518  | 0.003  | 1.000  | 627673   | 5.01         |                 | 100  | 1096    |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |         |       |
| 715.00 > 670.00                  | 4.761 | 4.759  | 0.002  |        | 13488161 | 58.3         |                 | 117  | 1155339 |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |         |       |
| 712.50 > 668.90                  | 4.761 | 4.761  | 0.0    | 1.000  | 1175506  | 4.80         |                 | 96.1 | 484     |       |
| 713.00 > 169.00                  | 4.761 | 4.761  | 0.0    | 1.000  | 194335   |              | 6.05(0.00-0.00) | 96.1 | 68892   |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |         |       |
| 815.00 > 770.00                  | 5.180 | 5.186  | -0.006 |        | 7591947  | 58.5         |                 | 117  | 144235  |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 813.00 > 769.00                  | 5.191 | 5.186  | 0.005  | 1.000  | 766480   | 5.09         |                 | 102  | 693     |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 913.00 > 869.00                  | 5.561 | 5.559  | 0.002  | 1.000  | 673971   | 5.14         |                 | 103  | 887     |       |

**Reagents:**

LCPFC-L3\_00019

Amount Added: 1.00

Units: mL



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_006.d

Injection Date: 03-Dec-2016 14:03:44

Instrument ID: A8\_N

Lims ID: IC L3

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#:

39

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor:

1.0000

Method: A8\_N

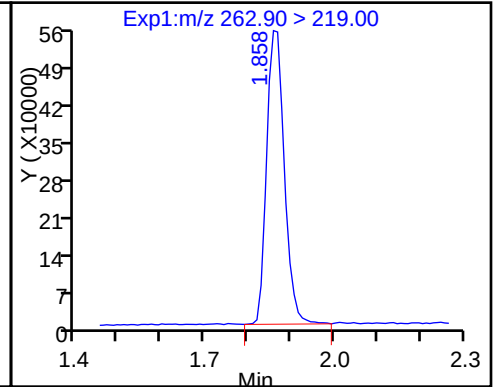
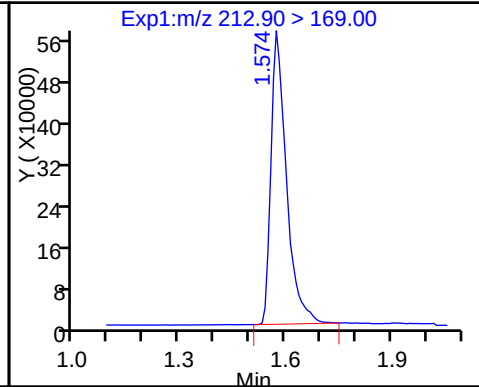
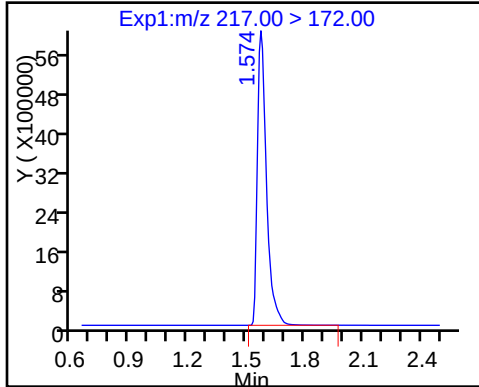
Limit Group:

LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

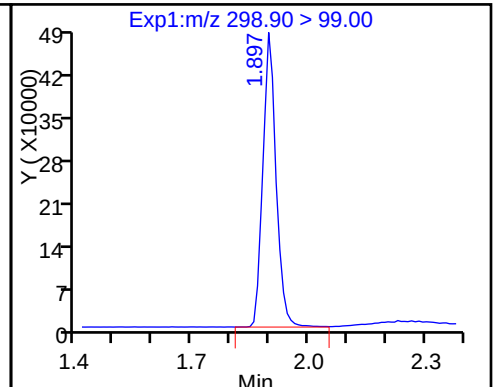
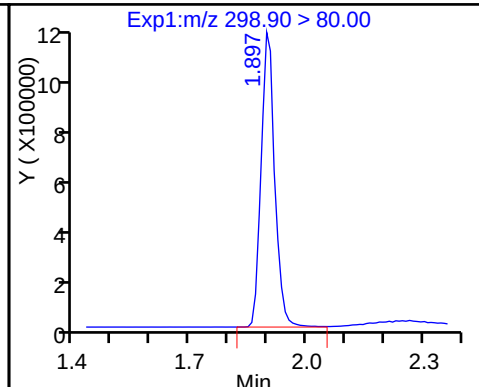
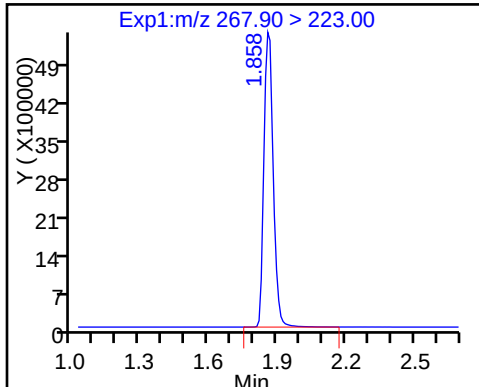
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

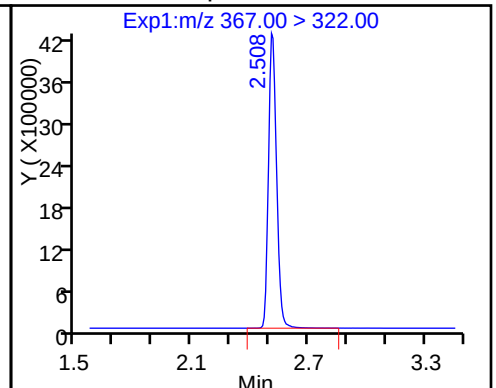
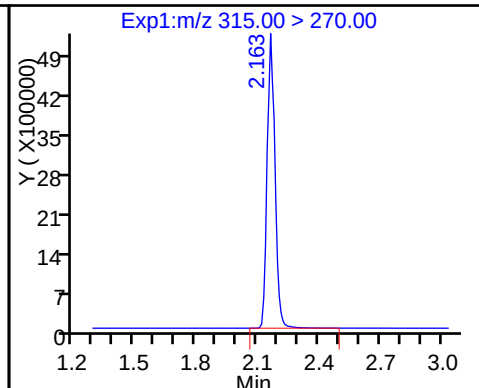
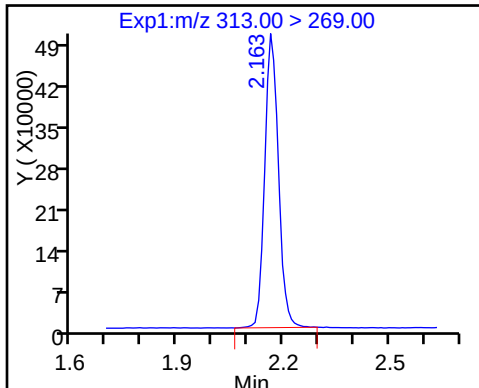
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

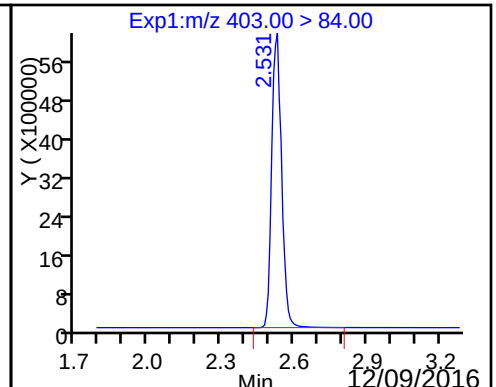
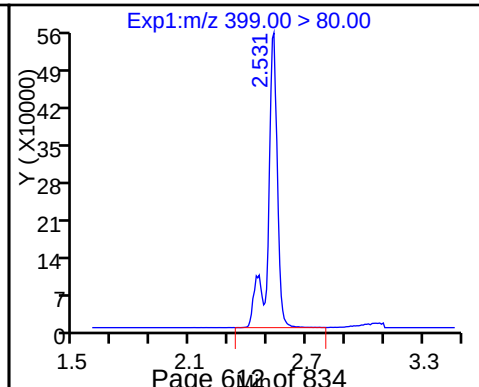
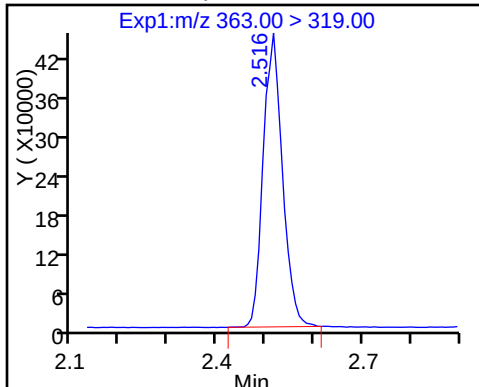
D 11 13C4-PFHpA



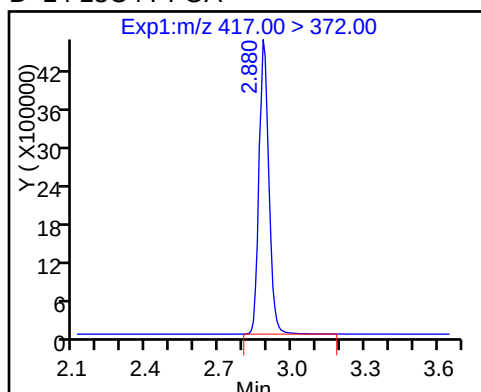
12 Perfluoroheptanoic acid

9 Perfluorohexanesulfonic acid

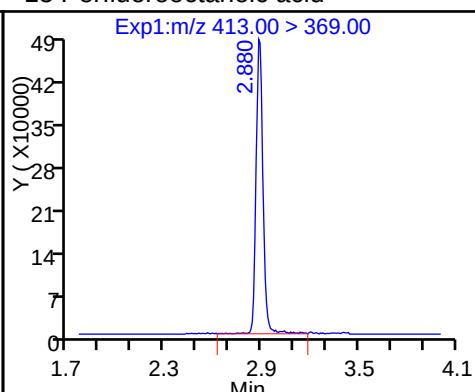
D 10 18O2 PFHxS



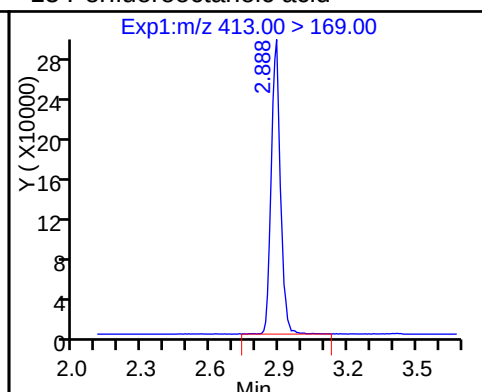
## D 14 13C4 PFOA



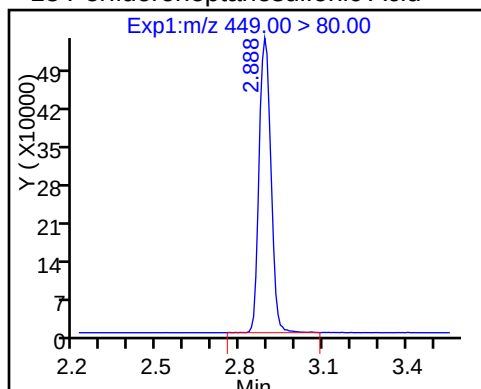
## 15 Perfluorooctanoic acid



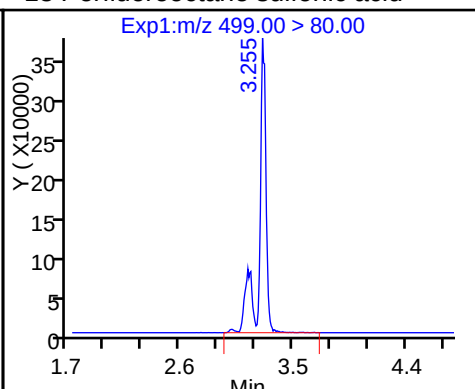
## 15 Perfluorooctanoic acid



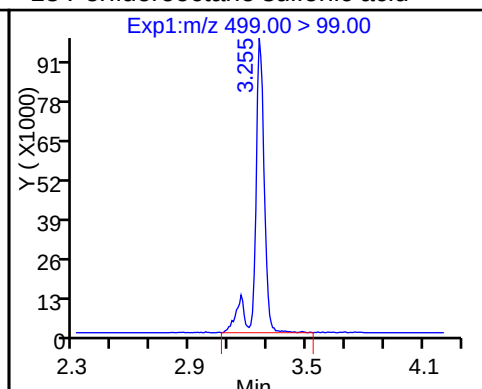
## 13 Perfluoroheptanesulfonic Acid



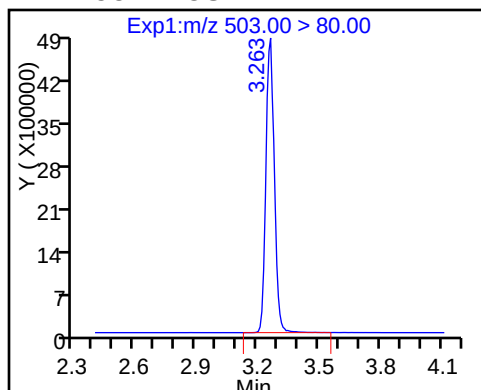
## 18 Perfluorooctane sulfonic acid



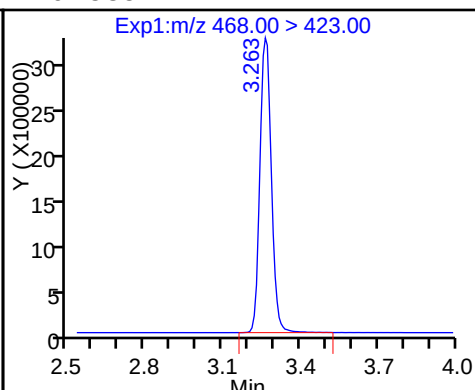
## 18 Perfluorooctane sulfonic acid



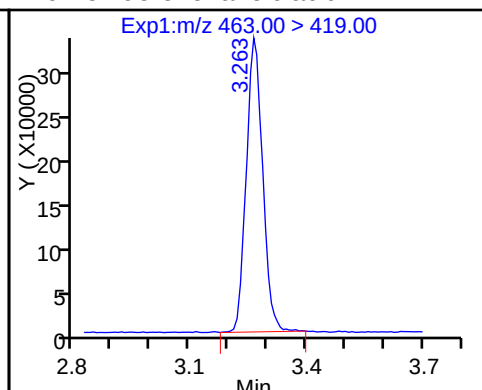
## D 17 13C4 PFOS



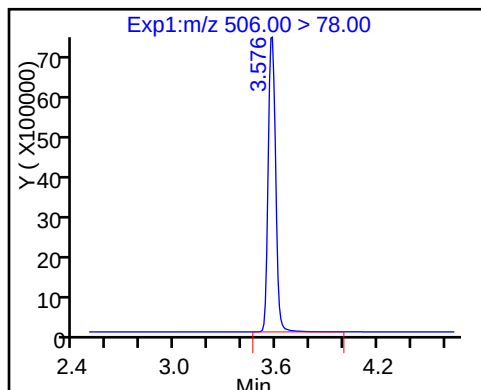
## D 19 13C5 PFNA



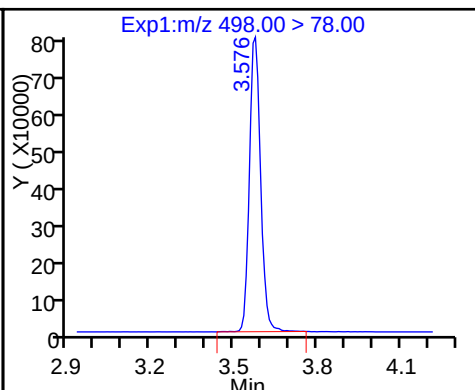
## 20 Perfluorononanoic acid



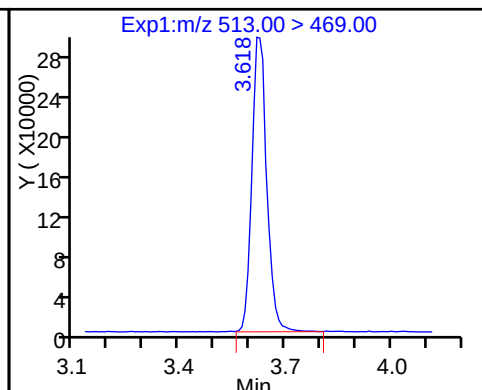
## D 21 13C8 FOSA



## 22 Perfluorooctane Sulfonamide



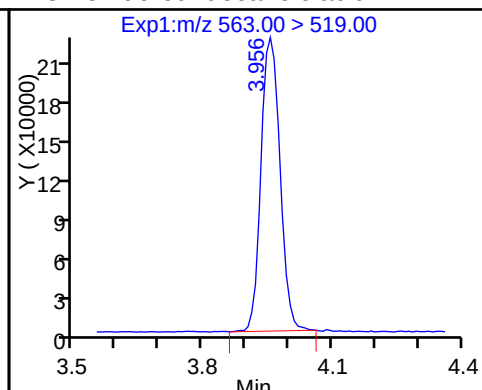
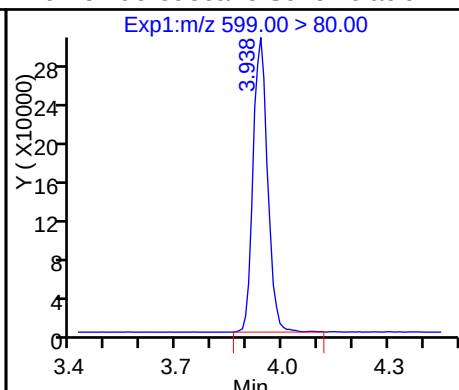
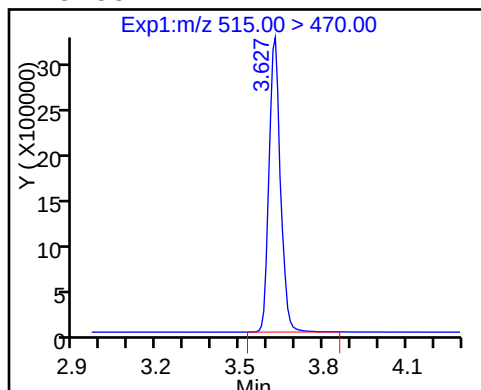
## 24 Perfluorodecanoic acid



## D 23 13C2 PFDA

## 26 Perfluorodecane Sulfonic acid

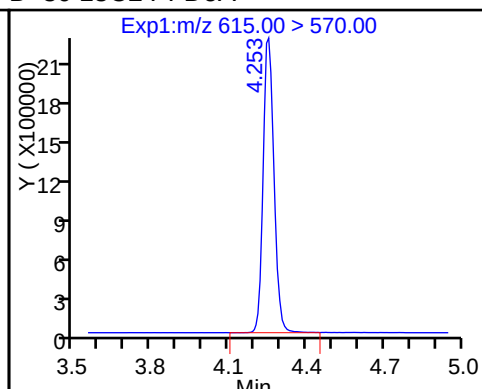
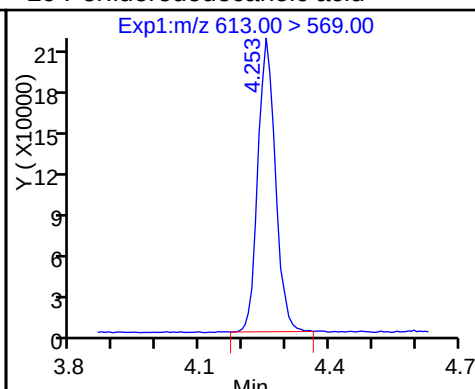
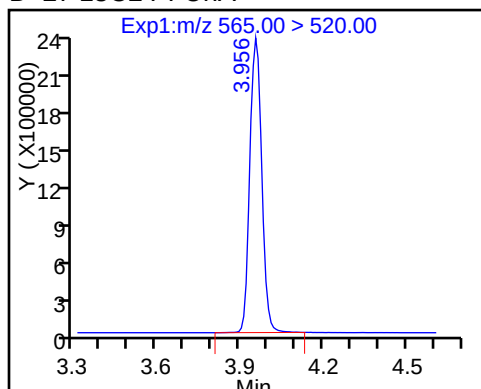
## 28 Perfluoroundecanoic acid



## D 27 13C2 PFUnA

## 29 Perfluorododecanoic acid

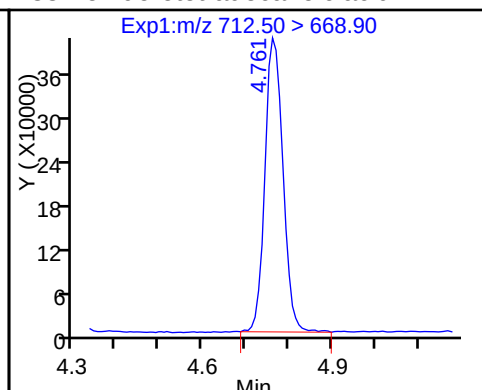
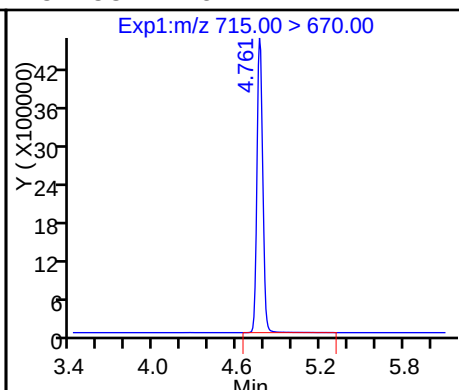
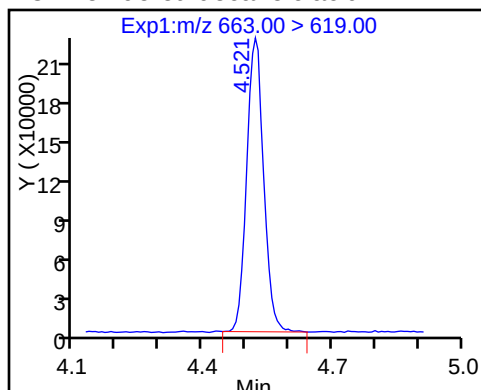
## D 30 13C2 PFDaA



## 31 Perfluorotridecanoic acid

## D 32 13C2-PFTeDA

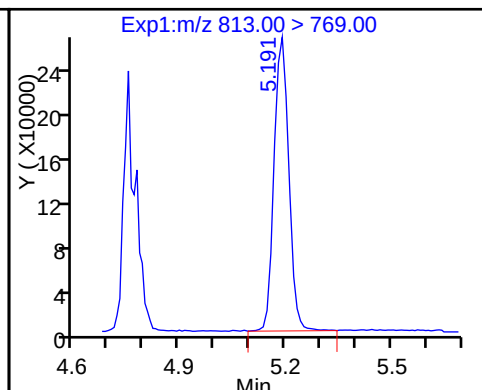
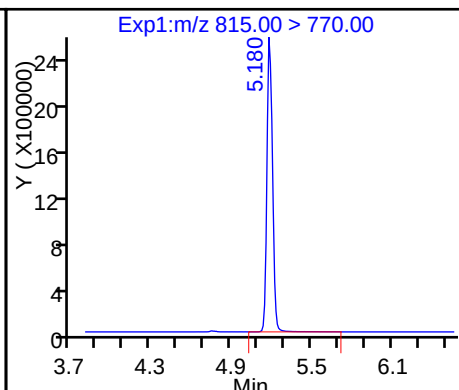
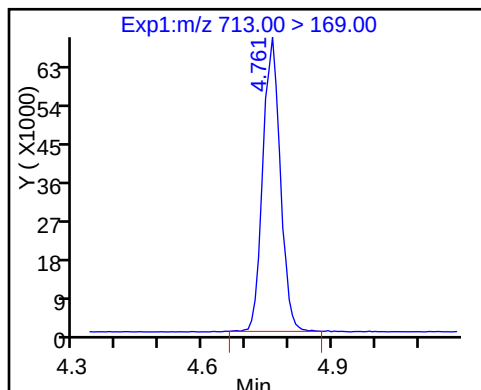
## 33 Perfluorotetradecanoic acid



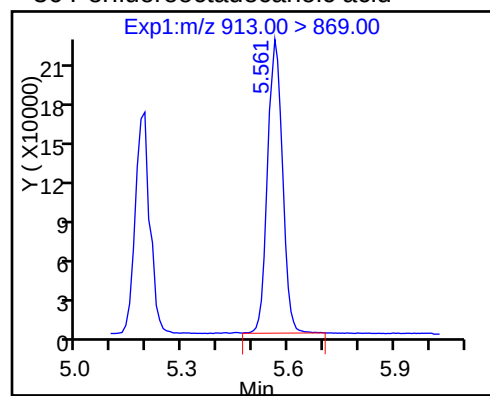
## 33 Perfluorotetradecanoic acid

## D 34 13C2-PFHxDA

## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_007.d  
 Lims ID: IC L4  
 Client ID:  
 Sample Type: IC Calib Level: 4  
 Inject. Date: 03-Dec-2016 14:11:14 ALS Bottle#: 40 Worklist Smp#: 7  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L4\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:24:13 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:41:57

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|

D 2 13C4 PFBA

217.00 > 172.00 1.574 1.574 0.0 18254473 54.4 109 916244

1 Perfluorobutyric acid

212.90 > 169.00 1.582 1.577 0.005 1.000 7008467 22.0 110 42848

3 Perfluoropentanoic acid

262.90 > 219.00 1.868 1.861 0.007 1.000 6115663 20.9 104 53754

D 4 13C5-PFPeA

267.90 > 223.00 1.868 1.861 0.007 14426922 54.5 109 1030803

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.907 1.900 0.007 1.000 10888534 20.0 113

298.90 > 99.00 1.897 1.900 -0.003 0.995 4709173 2.31(0.00-0.00) 113

7 Perfluorohexanoic acid

313.00 > 269.00 2.171 2.164 0.007 1.000 5224102 21.6 108 141802

D 6 13C2 PFHxA

315.00 > 270.00 2.162 2.164 -0.002 12716423 53.5 107 709396

D 11 13C4-PFHpA

367.00 > 322.00 2.512 2.511 0.001 11474824 55.3 111 830208

12 Perfluoroheptanoic acid

363.00 > 319.00 2.512 2.512 0.0 1.000 4918226 20.9 104 66176

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.527 2.531 -0.004 1.000 6968734 18.7 102 M

D 10 18O2 PFHxS

403.00 > 84.00 2.535 2.531 0.004 16099619 51.5 109 1076833

D 14 13C4 PFOA

417.00 > 372.00 2.886 2.880 0.006 12069172 55.0 110 656359

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 15 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |        | M     |
| 413.00 > 369.00                  | 2.894 | 2.887     | 0.007     | 1.000     | 5292388  | 20.5            |                 | 102  | 50246  | M     |
| 413.00 > 169.00                  | 2.886 | 2.887     | -0.001    | 0.997     | 3252983  |                 | 1.63(0.90-1.10) | 102  | 188817 |       |
| 13 Perfluoroheptanesulfonic Acid |       |           |           |           |          |                 |                 |      |        |       |
| 449.00 > 80.00                   | 2.886 | 2.888     | -0.002    | 1.000     | 6678298  | 20.6            |                 | 108  |        |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 499.00 > 80.00                   | 3.259 | 3.258     | 0.001     | 1.000     | 5631788  | 18.8            |                 | 101  | 741165 |       |
| 499.00 > 99.00                   | 3.259 | 3.258     | 0.001     | 1.000     | 1257953  |                 | 4.48(0.90-1.10) | 101  | 196382 |       |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |        |       |
| 503.00 > 80.00                   | 3.259 | 3.259     | 0.0       |           | 13189624 | 53.6            |                 | 112  | 527854 |       |
| D 19 13C5 PFNA                   |       |           |           |           |          |                 |                 |      |        |       |
| 468.00 > 423.00                  | 3.267 | 3.263     | 0.004     |           | 8920352  | 53.6            |                 | 107  | 500218 |       |
| 20 Perfluorononanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 463.00 > 419.00                  | 3.267 | 3.263     | 0.004     | 1.000     | 3804327  | 21.4            |                 | 107  | 70301  |       |
| D 21 13C8 FOSA                   |       |           |           |           |          |                 |                 |      |        |       |
| 506.00 > 78.00                   | 3.573 | 3.571     | 0.002     |           | 22326638 | 55.5            |                 | 111  | 379770 |       |
| 22 Perfluorooctane Sulfonamide   |       |           |           |           |          |                 |                 |      |        |       |
| 498.00 > 78.00                   | 3.573 | 3.574     | -0.001    | 1.000     | 9111782  | 21.8            |                 | 109  | 354493 |       |
| 24 Perfluorodecanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 513.00 > 469.00                  | 3.623 | 3.623     | 0.0       | 1.000     | 3434382  | 20.3            |                 | 102  | 104771 |       |
| D 23 13C2 PFDA                   |       |           |           |           |          |                 |                 |      |        |       |
| 515.00 > 470.00                  | 3.623 | 3.626     | -0.003    |           | 8786342  | 55.7            |                 | 111  | 333180 |       |
| 26 Perfluorodecane Sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 599.00 > 80.00                   | 3.939 | 3.936     | 0.003     | 1.000     | 3548629  | 20.1            |                 | 104  |        |       |
| 28 Perfluoroundecanoic acid      |       |           |           |           |          |                 |                 |      |        |       |
| 563.00 > 519.00                  | 3.956 | 3.955     | 0.001     | 1.000     | 2673576  | 19.3            |                 | 96.7 | 68734  |       |
| D 27 13C2 PFUnA                  |       |           |           |           |          |                 |                 |      |        |       |
| 565.00 > 520.00                  | 3.965 | 3.958     | 0.007     |           | 6485474  | 54.6            |                 | 109  | 683577 |       |
| 29 Perfluorododecanoic acid      |       |           |           |           |          |                 |                 |      |        |       |
| 613.00 > 569.00                  | 4.253 | 4.250     | 0.003     | 1.000     | 2415187  | 21.0            |                 | 105  | 47125  |       |
| D 30 13C2 PFDaA                  |       |           |           |           |          |                 |                 |      |        |       |
| 615.00 > 570.00                  | 4.253 | 4.251     | 0.002     |           | 6067987  | 54.1            |                 | 108  | 181188 |       |
| 31 Perfluorotridecanoic acid     |       |           |           |           |          |                 |                 |      |        |       |
| 663.00 > 619.00                  | 4.524 | 4.518     | 0.006     | 1.000     | 2373060  | 20.6            |                 | 103  | 5080   |       |
| D 32 13C2-PFTeDA                 |       |           |           |           |          |                 |                 |      |        |       |
| 715.00 > 670.00                  | 4.764 | 4.759     | 0.005     |           | 12877999 | 55.7            |                 | 111  | 442175 |       |
| 33 Perfluorotetradecanoic acid   |       |           |           |           |          |                 |                 |      |        |       |
| 712.50 > 668.90                  | 4.764 | 4.761     | 0.003     | 1.000     | 4681126  | 20.8            |                 | 104  | 1697   |       |
| 713.00 > 169.00                  | 4.756 | 4.761     | -0.005    | 0.998     | 771098   |                 | 6.07(0.00-0.00) | 104  | 90317  |       |
| D 34 13C2-PFHxDA                 |       |           |           |           |          |                 |                 |      |        |       |
| 815.00 > 770.00                  | 5.187 | 5.186     | 0.001     |           | 7363997  | 56.8            |                 | 114  | 132680 |       |
| 35 Perfluorohexadecanoic acid    |       |           |           |           |          |                 |                 |      |        |       |
| 813.00 > 769.00                  | 5.187 | 5.186     | 0.001     | 1.000     | 2870345  | 23.1            |                 | 115  | 2476   |       |
| 36 Perfluorooctadecanoic acid    |       |           |           |           |          |                 |                 |      |        |       |
| 913.00 > 869.00                  | 5.563 | 5.559     | 0.004     | 1.000     | 2205153  | 18.3            |                 | 91.5 | 3091   |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## Reagents:

LCPFC-L4\_00022

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_007.d

Injection Date: 03-Dec-2016 14:11:14

Instrument ID: A8\_N

Lims ID: IC L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

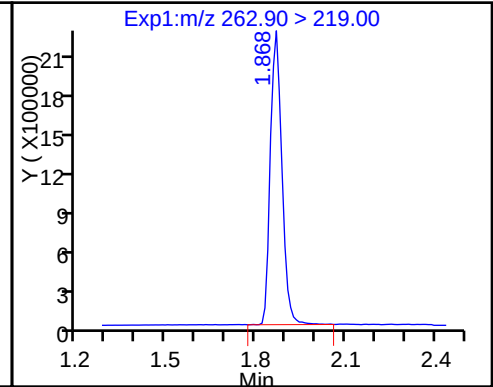
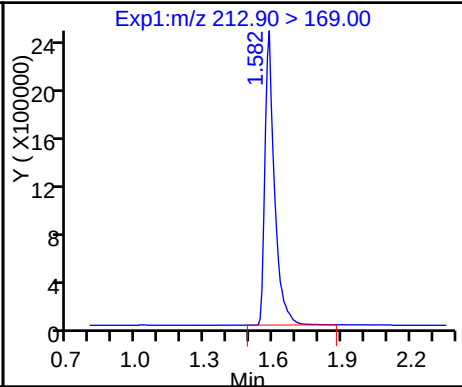
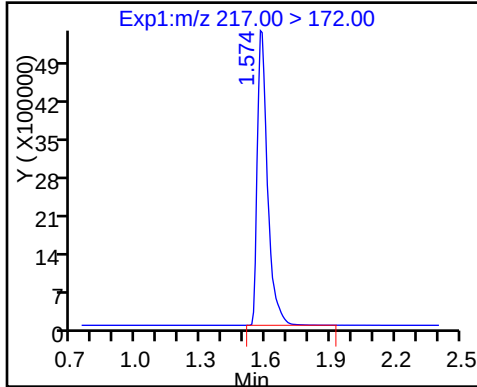
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

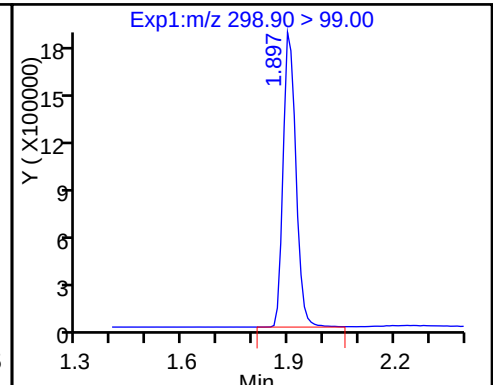
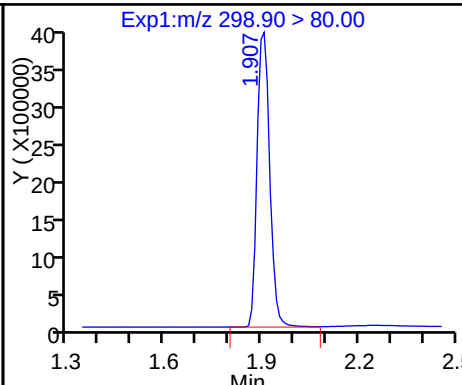
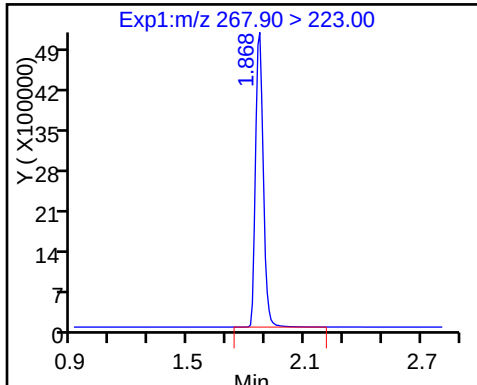
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

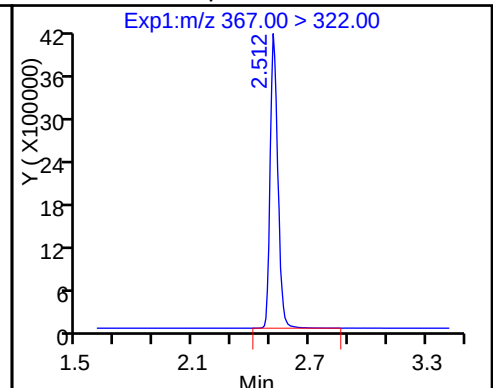
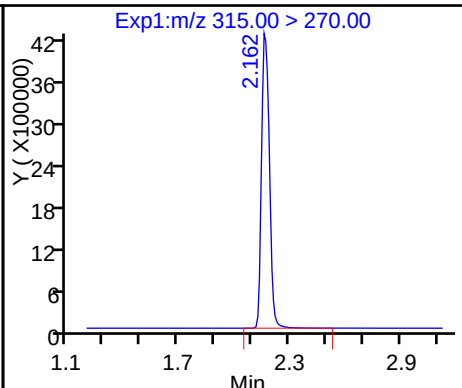
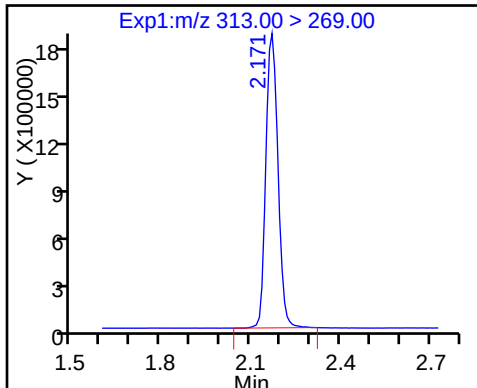
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

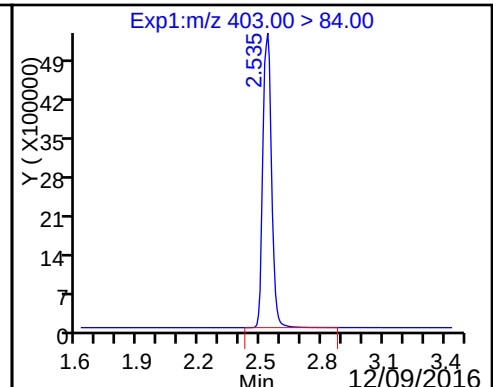
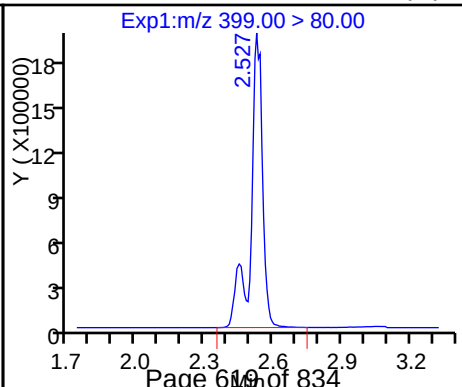
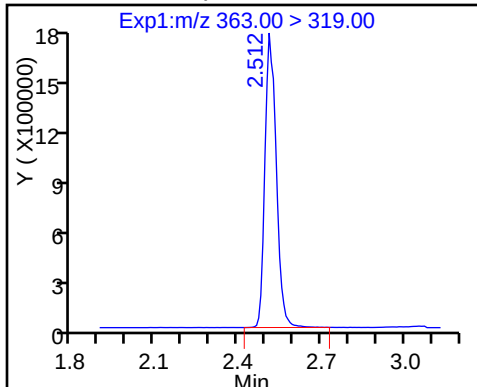
D 11 13C4-PFHpA



12 Perfluoroheptanoic acid

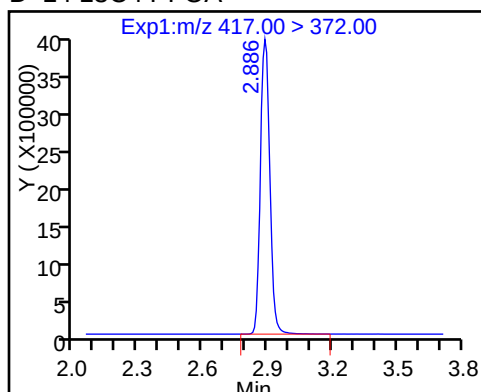
9 Perfluorohexanesulfonic acid (M)

D 10 18O2 PFHxS

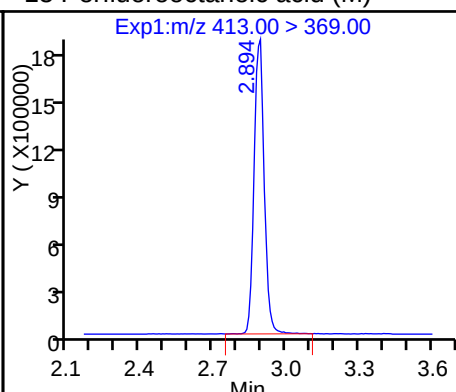




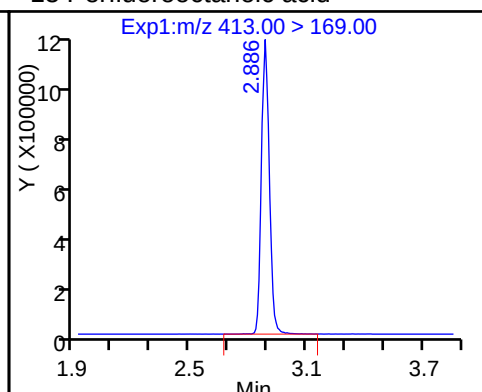
## D 14 13C4 PFOA



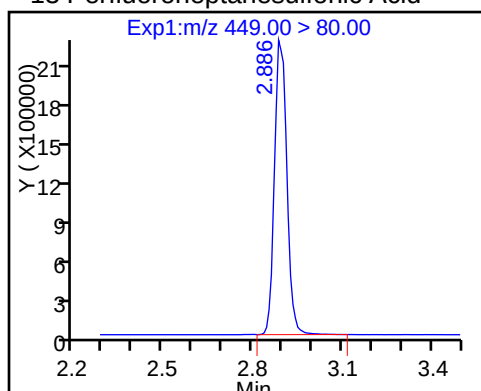
## 15 Perfluorooctanoic acid (M)



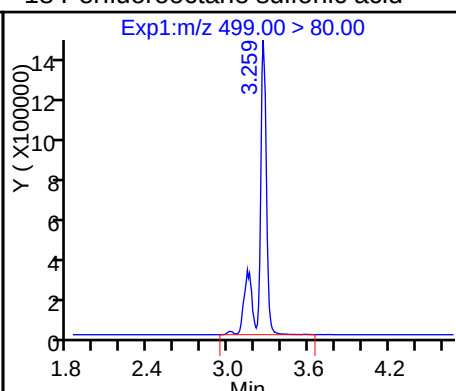
## 15 Perfluorooctanoic acid



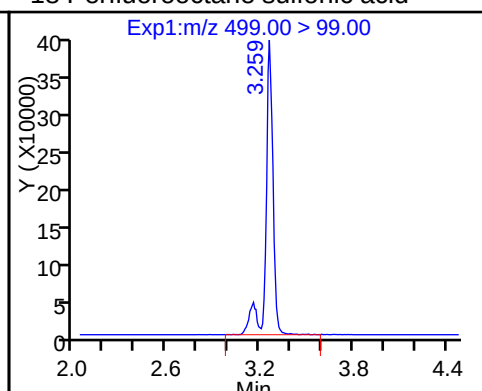
## 13 Perfluoroheptanesulfonic Acid



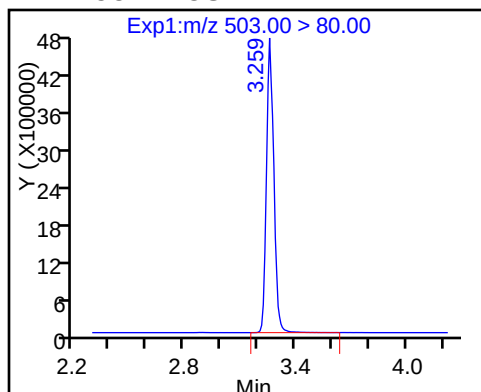
## 18 Perfluorooctane sulfonic acid



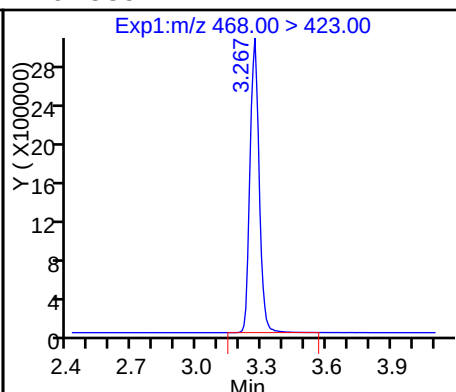
## 18 Perfluorooctane sulfonic acid



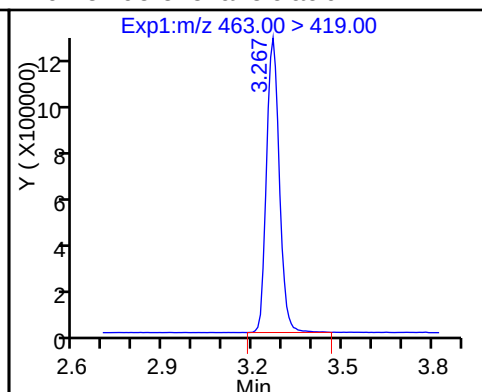
## D 17 13C4 PFOS



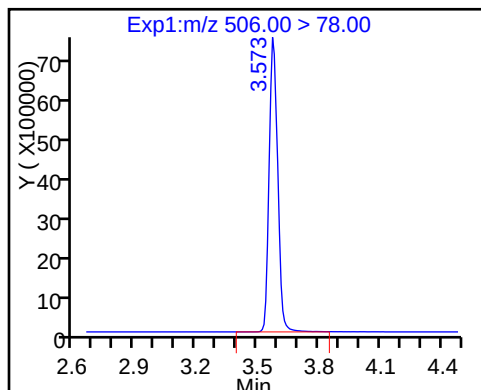
## D 19 13C5 PFNA



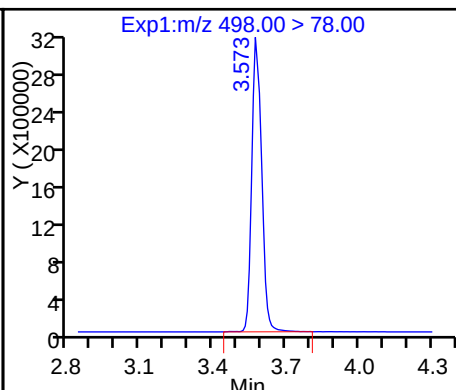
## 20 Perfluorononanoic acid



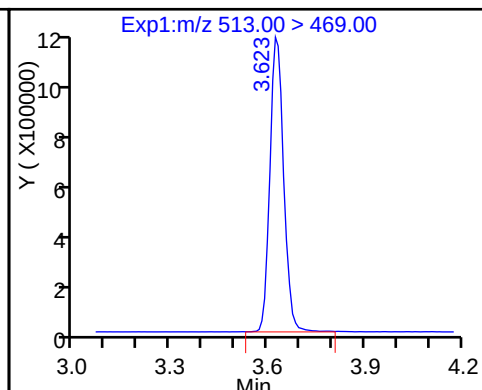
## D 21 13C8 FOSA



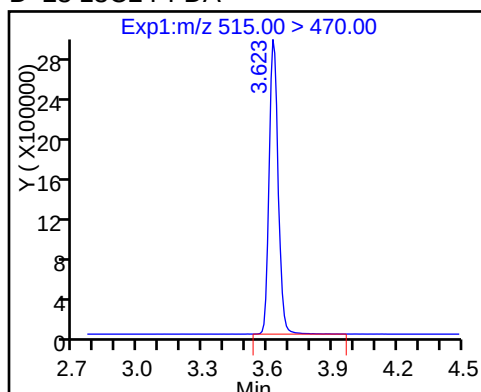
## 22 Perfluorooctane Sulfonamide



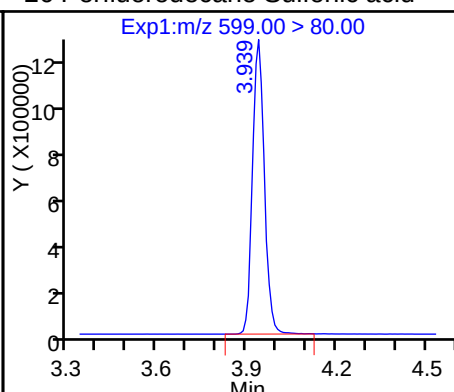
## 24 Perfluorodecanoic acid



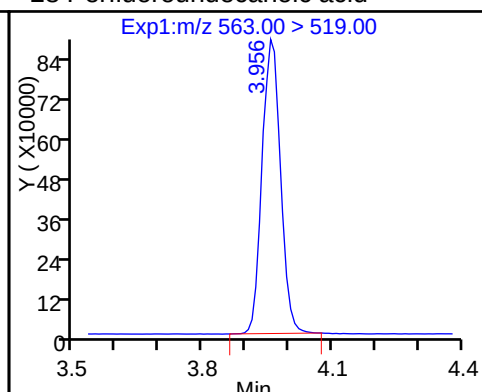
## D 23 13C2 PFDA



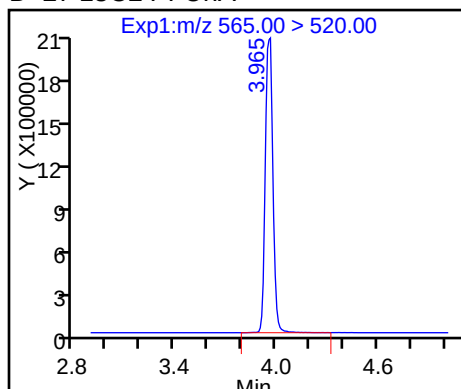
## 26 Perfluorodecane Sulfonic acid



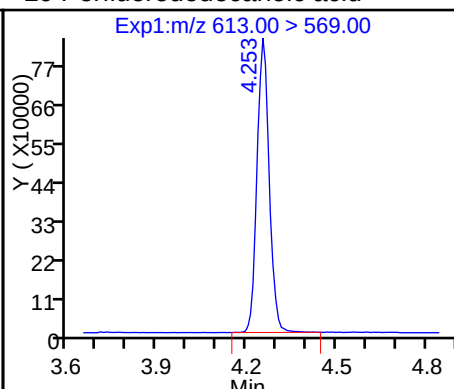
## 28 Perfluoroundecanoic acid



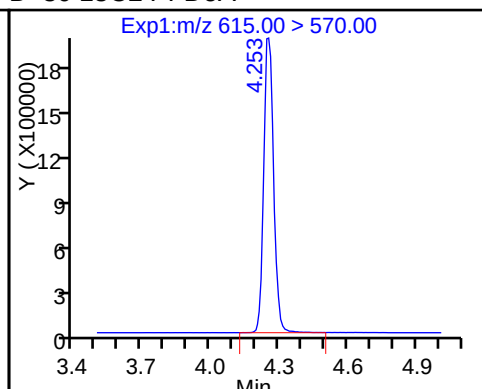
## D 27 13C2 PFUnA



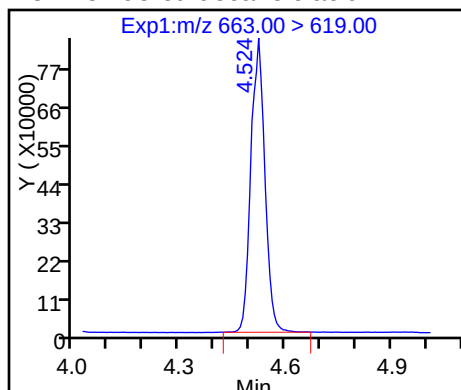
## 29 Perfluorododecanoic acid



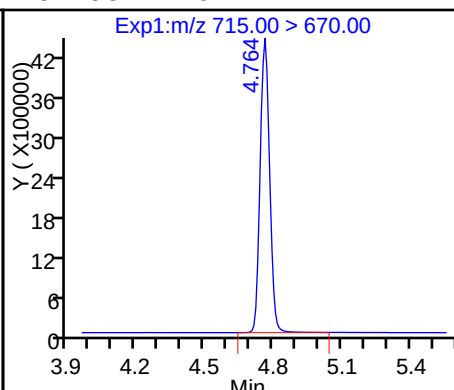
## D 30 13C2 PFDaA



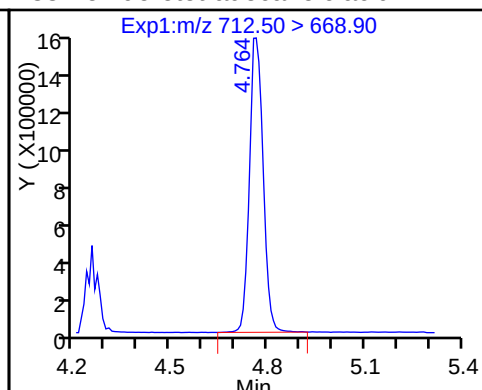
## 31 Perfluorotridecanoic acid



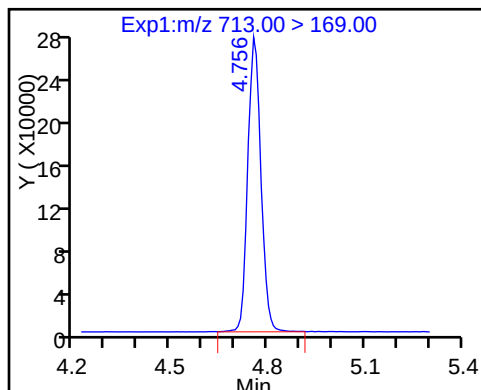
## D 32 13C2-PFTeDA



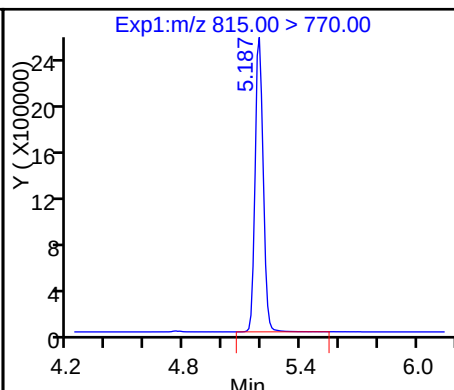
## 33 Perfluorotetradecanoic acid



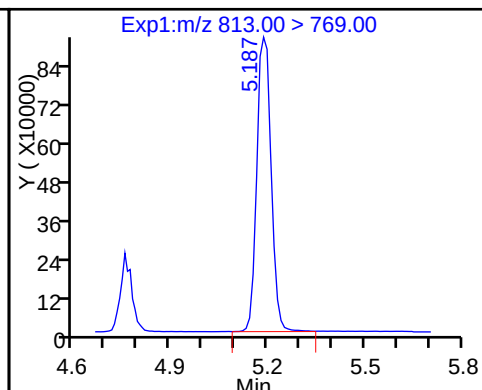
## 33 Perfluorotetradecanoic acid



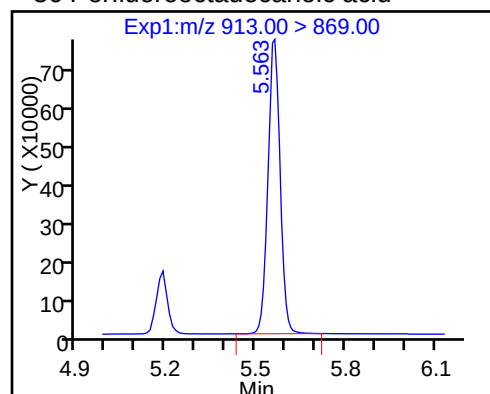
## D 34 13C2-PFHxDA



## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



## TestAmerica Sacramento

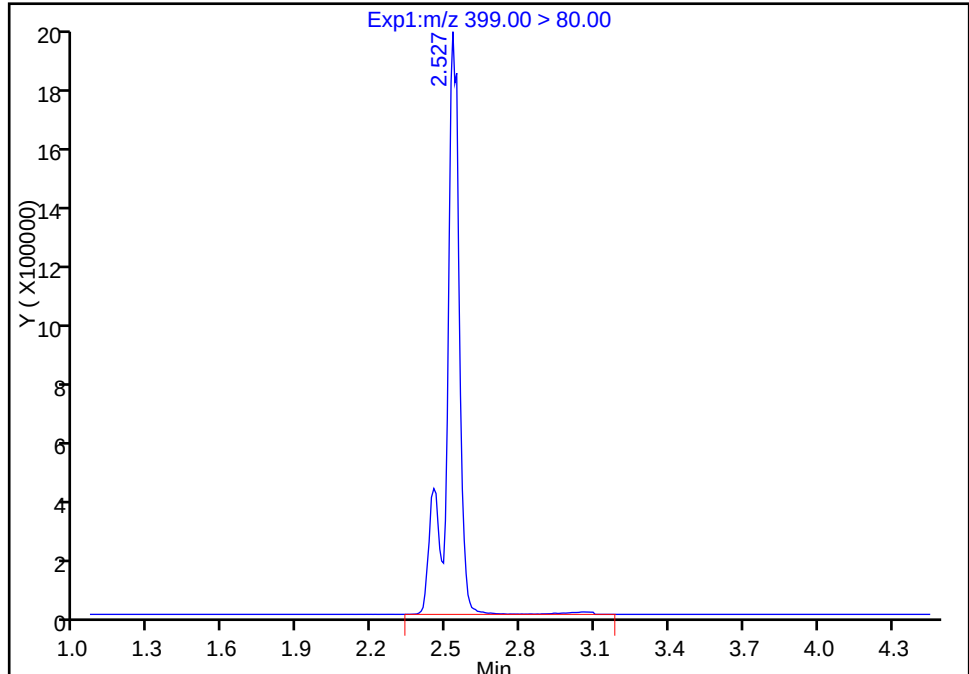
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_007.d  
Injection Date: 03-Dec-2016 14:11:14 Instrument ID: A8\_N  
Lims ID: IC L4  
Client ID:  
Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**9 Perfluorohexanesulfonic acid, CAS: 355-46-4**

Signal: 1

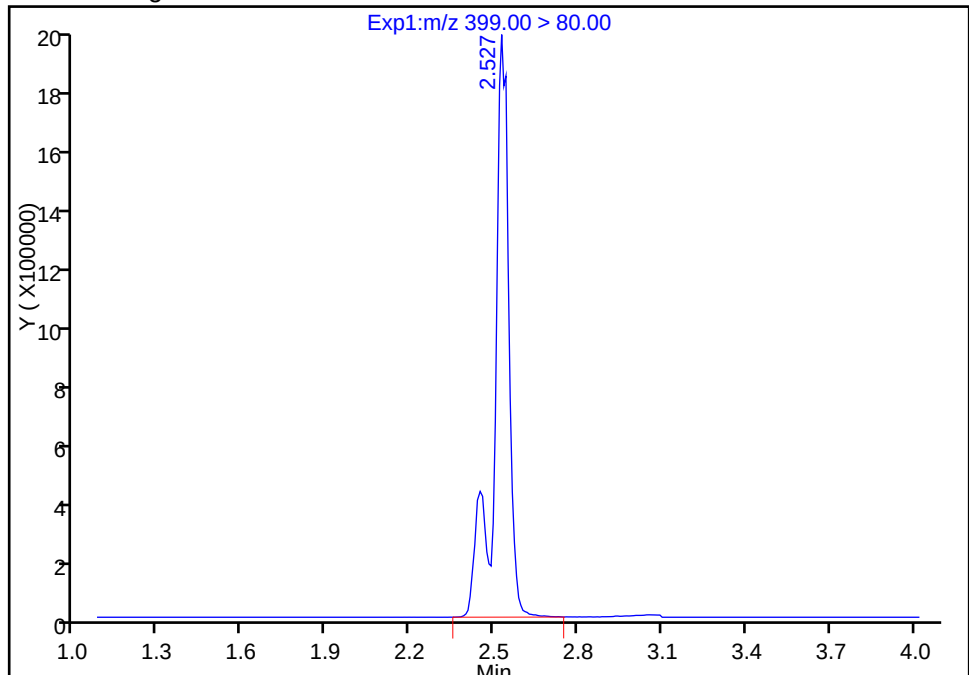
RT: 2.53  
Area: 7050184  
Amount: 18.826548  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.53  
Area: 6968734  
Amount: 18.653631  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 09:41:57

Audit Action: Manually Integrated

Audit Reason: Baseline

## TestAmerica Sacramento

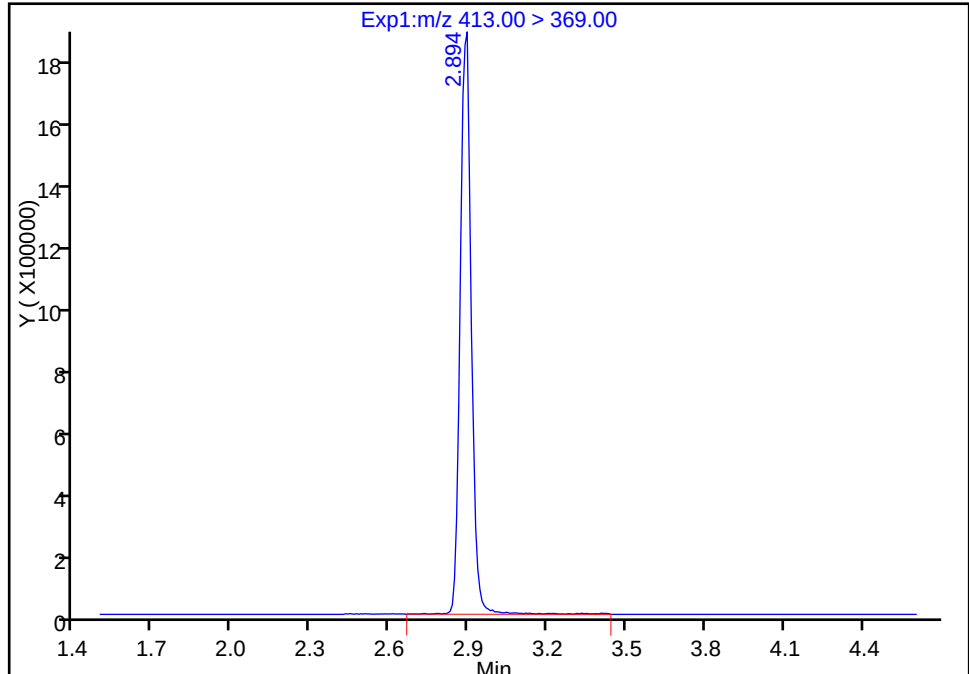
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_007.d  
Injection Date: 03-Dec-2016 14:11:14 Instrument ID: A8\_N  
Lims ID: IC L4  
Client ID:  
Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**15 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

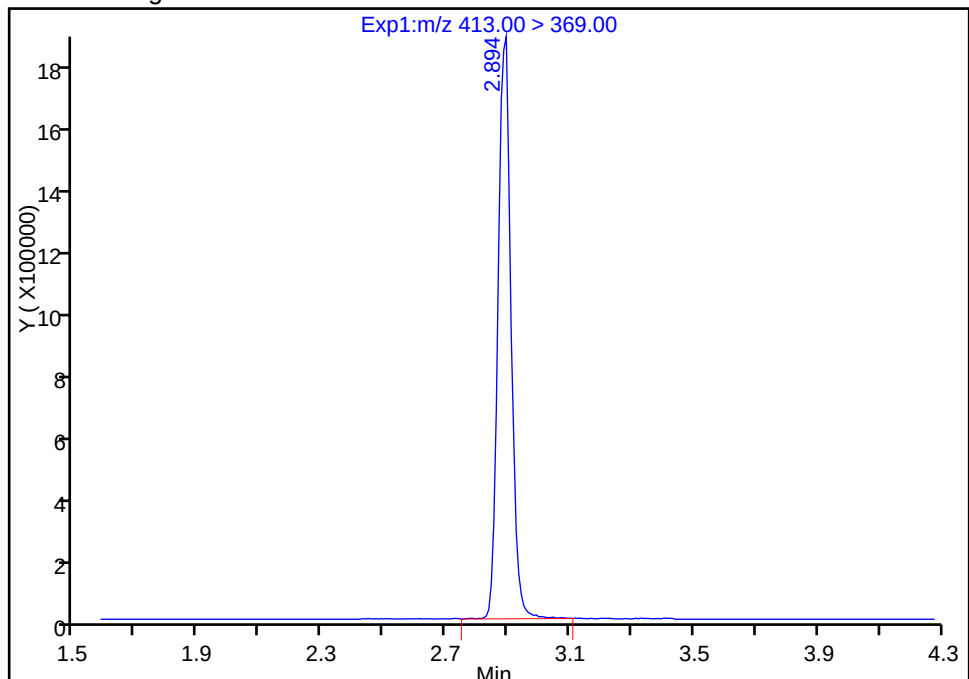
RT: 2.89  
Area: 5360428  
Amount: 20.662890  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.89  
Area: 5292388  
Amount: 20.454262  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 09:41:57

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_008.d  
 Lims ID: IC L5  
 Client ID:  
 Sample Type: IC Calib Level: 5  
 Inject. Date: 03-Dec-2016 14:18:44 ALS Bottle#: 41 Worklist Smp#: 8  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L5\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:24:15 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:43:57

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.574 | 1.574  | 0.0    |        | 16029004 | 47.7         |                 | 95.5 | 1234710 |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.574 | 1.577  | -0.003 | 1.000  | 14048645 | 50.1         |                 | 100  | 74155   |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.858 | 1.861  | -0.003 | 1.000  | 12597041 | 49.7         |                 | 99.5 | 116129  |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.858 | 1.861  | -0.003 |        | 12477636 | 47.2         |                 | 94.3 | 1170062 |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.897 | 1.900  | -0.003 | 1.000  | 21513660 | 44.6         |                 | 101  |         |       |
| 298.90 > 99.00                 | 1.897 | 1.900  | -0.003 | 1.000  | 9875959  |              | 2.18(0.00-0.00) | 101  |         |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.160 | 2.164  | -0.004 | 1.000  | 10420431 | 49.8         |                 | 99.5 | 246256  |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.160 | 2.164  | -0.004 |        | 10985481 | 46.3         |                 | 92.5 | 787845  |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.510 | 2.511  | -0.001 |        | 9653835  | 46.5         |                 | 93.1 | 803660  |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.510 | 2.512  | -0.002 | 1.000  | 9915679  | 50.0         |                 | 100  | 147911  |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.525 | 2.531  | -0.006 | 1.000  | 14498414 | 43.7         |                 | 96.0 |         |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.525 | 2.531  | -0.006 |        | 14303487 | 45.8         |                 | 96.8 | 5055434 |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.876 | 2.880  | -0.004 |        | 9909434  | 45.2         |                 | 90.4 | 408580  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 413.00 > 369.00                  | 2.884 | 2.887  | -0.003 | 1.000  | 10434085 | 49.1         |                 | 98.2 | 197146 |       |
| 413.00 > 169.00                  | 2.876 | 2.887  | -0.011 | 0.997  | 6358650  |              | 1.64(0.90-1.10) | 98.2 | 316749 |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |        |       |
| 449.00 > 80.00                   | 2.884 | 2.888  | -0.004 | 1.000  | 13806464 | 49.7         |                 | 104  |        |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 499.00 > 80.00                   | 3.257 | 3.258  | -0.001 | 1.000  | 11953842 | 46.7         |                 | 101  | 39071  |       |
| 499.00 > 99.00                   | 3.248 | 3.258  | -0.010 | 0.997  | 2570510  |              | 4.65(0.90-1.10) | 101  | 263704 |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.257 | 3.259  | -0.002 |        | 11281105 | 45.9         |                 | 95.9 | 268992 |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                  | 3.257 | 3.263  | -0.006 |        | 7854327  | 47.2         |                 | 94.4 | 841834 |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 463.00 > 419.00                  | 3.257 | 3.263  | -0.006 | 1.000  | 7675034  | 49.0         |                 | 98.1 | 142675 |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                   | 3.570 | 3.571  | -0.001 |        | 19293148 | 48.0         |                 | 95.9 | 389510 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                   | 3.570 | 3.574  | -0.004 | 1.000  | 18269014 | 50.7         |                 | 101  | 626245 |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                  | 3.620 | 3.623  | -0.003 | 1.000  | 7159278  | 50.3         |                 | 101  | 175242 |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                  | 3.620 | 3.626  | -0.006 |        | 7405870  | 46.9         |                 | 93.9 | 311468 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                   | 3.928 | 3.936  | -0.008 | 1.000  | 7347809  | 48.7         |                 | 101  |        |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                  | 3.946 | 3.955  | -0.009 | 1.000  | 5553051  | 46.3         |                 | 92.6 | 133337 |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                  | 3.946 | 3.958  | -0.012 |        | 5625237  | 47.4         |                 | 94.7 | 281129 |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 613.00 > 569.00                  | 4.242 | 4.250  | -0.008 | 1.000  | 5000795  | 49.4         |                 | 98.7 | 86155  |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                  | 4.242 | 4.251  | -0.009 |        | 5338479  | 47.6         |                 | 95.3 | 147109 |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                  | 4.510 | 4.518  | -0.008 | 1.000  | 5034109  | 49.6         |                 | 99.3 | 21741  |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                  | 4.750 | 4.759  | -0.009 |        | 11031119 | 47.7         |                 | 95.4 | 553742 |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |        |       |
| 712.50 > 668.90                  | 4.750 | 4.761  | -0.011 | 1.000  | 9601518  | 48.5         |                 | 97.0 | 4445   |       |
| 713.00 > 169.00                  | 4.750 | 4.761  | -0.011 | 1.000  | 1523287  |              | 6.30(0.00-0.00) | 97.0 | 181298 |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |        |       |
| 815.00 > 770.00                  | 5.177 | 5.186  | -0.009 |        | 5893329  | 45.4         |                 | 90.9 | 104400 |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 813.00 > 769.00                  | 5.177 | 5.186  | -0.009 | 1.000  | 5382109  | 50.0         |                 | 100  | 6406   |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 913.00 > 869.00                  | 5.547 | 5.559  | -0.012 | 1.000  | 5729058  | 54.0         |                 | 108  | 9772   |       |

**Reagents:**

LCPFC-L5\_00020

Amount Added: 1.00

Units: mL



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_008.d

Injection Date: 03-Dec-2016 14:18:44

Instrument ID: A8\_N

Lims ID: IC L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#:

41

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor:

1.0000

Method: A8\_N

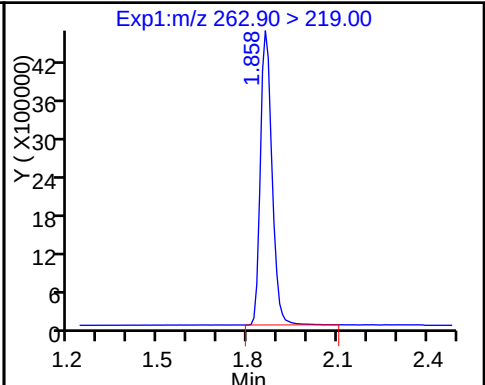
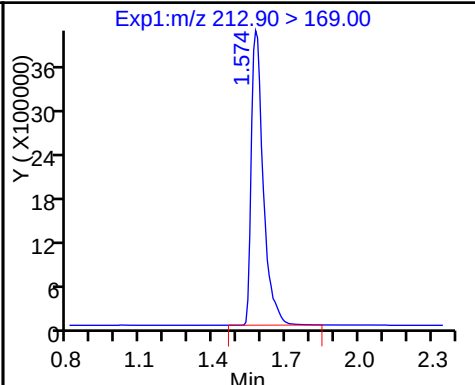
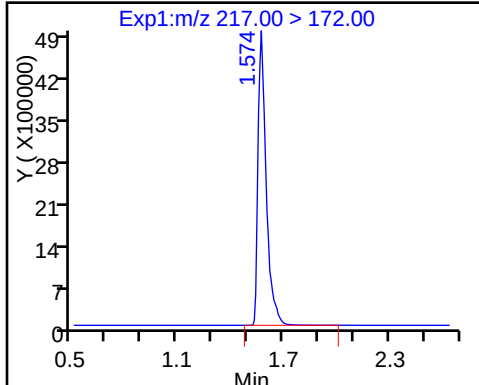
Limit Group:

LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

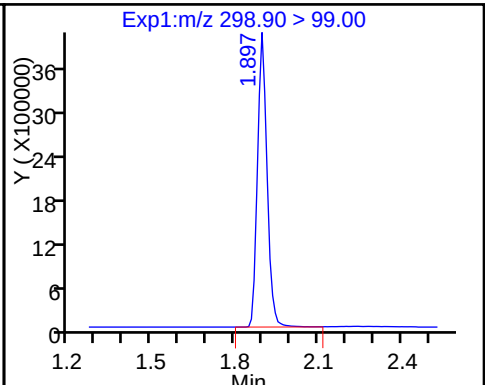
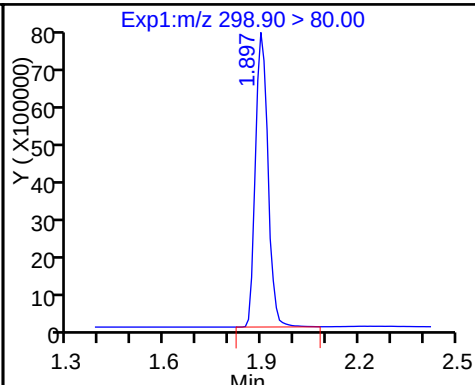
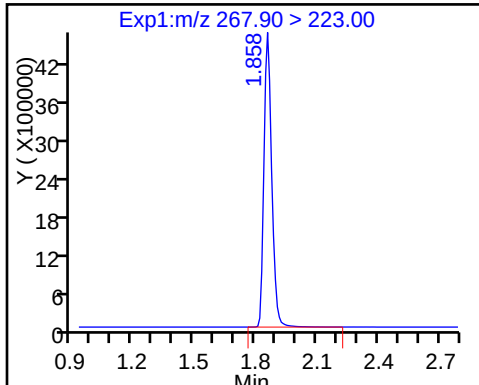
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

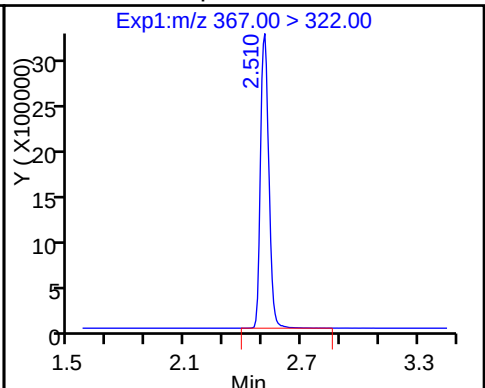
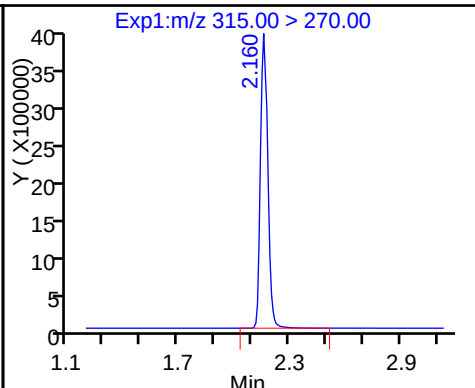
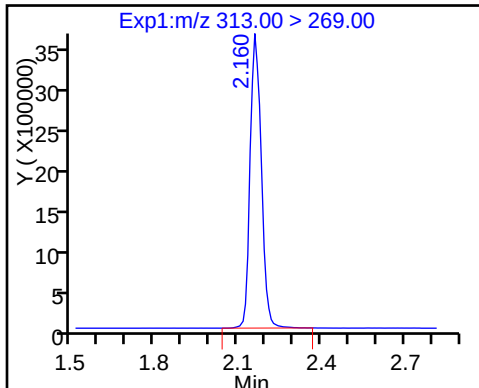
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

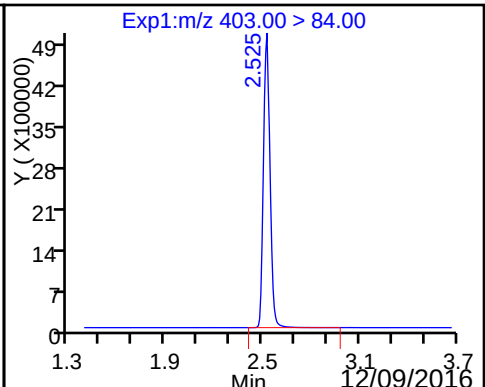
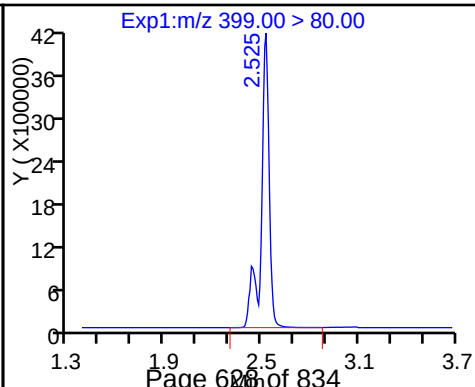
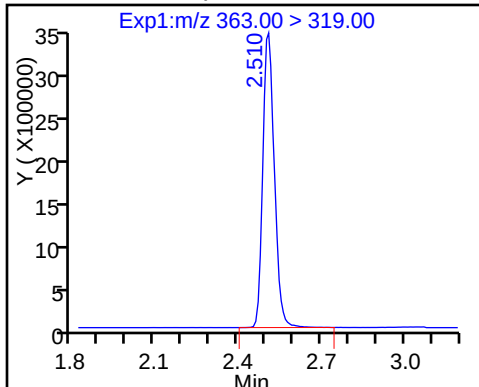
D 11 13C4-PFHpA



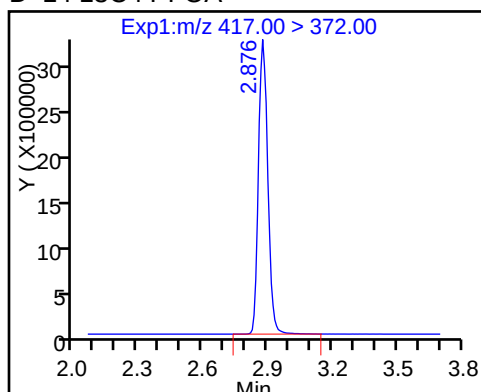
12 Perfluoroheptanoic acid

9 Perfluorohexanesulfonic acid

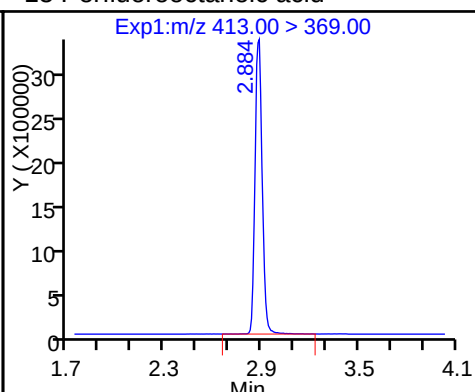
D 10 18O2 PFHxS



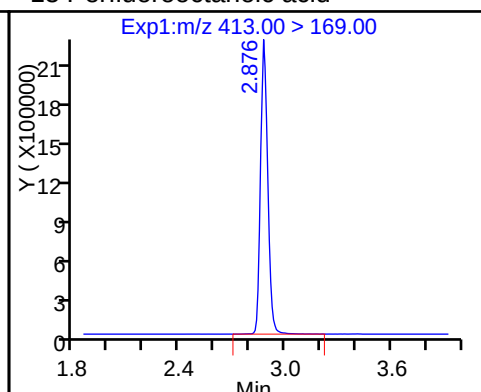
## D 14 13C4 PFOA



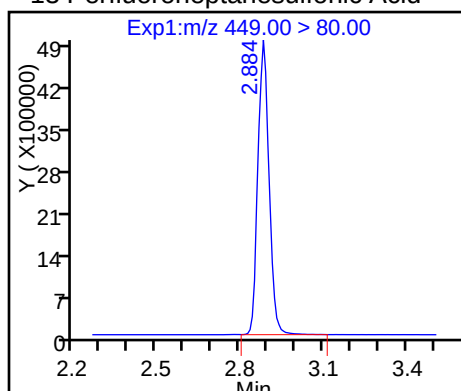
## 15 Perfluorooctanoic acid



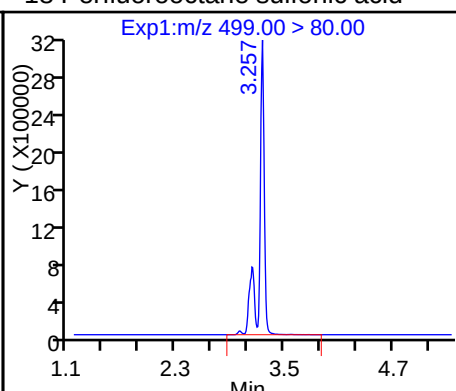
## 15 Perfluorooctanoic acid



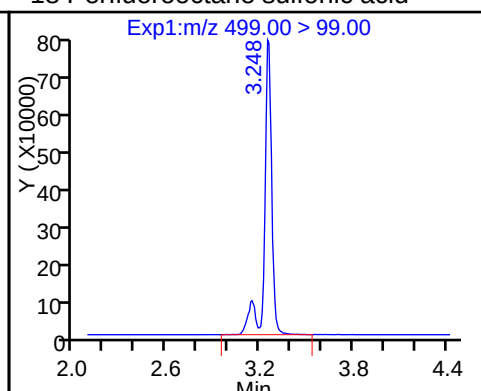
## 13 Perfluoroheptanesulfonic Acid



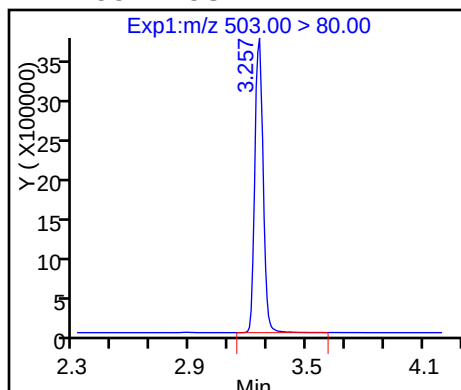
## 18 Perfluorooctane sulfonic acid



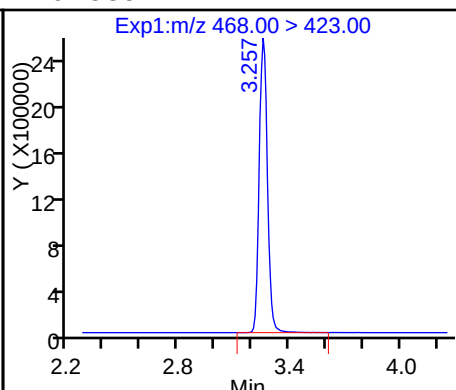
## 18 Perfluorooctane sulfonic acid



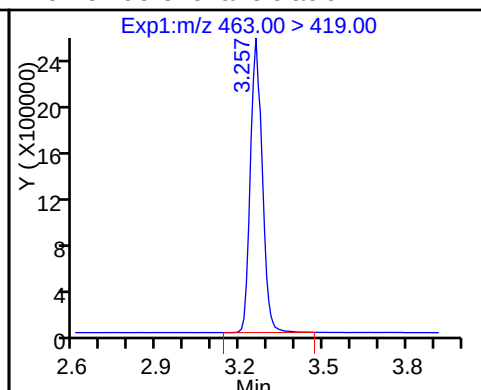
## D 17 13C4 PFOS



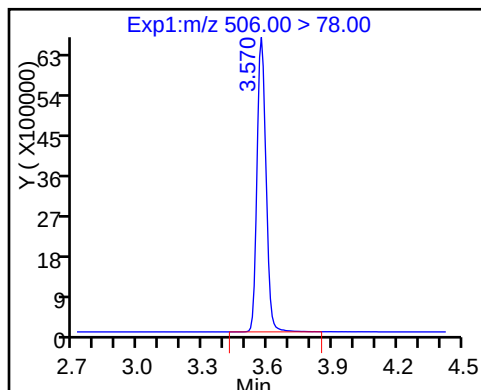
## D 19 13C5 PFNA



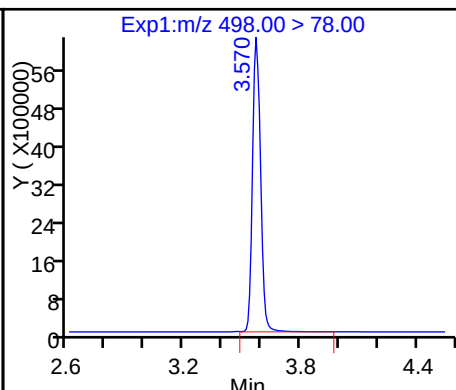
## 20 Perfluorononanoic acid



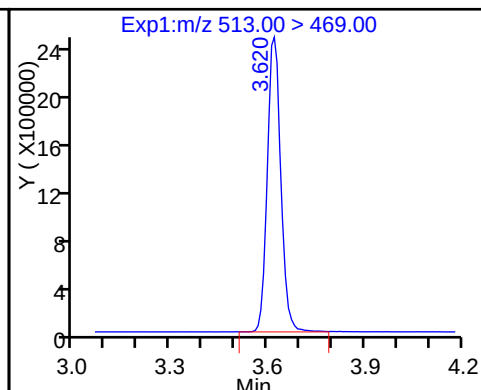
## D 21 13C8 FOSA



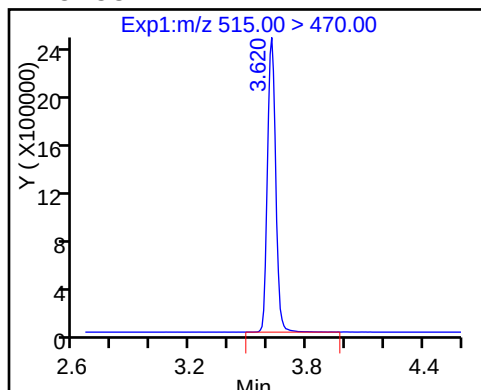
## 22 Perfluorooctane Sulfonamide



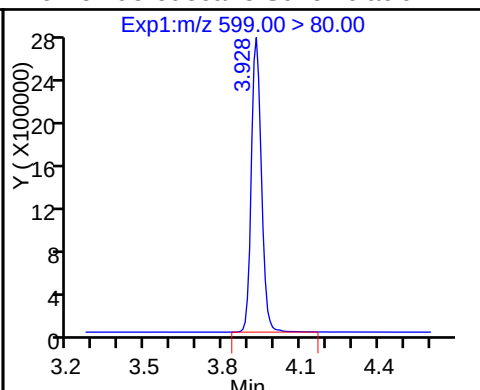
## 24 Perfluorodecanoic acid



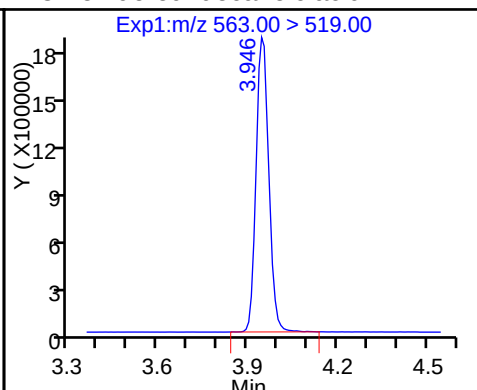
## D 23 13C2 PFDA



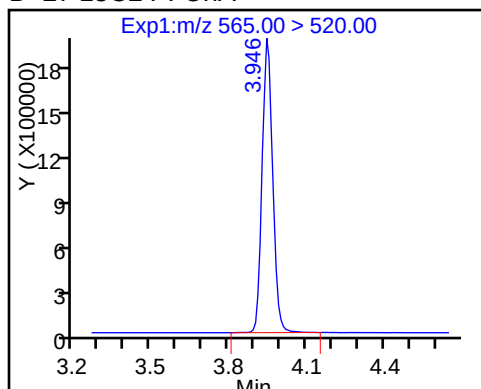
## 26 Perfluorodecane Sulfonic acid



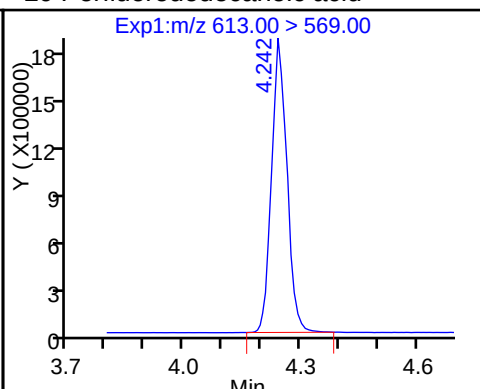
## 28 Perfluoroundecanoic acid



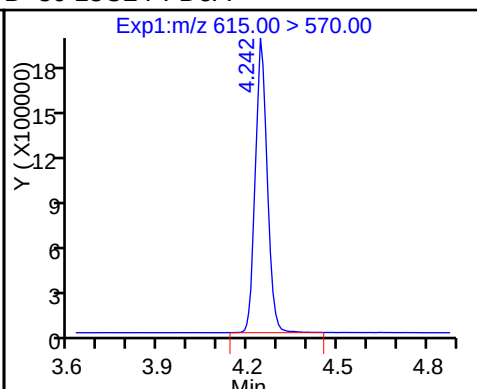
## D 27 13C2 PFUnA



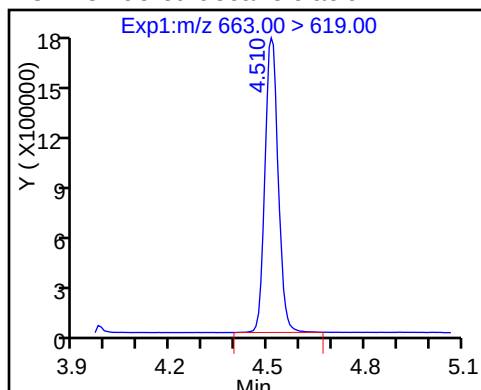
## 29 Perfluorododecanoic acid



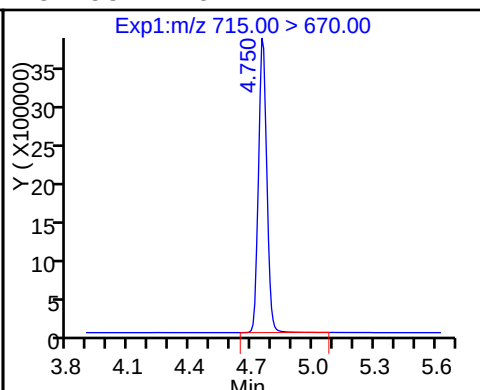
## D 30 13C2 PFDaA



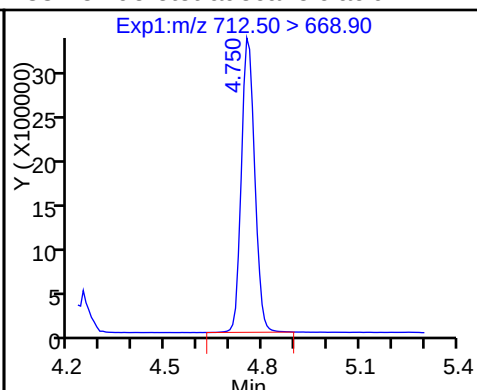
## 31 Perfluorotridecanoic acid



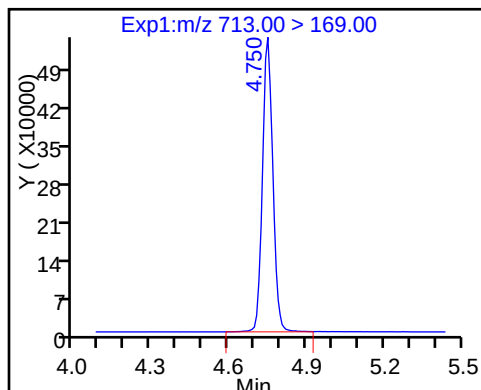
## D 32 13C2-PFTeDA



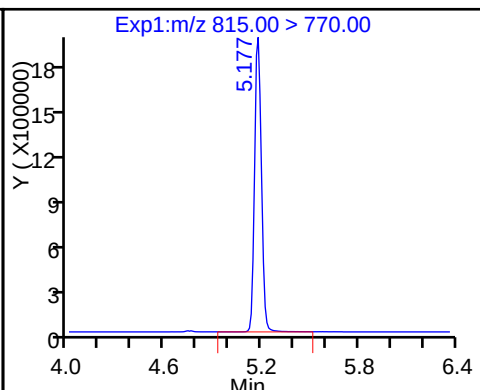
## 33 Perfluorotetradecanoic acid



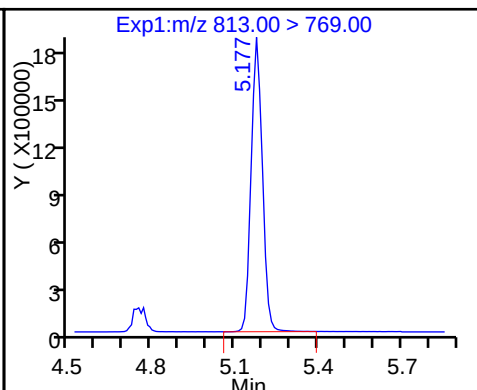
## 33 Perfluorotetradecanoic acid



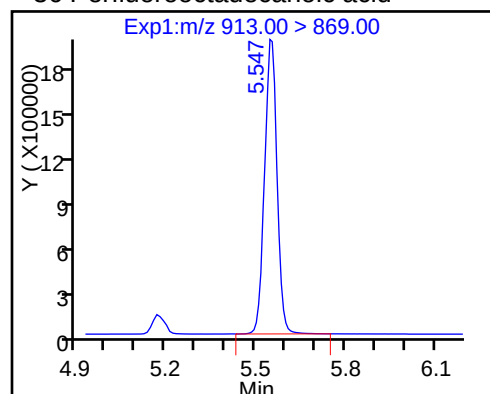
## D 34 13C2-PFHxDA



## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_009.d  
 Lims ID: IC L6  
 Client ID:  
 Sample Type: IC Calib Level: 6  
 Inject. Date: 03-Dec-2016 14:26:13 ALS Bottle#: 42 Worklist Smp#: 9  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L6\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:24:17 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:44:26

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|

D 2 13C4 PFBA

217.00 > 172.00 1.565 1.574 -0.009 14589192 43.4 86.9 865034

1 Perfluorobutyric acid

212.90 > 169.00 1.574 1.577 -0.003 1.000 42806432 167.9 83.9 195743

3 Perfluoropentanoic acid

262.90 > 219.00 1.858 1.861 -0.003 1.000 35527936 156.8 78.4 261830

D 4 13C5-PFPeA

267.90 > 223.00 1.858 1.861 -0.003 11161582 42.2 84.4 966643

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.896 1.900 -0.004 1.000 53135654 128.0 72.4

298.90 > 99.00 1.896 1.900 -0.004 1.000 29815085 1.78(0.00-0.00) 72.4

7 Perfluorohexanoic acid

313.00 > 269.00 2.157 2.164 -0.007 1.000 33117925 168.5 84.2 581515

D 6 13C2 PFHxA

315.00 > 270.00 2.157 2.164 -0.007 10311260 43.4 86.8 509947

D 11 13C4-PFHpA

367.00 > 322.00 2.501 2.511 -0.010 8082881 39.0 77.9 826093

12 Perfluoroheptanoic acid

363.00 > 319.00 2.501 2.512 -0.011 1.000 30013620 180.8 90.4 294610

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.526 2.531 -0.005 1.000 47221104 165.4 90.9

D 10 18O2 PFHxS

403.00 > 84.00 2.518 2.531 -0.013 12302944 39.4 83.3 1330084

D 14 13C4 PFOA

417.00 > 372.00 2.868 2.880 -0.012 8181000 37.3 74.6 486964

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                  | 2.868 | 2.887  | -0.019 | 1.000  | 30853962 | 175.9        |                 | 88.0 | 291973  |       |
| 413.00 > 169.00                  | 2.876 | 2.887  | -0.011 | 1.003  | 20504099 |              | 1.50(0.90-1.10) | 88.0 | 540708  |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |         |       |
| 449.00 > 80.00                   | 2.884 | 2.888  | -0.004 | 1.000  | 39398056 | 159.1        |                 | 83.6 |         |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 499.00 > 80.00                   | 3.249 | 3.258  | -0.009 | 1.000  | 43077470 | 188.7        |                 | 102  | 75165   |       |
| 499.00 > 99.00                   | 3.249 | 3.258  | -0.009 | 1.000  | 9992099  |              | 4.31(0.90-1.10) | 102  | 2648708 |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |         |       |
| 503.00 > 80.00                   | 3.249 | 3.259  | -0.010 |        | 10053294 | 40.9         |                 | 85.5 | 90966   |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |         |       |
| 468.00 > 423.00                  | 3.249 | 3.263  | -0.014 |        | 6537549  | 39.3         |                 | 78.6 | 482383  |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 463.00 > 419.00                  | 3.249 | 3.263  | -0.014 | 1.000  | 24899337 | 191.1        |                 | 95.6 | 358972  |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |         |       |
| 506.00 > 78.00                   | 3.562 | 3.571  | -0.009 |        | 16949269 | 42.1         |                 | 84.3 | 560152  |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |         |       |
| 498.00 > 78.00                   | 3.571 | 3.574  | -0.003 | 1.000  | 50658186 | 160.0        |                 | 80.0 | 335690  |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 513.00 > 469.00                  | 3.613 | 3.623  | -0.010 | 1.000  | 23571490 | 191.4        |                 | 95.7 | 488396  |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |         |       |
| 515.00 > 470.00                  | 3.621 | 3.626  | -0.005 |        | 6410340  | 40.6         |                 | 81.2 | 207594  |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 599.00 > 80.00                   | 3.921 | 3.936  | -0.015 | 1.000  | 24987612 | 185.7        |                 | 96.3 |         |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 563.00 > 519.00                  | 3.947 | 3.955  | -0.008 | 1.000  | 17818228 | 185.2        |                 | 92.6 | 329189  |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |         |       |
| 565.00 > 520.00                  | 3.947 | 3.958  | -0.011 |        | 4513820  | 38.0         |                 | 76.0 | 155727  |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 613.00 > 569.00                  | 4.236 | 4.250  | -0.014 | 1.000  | 17773370 | 194.4        |                 | 97.2 | 287464  |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |         |       |
| 615.00 > 570.00                  | 4.236 | 4.251  | -0.015 |        | 4817286  | 43.0         |                 | 86.0 | 195663  |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 663.00 > 619.00                  | 4.501 | 4.518  | -0.017 | 1.000  | 17494025 | 191.2        |                 | 95.6 | 67382   | M     |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |         |       |
| 715.00 > 670.00                  | 4.738 | 4.759  | -0.021 |        | 9518260  | 41.2         |                 | 82.3 | 367157  |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |         |       |
| 712.50 > 668.90                  | 4.746 | 4.761  | -0.015 | 1.000  | 30593527 | 171.3        |                 | 85.7 | 17849   |       |
| 713.00 > 169.00                  | 4.746 | 4.761  | -0.015 | 1.000  | 5666745  |              | 5.40(0.00-0.00) | 85.7 | 258419  |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |         |       |
| 815.00 > 770.00                  | 5.171 | 5.186  | -0.015 |        | 5482429  | 42.3         |                 | 84.5 | 117464  |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 813.00 > 769.00                  | 5.160 | 5.186  | -0.026 | 1.000  | 18912385 | 196.9        |                 | 98.5 | 16230   |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 913.00 > 869.00                  | 5.536 | 5.559  | -0.023 | 1.000  | 17844066 | 186.5        |                 | 93.3 | 33443   |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## Reagents:

LCPFC-L6\_00019

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_009.d

Injection Date: 03-Dec-2016 14:26:13

Instrument ID: A8\_N

Lims ID: IC L6

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 42

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

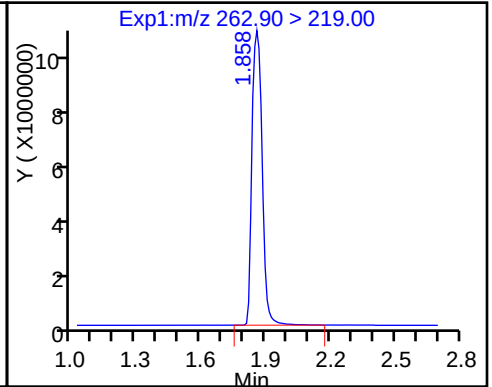
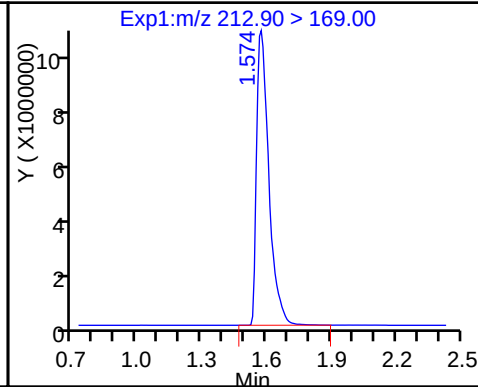
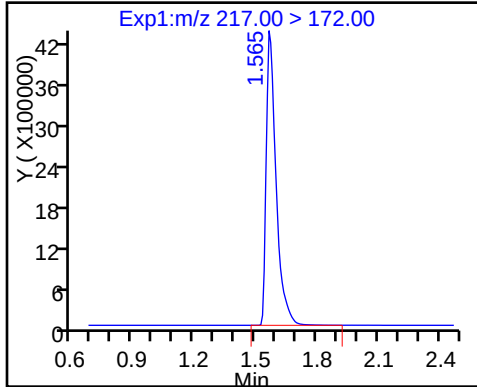
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

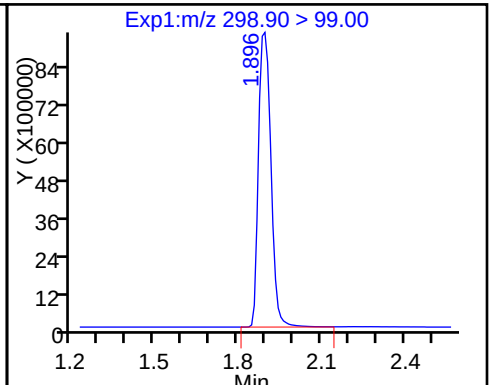
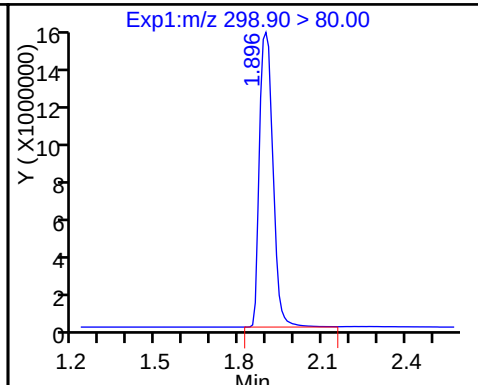
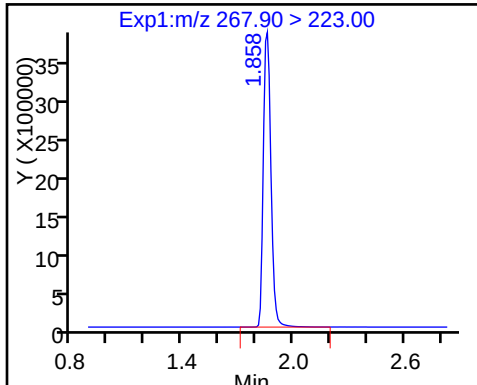
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

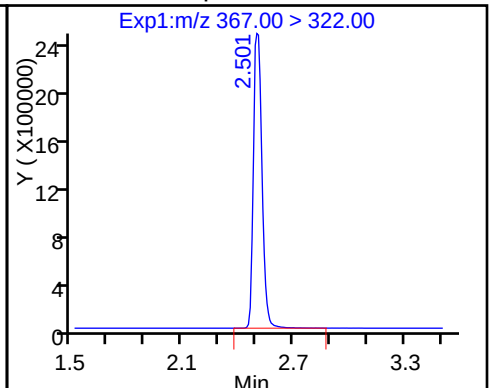
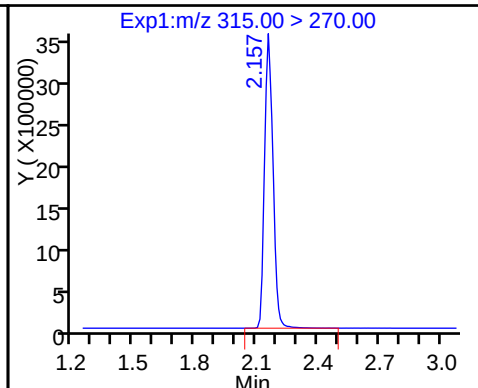
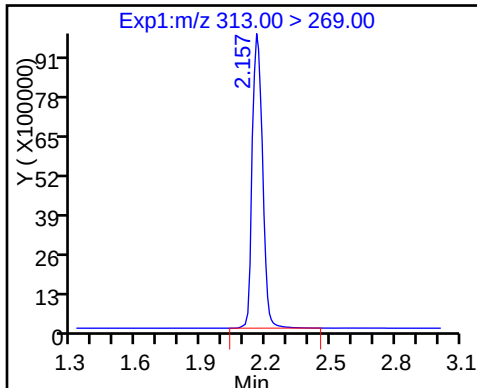
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

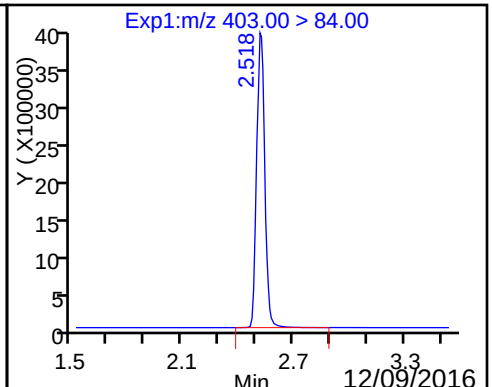
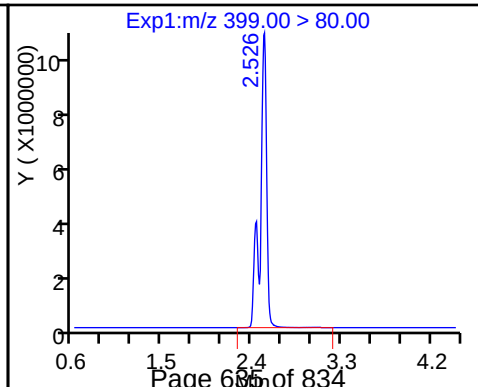
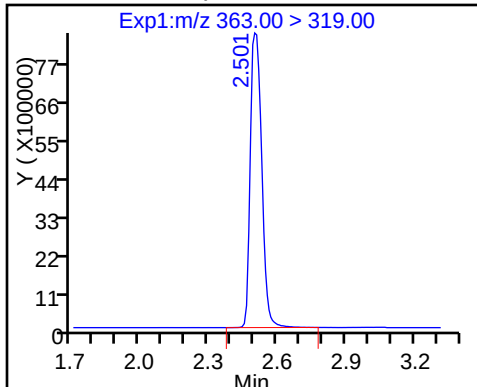
D 11 13C4-PFHpA



12 Perfluoroheptanoic acid

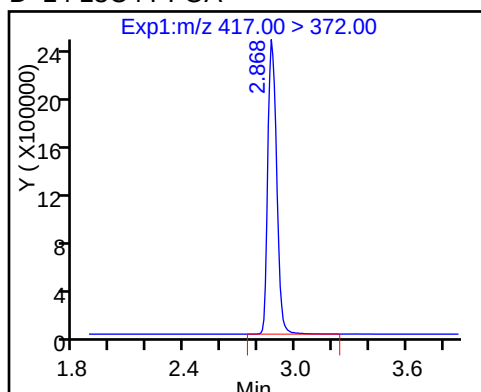
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS

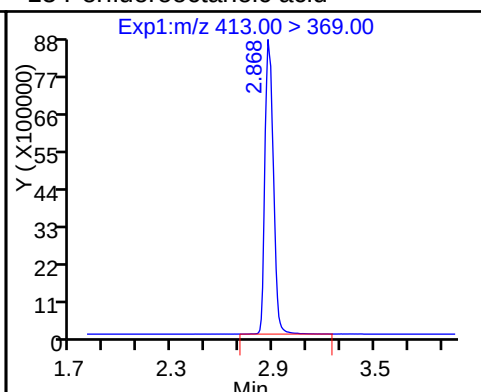




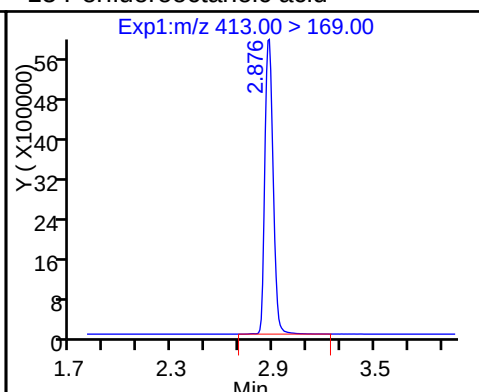
## D 14 13C4 PFOA



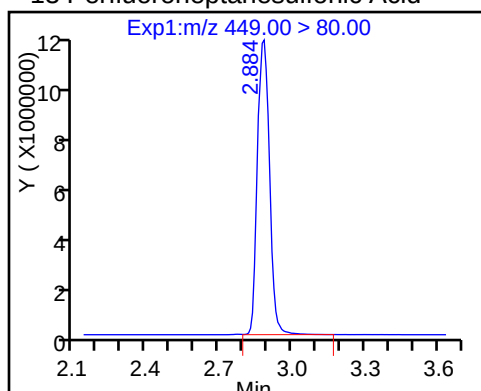
## 15 Perfluorooctanoic acid



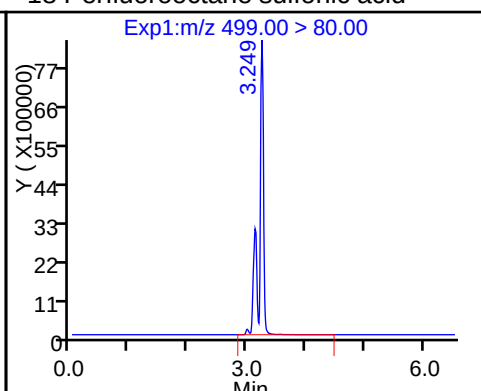
## 15 Perfluorooctanoic acid



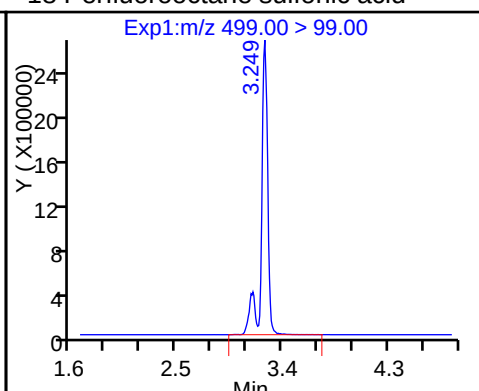
## 13 Perfluoroheptanesulfonic Acid



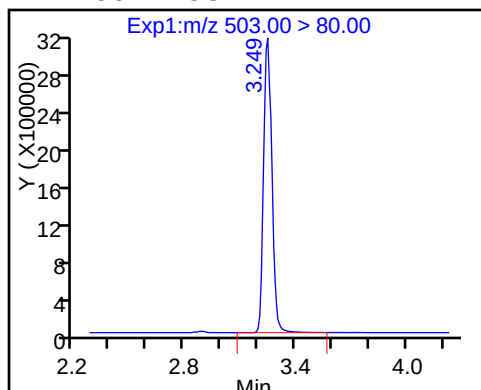
## 18 Perfluorooctane sulfonic acid



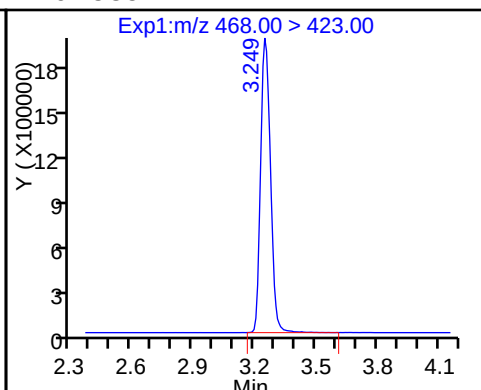
## 18 Perfluorooctane sulfonic acid



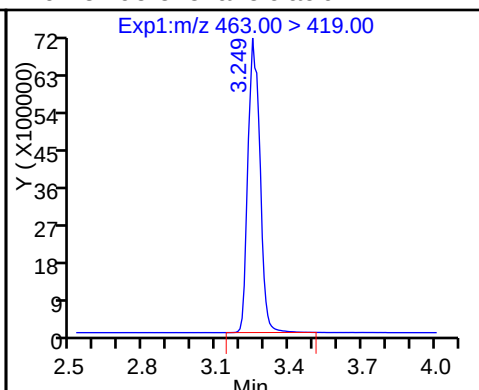
## D 17 13C4 PFOS



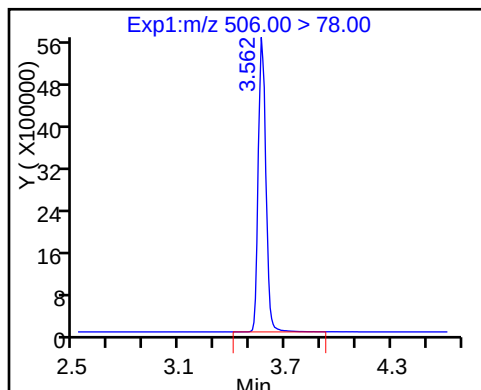
## D 19 13C5 PFNA



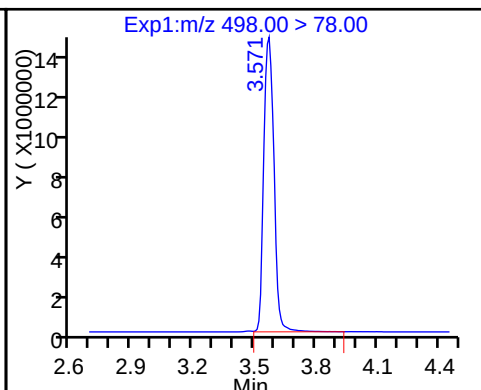
## 20 Perfluorononanoic acid



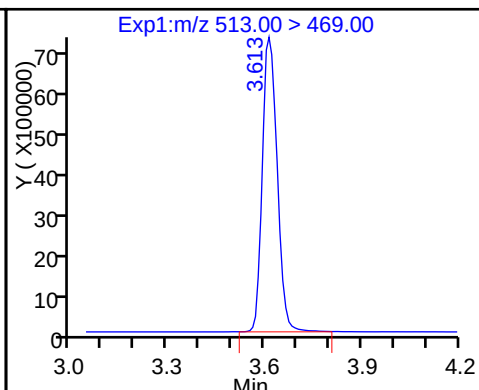
## D 21 13C8 FOSA



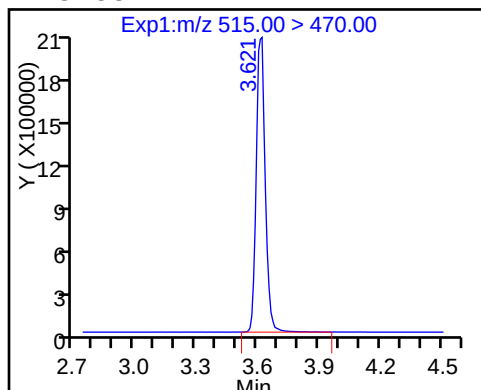
## 22 Perfluorooctane Sulfonamide



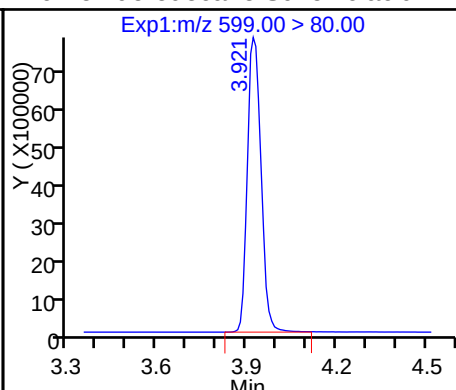
## 24 Perfluorodecanoic acid



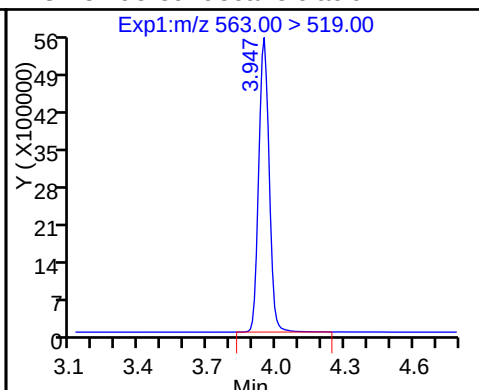
## D 23 13C2 PFDA



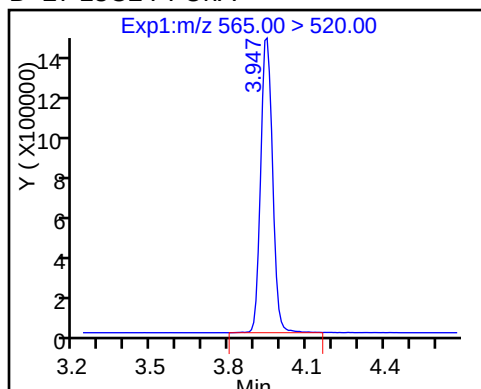
## 26 Perfluorodecane Sulfonic acid



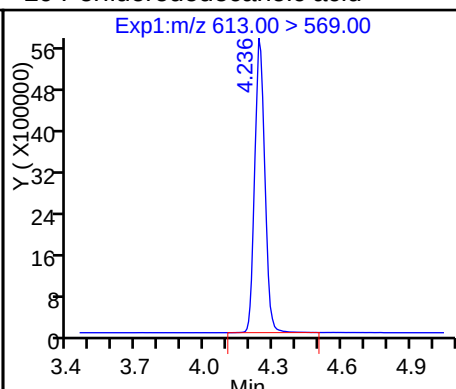
## 28 Perfluoroundecanoic acid



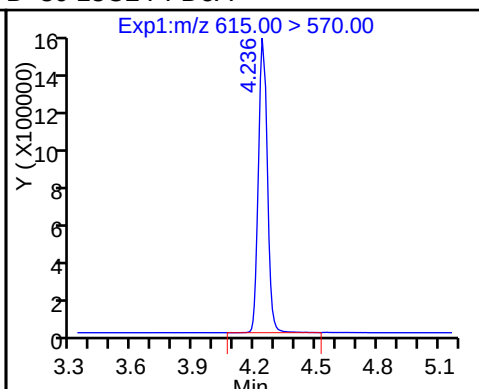
## D 27 13C2 PFUnA



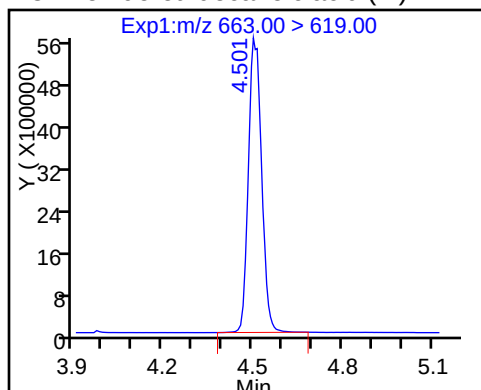
## 29 Perfluorododecanoic acid



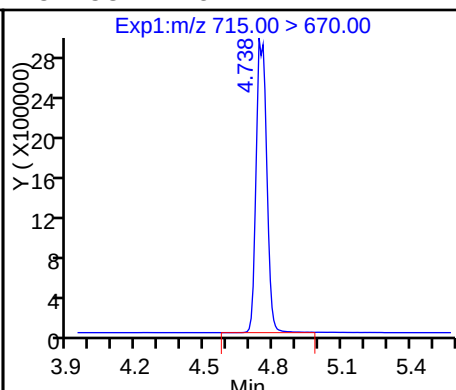
## D 30 13C2 PFDaA



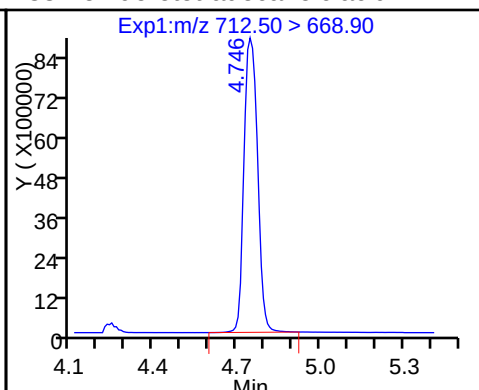
## 31 Perfluorotridecanoic acid (M)



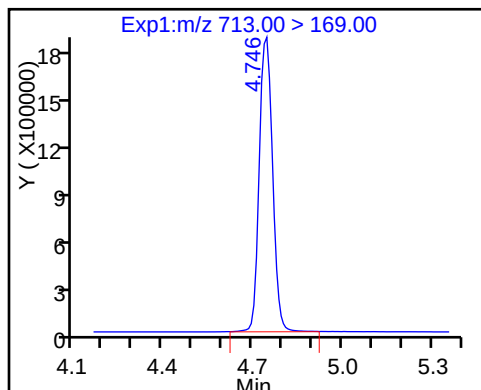
## D 32 13C2-PFTeDA



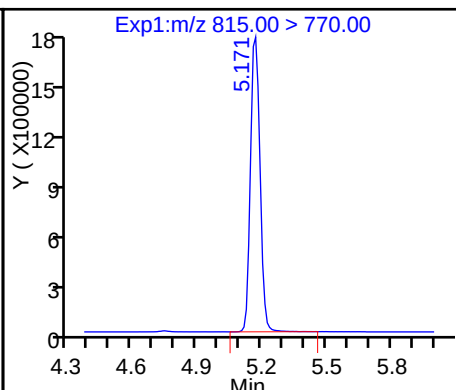
## 33 Perfluorotetradecanoic acid



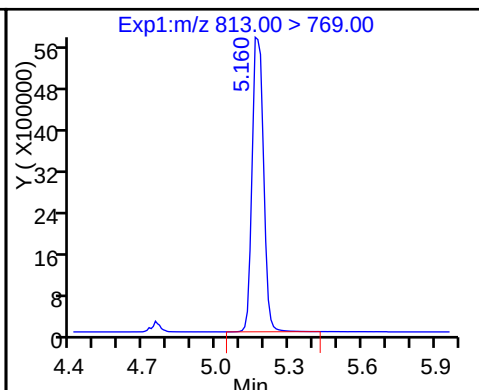
## 33 Perfluorotetradecanoic acid



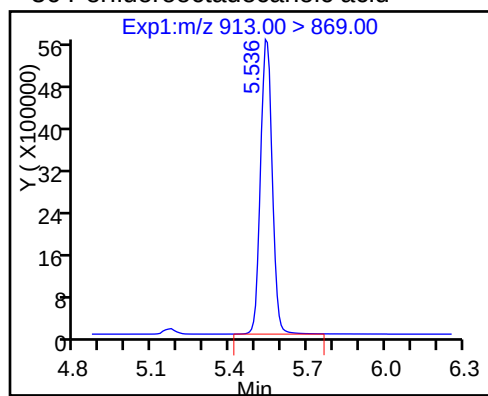
## D 34 13C2-PFHxDA



## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



## TestAmerica Sacramento

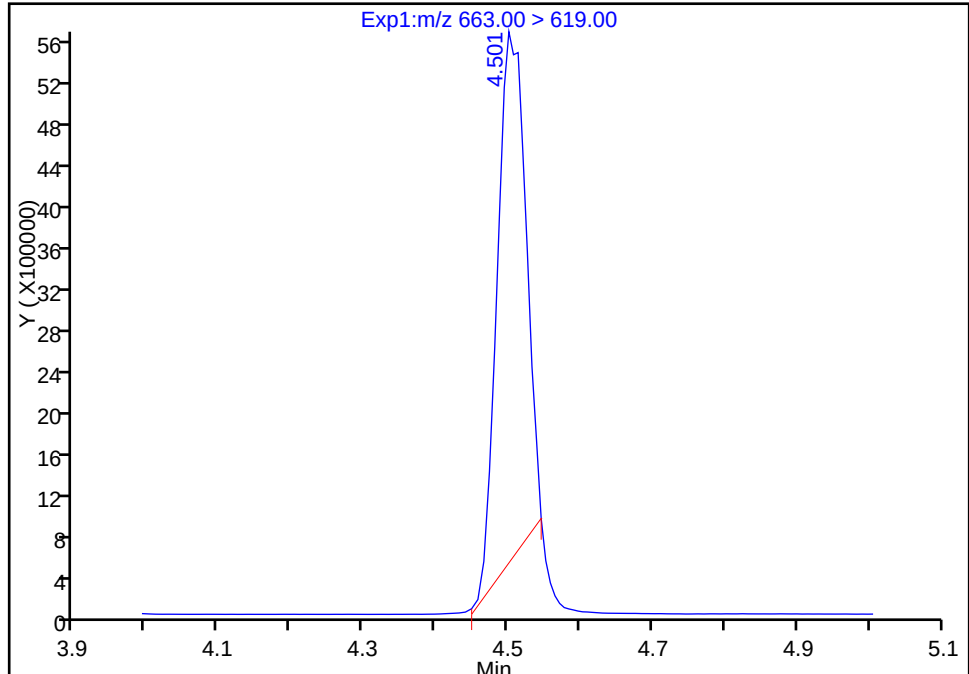
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_009.d  
Injection Date: 03-Dec-2016 14:26:13 Instrument ID: A8\_N  
Lims ID: IC L6  
Client ID:  
Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: A8\_N Limit Group: LC PFC\_DOD ICAL  
Column: Detector EXP1

**31 Perfluorotridecanoic acid, CAS: 72629-94-8**

Signal: 1

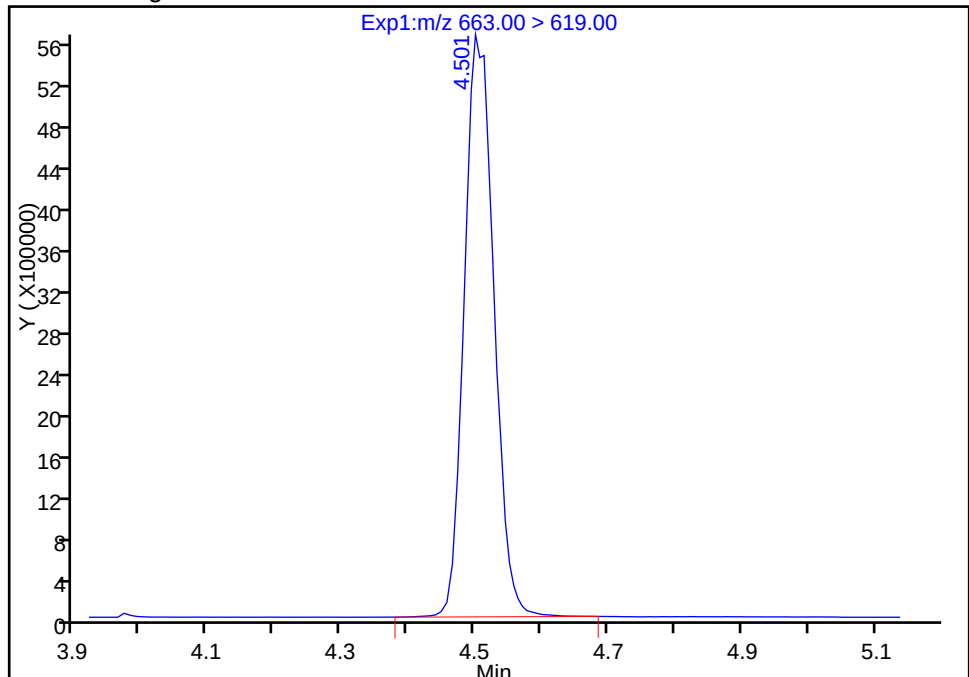
RT: 4.50  
Area: 14077685  
Amount: 158.7746  
Amount Units: ng/ml

## Processing Integration Results



RT: 4.50  
Area: 17494025  
Amount: 191.1674  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: chandrasenas, 05-Dec-2016 09:44:26

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_013.d  
 Lims ID: IC L1 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 1  
 Inject. Date: 03-Dec-2016 14:56:13 ALS Bottle#: 46 Worklist Smp#: 13  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L1 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:28:00 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:47:53

| Signal                                | RT              | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.840  | 2.836  | 0.004  | 1.000    | 40088        | 0.5222        | 110  |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.840  | 2.836  | 0.004  |          | 4340981      | 41.1          | 86.6 |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.601  | 3.588  | 0.013  | 1.000    | 37551        | 0.4928        | 103  |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.601  | 3.591  | 0.010  |          | 4263521      | 43.9          | 91.6 |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.765  | 3.756  | 0.009  |          | 3321758      | 45.8          | 91.6 |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.774  | 3.759  | 0.015  | 1.002    | 23619        | 0.4142        | 82.8 |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 3.931  | 3.922  | 0.009  |          | 3822164      | 48.0          | 96.0 |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 3.931  | 3.929  | 0.002  | 1.000    | 25433        | 0.4345        | 86.9 |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.054  | 4.051  | 0.003  |          | 4696243      | 44.7          | 89.4 |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.063  | 4.057  | 0.006  | 1.000    | 37442        | 0.4934        | 98.7 |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.244  | 4.239  | 0.005  |          | 4355916      | 43.9          | 87.9 |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.253  | 4.245  | 0.008  | 1.000    | 36079        | 0.4813        | 96.3 |     |       |

**Reagents:**

LCPFC2-L1\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_013.d

Injection Date: 03-Dec-2016 14:56:13

Instrument ID: A8\_N

Lims ID: IC L1 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 46

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

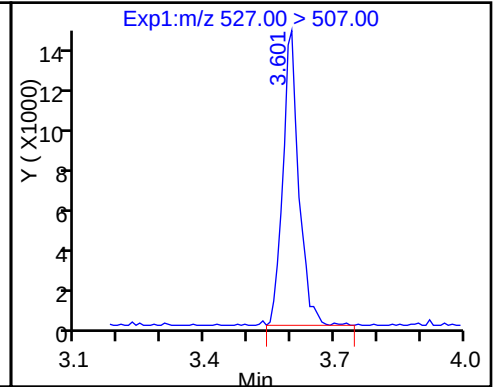
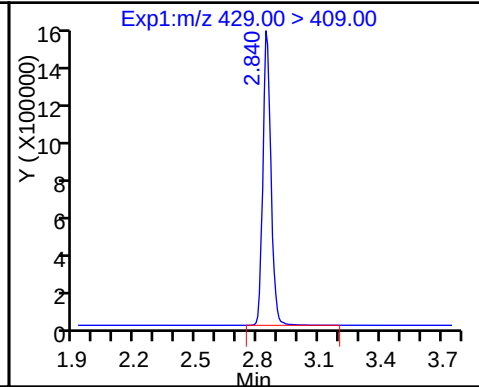
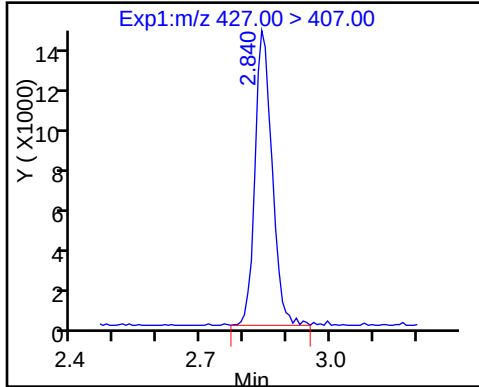
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate

D 47 M2-6:2FTS

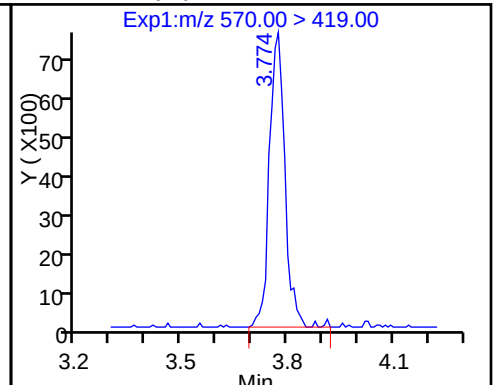
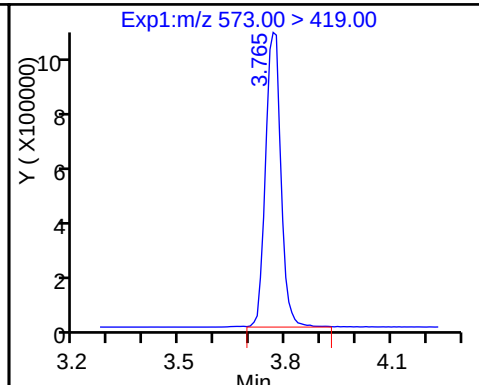
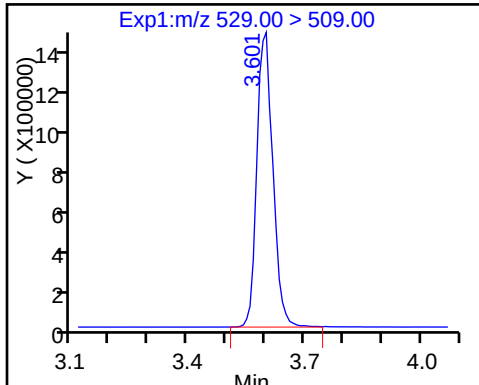
43 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

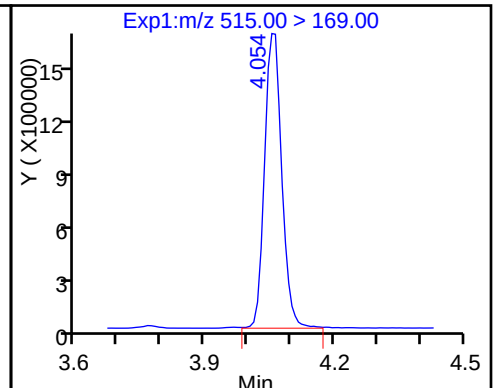
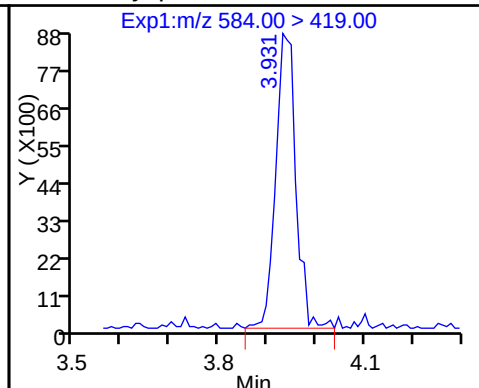
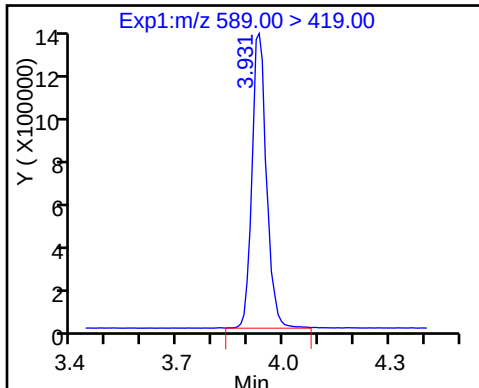
44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamide

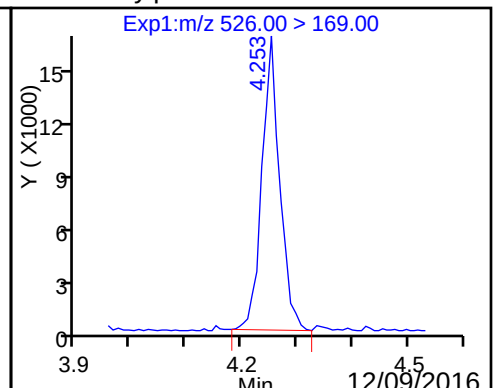
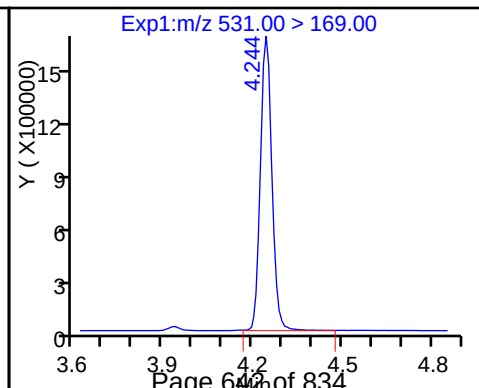
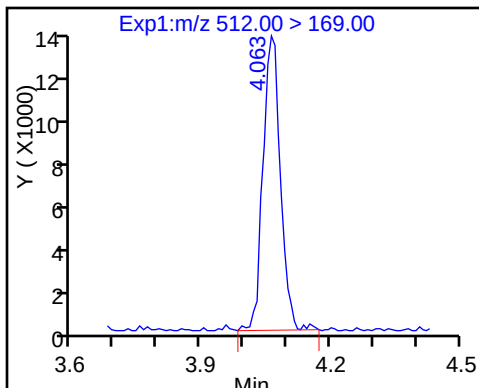
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide







TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_014.d  
 Lims ID: IC L2 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 2  
 Inject. Date: 03-Dec-2016 15:03:43 ALS Bottle#: 47 Worklist Smp#: 14  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L2 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:28:01 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:48:07

| Signal                                | RT              | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.830  | 2.836  | -0.006 | 1.000    | 69385        | 0.9534        | 101  |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.830  | 2.836  | -0.006 |          | 4115043      | 39.0          | 82.1 |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.579  | 3.588  | -0.009 | 1.000    | 63932        | 0.9133        | 95.3 |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.579  | 3.591  | -0.012 |          | 3917070      | 40.3          | 84.2 |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.760  | 3.756  | 0.004  |          | 3368323      | 46.4          | 92.9 |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.760  | 3.759  | 0.001  | 1.000    | 53845        | 0.9312        | 93.1 |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 3.918  | 3.922  | -0.004 |          | 3818745      | 47.9          | 95.9 |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 3.935  | 3.929  | 0.006  | 1.004    | 49948        | 0.8541        | 85.4 |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.051  | 4.051  | 0.0    |          | 4885054      | 46.5          | 93.0 |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.051  | 4.057  | -0.006 | 1.000    | 72155        | 0.9140        | 91.4 |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.231  | 4.239  | -0.008 |          | 4699997      | 47.4          | 94.8 |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.239  | 4.245  | -0.006 | 1.000    | 72107        | 0.8915        | 89.1 |     |       |

**Reagents:**

LCPFC2-L2\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_014.d

Injection Date: 03-Dec-2016 15:03:43

Instrument ID: A8\_N

Lims ID: IC L2 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 47

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

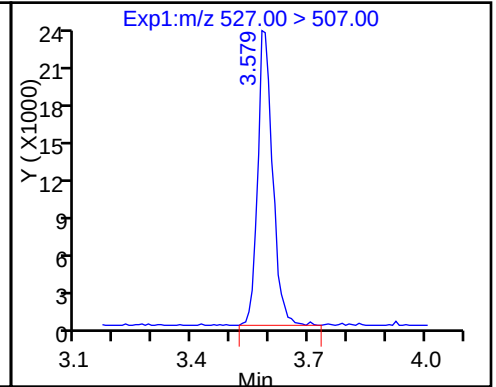
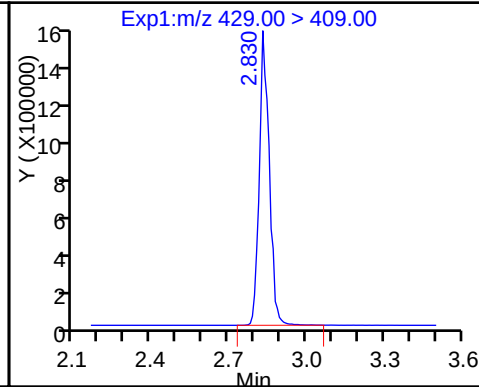
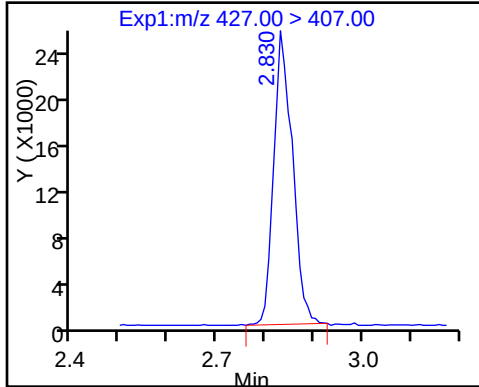
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate

De 47 M2-6:2FTS

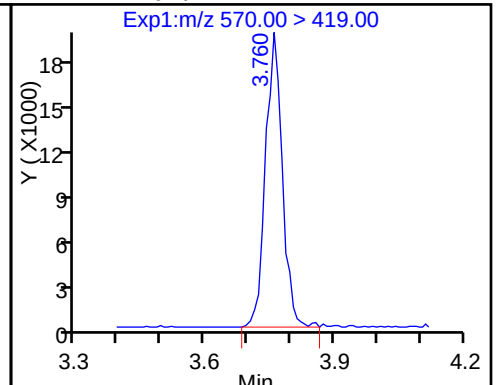
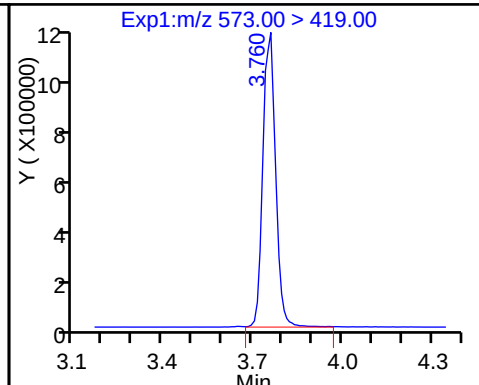
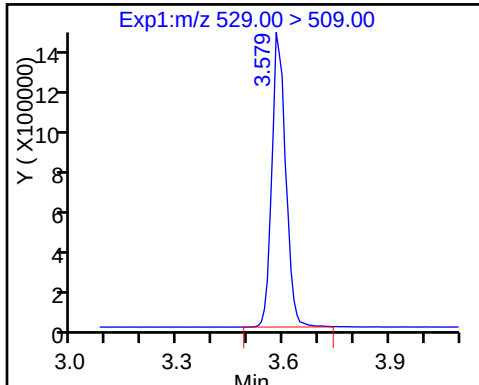
43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

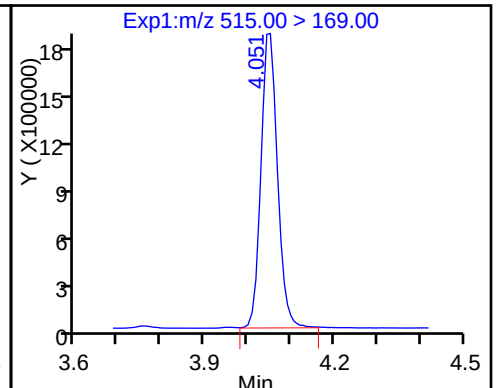
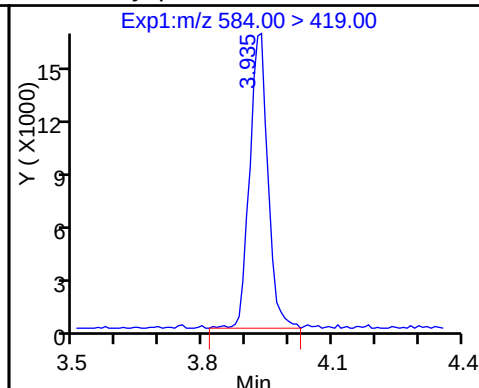
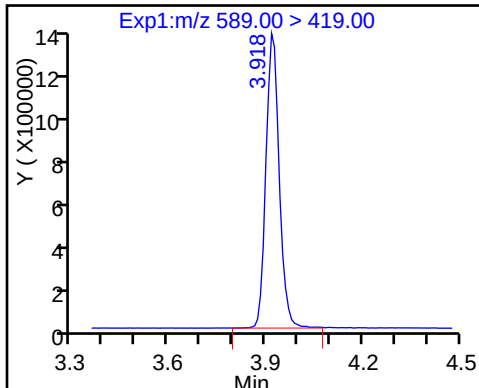
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

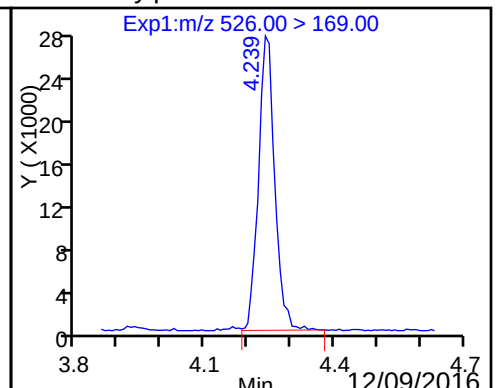
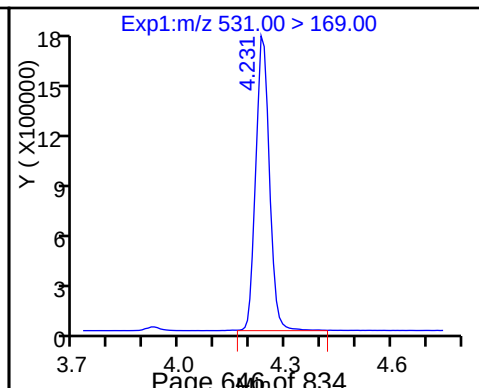
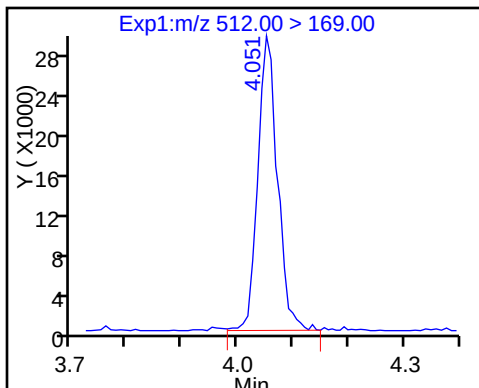
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami





TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_015.d  
 Lims ID: IC L3 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 3  
 Inject. Date: 03-Dec-2016 15:11:13 ALS Bottle#: 48 Worklist Smp#: 15  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L3 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:28:04 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:48:18

| Signal                                | RT              | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.838  | 2.836  | 0.002  | 1.000    | 352721       | 4.15          | 87.6 |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.838  | 2.836  | 0.002  |          | 4800798      | 45.5          | 95.8 |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.588  | 3.588  | 0.0    | 0.998    | 326213       | 4.10          | 85.6 |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.596  | 3.591  | 0.005  |          | 4450751      | 45.8          | 95.7 |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.751  | 3.756  | -0.005 |          | 3668263      | 50.6          | 101  |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.760  | 3.759  | 0.001  | 1.002    | 260030       | 4.13          | 82.6 |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 3.918  | 3.922  | -0.004 |          | 4095032      | 51.4          | 103  |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 3.926  | 3.929  | -0.003 | 1.002    | 265257       | 4.23          | 84.6 |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.051  | 4.051  | 0.0    |          | 5526561      | 52.6          | 105  |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.051  | 4.057  | -0.006 | 1.000    | 356898       | 4.00          | 79.9 |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.240  | 4.239  | 0.001  |          | 5054297      | 51.0          | 102  |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.240  | 4.245  | -0.005 | 1.000    | 365313       | 4.20          | 84.0 |     |       |

**Reagents:**

LCPFC2-L3\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_015.d

Injection Date: 03-Dec-2016 15:11:13

Instrument ID: A8\_N

Lims ID: IC L3 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 48

Worklist Smp#: 15

Injection Vol: 2.0 ul

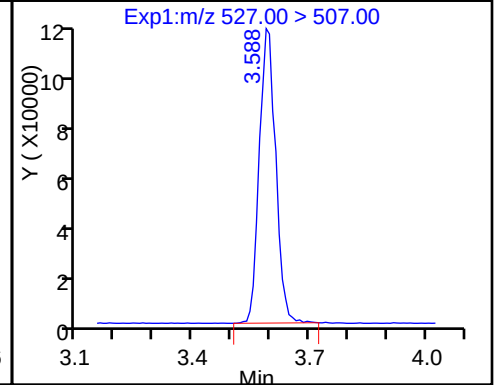
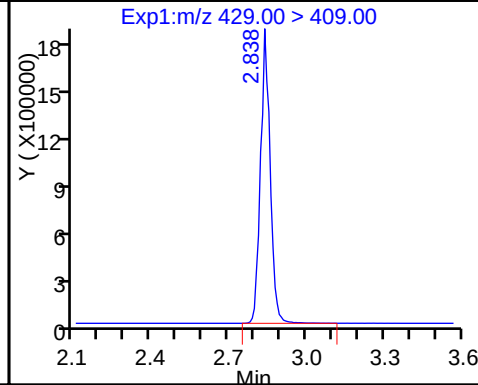
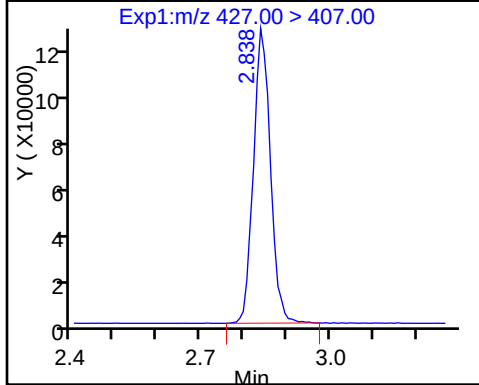
Dil. Factor: 1.0000

Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate

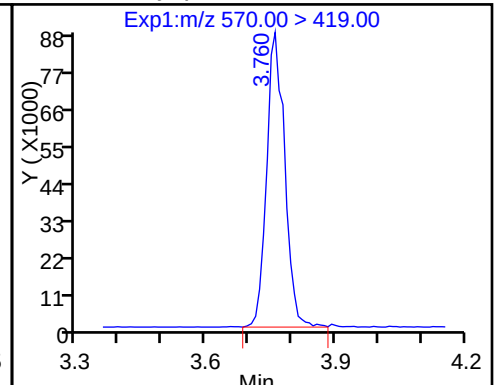
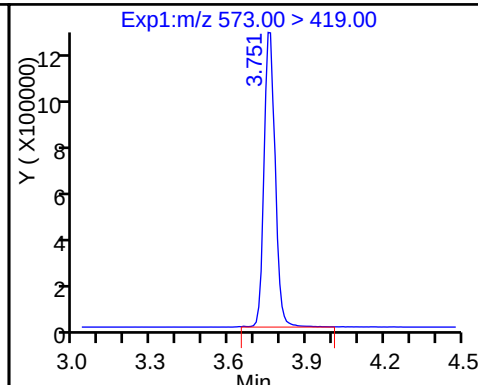
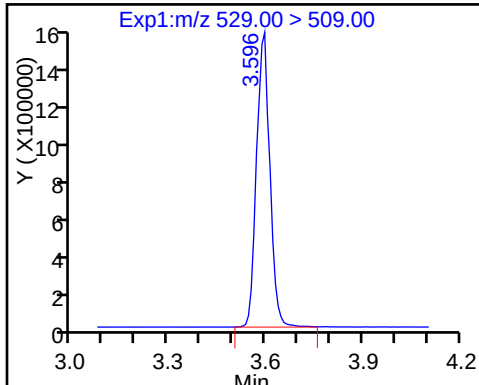
43 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

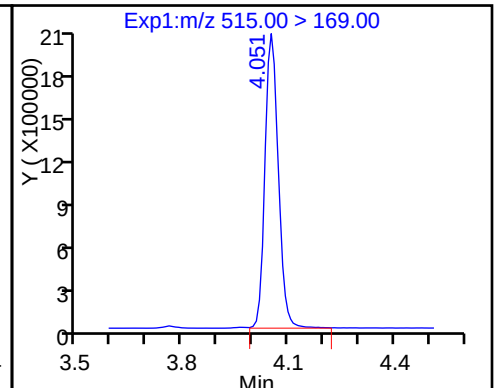
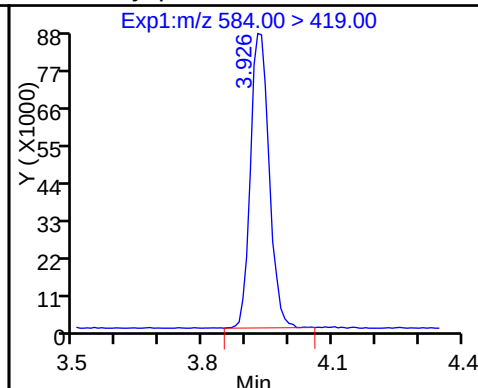
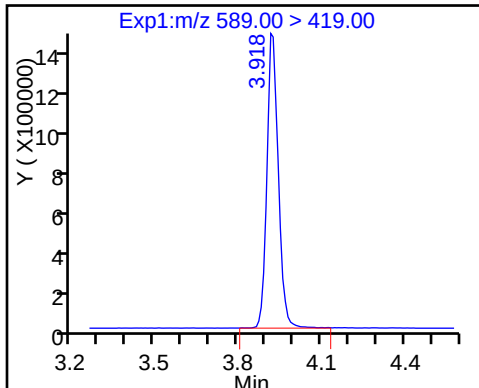
44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamide

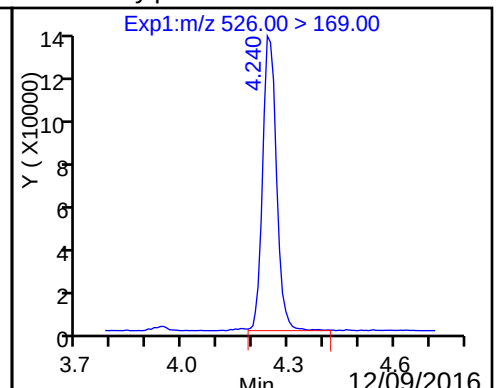
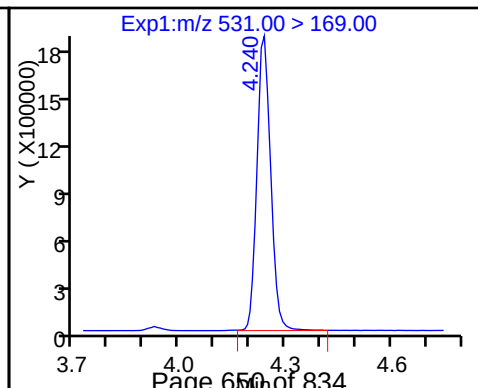
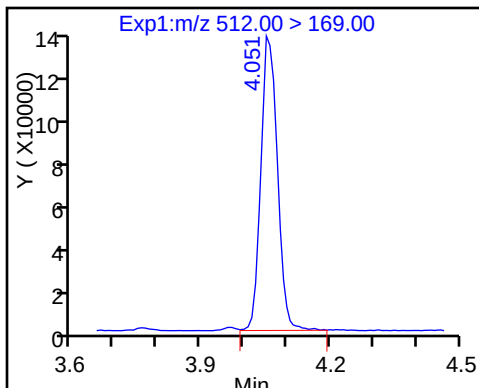
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide







TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_016.d  
 Lims ID: IC L4 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 4  
 Inject. Date: 03-Dec-2016 15:18:43 ALS Bottle#: 49 Worklist Smp#: 16  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L4 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:28:06 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:47:40

| Signal                                | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.840     | 2.836     | 0.004     | 1.000    | 2169230         | 19.5          | 103  |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.840     | 2.836     | 0.004     |          | 6295656         | 59.7          | 126  |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.592     | 3.588     | 0.004     | 1.000    | 2029390         | 21.1          | 110  |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.592     | 3.591     | 0.001     |          | 5378444         | 55.4          | 116  |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.756     | 3.756     | 0.0       |          | 4323749         | 59.6          | 119  |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.756     | 3.759     | -0.003    | 1.000    | 1655435         | 22.3          | 112  |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 3.931     | 3.922     | 0.009     |          | 4650188         | 58.4          | 117  |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 3.931     | 3.929     | 0.002     | 1.000    | 1629443         | 22.9          | 114  |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.055     | 4.051     | 0.004     |          | 6162693         | 58.6          | 117  |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.063     | 4.057     | 0.006     | 1.000    | 2189848         | 22.0          | 110  |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.244     | 4.239     | 0.005     |          | 5747792         | 58.0          | 116  |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.244     | 4.245     | -0.001    | 1.000    | 2201423         | 22.3          | 111  |     |       |

**Reagents:**

LCPFC2-L4\_00003

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_016.d

Injection Date: 03-Dec-2016 15:18:43

Instrument ID: A8\_N

Lims ID: IC L4 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 49

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

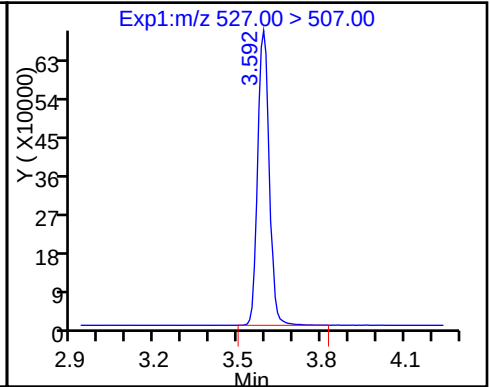
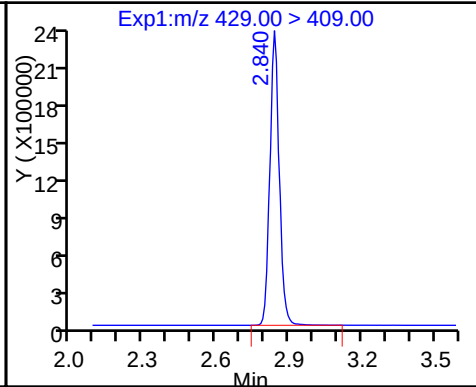
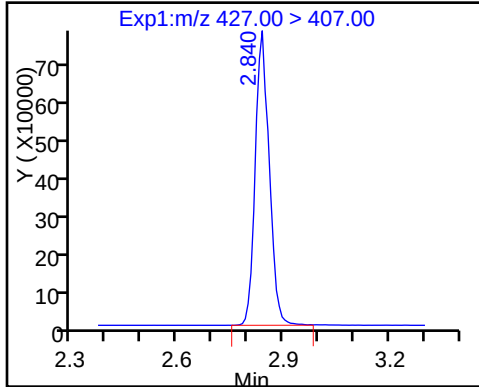
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 47 M2-6:2FTS

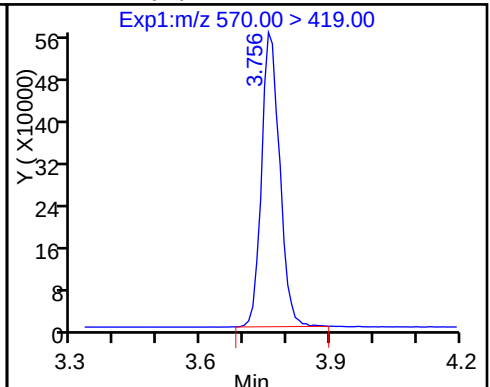
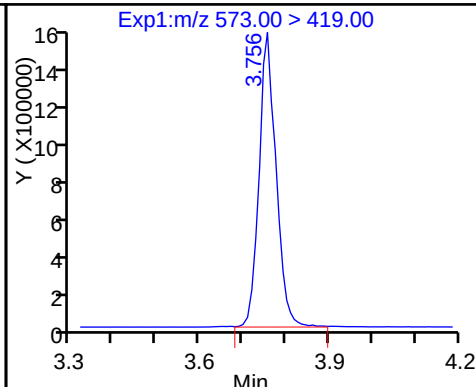
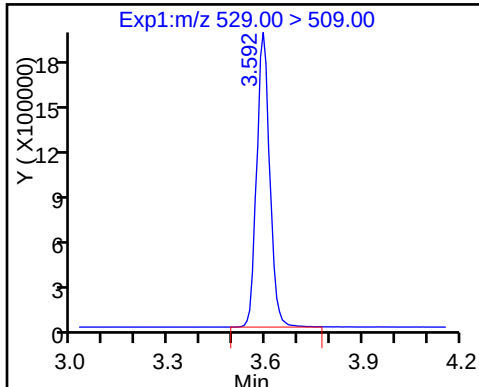
43 Sodium 1H,1H,2H,2H-perfluorooctanoate



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

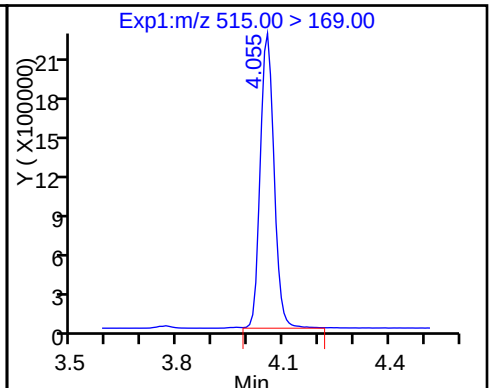
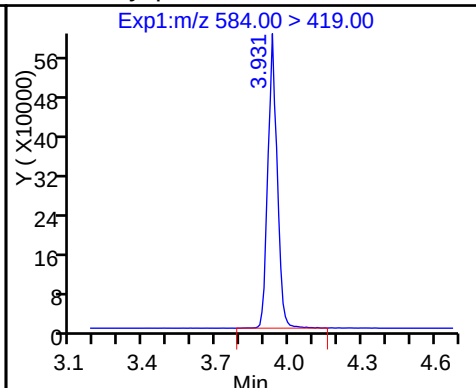
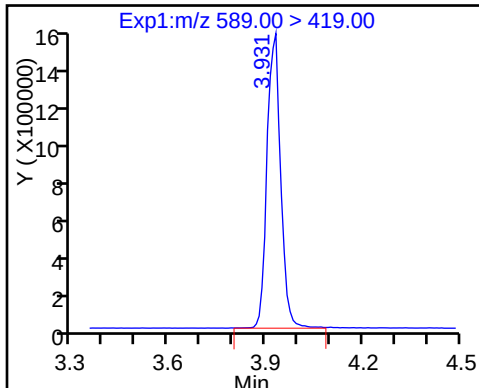
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

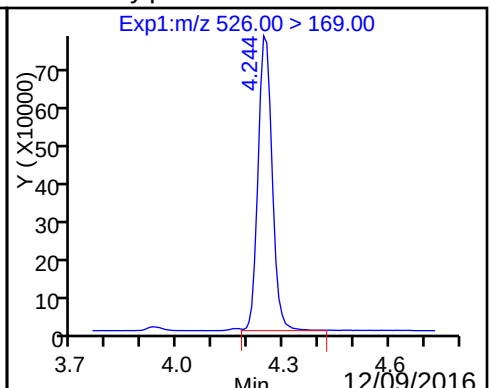
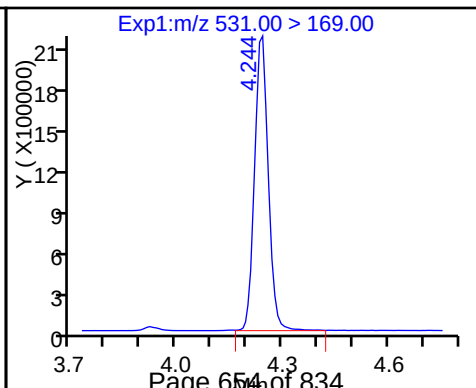
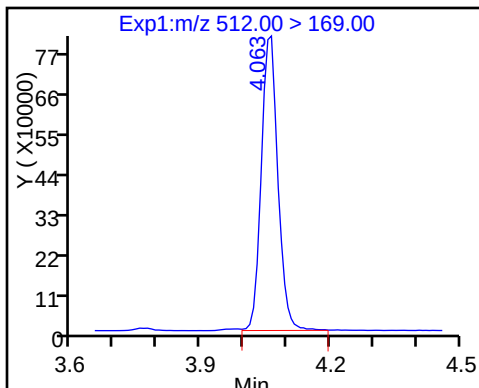
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami





TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_017.d  
 Lims ID: IC L5 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 5  
 Inject. Date: 03-Dec-2016 15:26:12 ALS Bottle#: 50 Worklist Smp#: 17  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L5 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:28:07 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:48:43

| Signal                                | RT              | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.830  | 2.836  | -0.006 | 1.000    | 4576863      | 55.8          | 118  |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.830  | 2.836  | -0.006 |          | 4638709      | 44.0          | 92.5 |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.579  | 3.588  | -0.009 | 0.998    | 4279048      | 57.8          | 121  |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.587  | 3.591  | -0.004 |          | 4144623      | 42.7          | 89.1 |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.750  | 3.756  | -0.006 |          | 3122973      | 43.1          | 86.1 |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.750  | 3.759  | -0.009 | 1.000    | 3484088      | 65.0          | 130  |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 3.917  | 3.922  | -0.005 |          | 3419439      | 42.9          | 85.9 |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 3.925  | 3.929  | -0.004 | 1.002    | 3261537      | 62.3          | 125  |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.042  | 4.051  | -0.009 |          | 4794382      | 45.6          | 91.2 |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.051  | 4.057  | -0.006 | 1.000    | 4656344      | 60.1          | 120  |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.236  | 4.239  | -0.003 |          | 4667809      | 47.1          | 94.1 |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.245  | 4.245  | 0.0    | 1.000    | 4735360      | 58.9          | 118  |     |       |

**Reagents:**

LCPFC2-L5\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_017.d

Injection Date: 03-Dec-2016 15:26:12

Instrument ID: A8\_N

Lims ID: IC L5 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 50

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

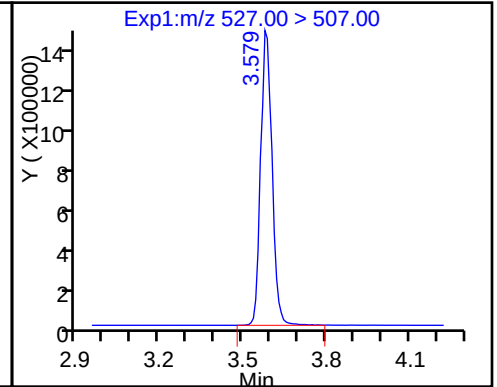
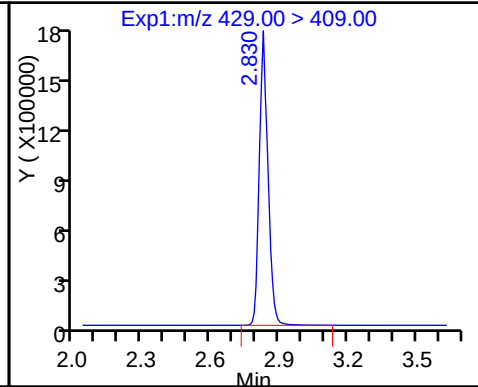
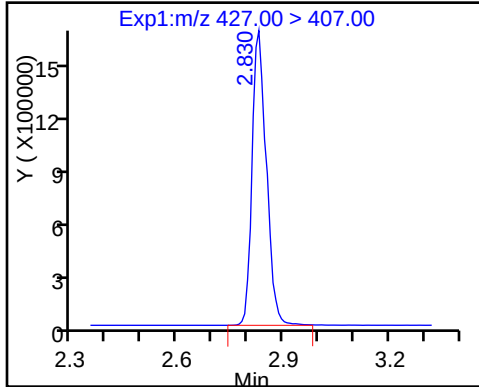
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate

D 47 M2-6:2FTS

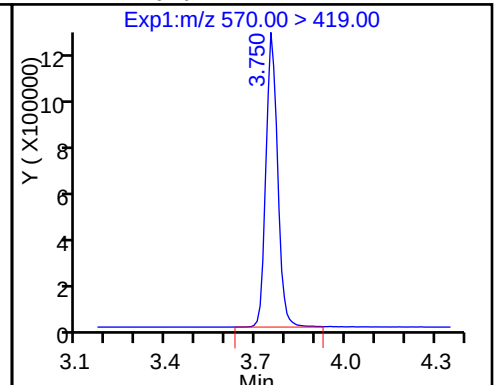
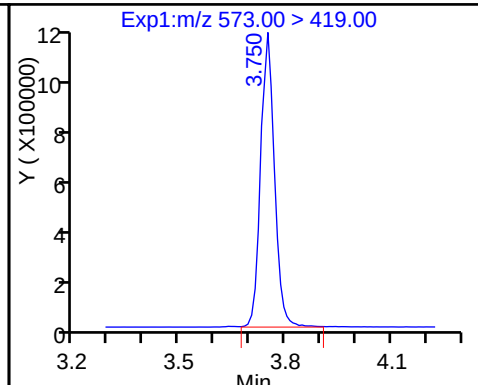
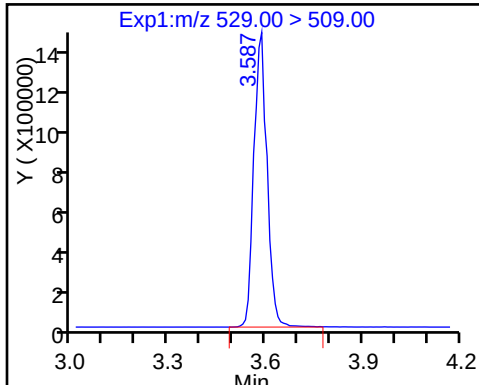
43 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

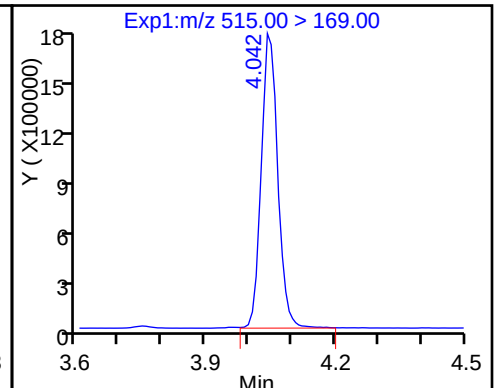
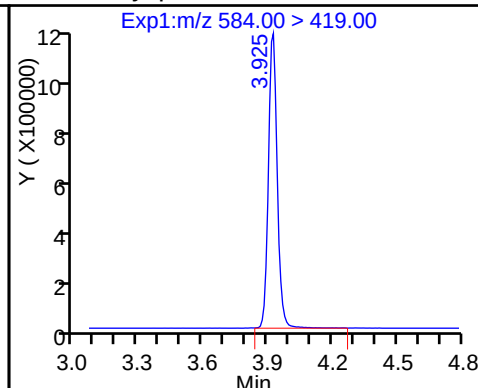
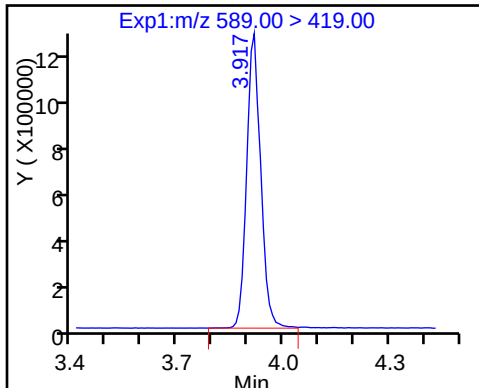
44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamide

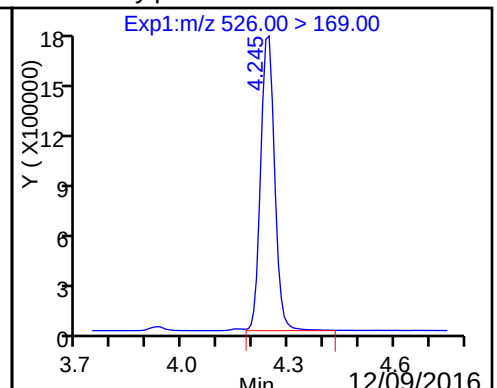
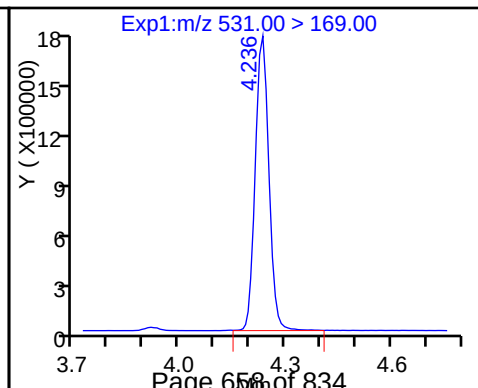
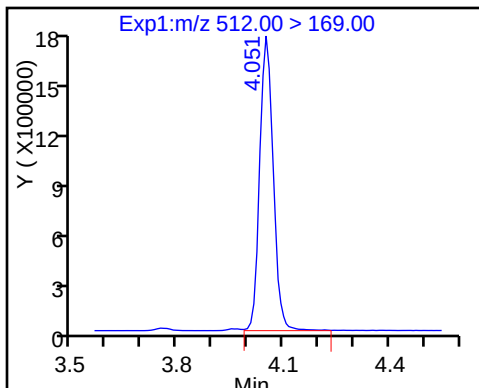
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide







TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Lims ID: IC L6 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 6  
 Inject. Date: 03-Dec-2016 15:33:40 ALS Bottle#: 51 Worklist Smp#: 18  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L6 ADD ON  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub3  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:28:09 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:49:51

| Signal                                | RT              | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
| 48 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.838  | 2.836  | 0.002  | 1.000    | 18026595     | 173.2         | 91.3 |     |       |
| D 47 M2-6:2FTS                        | 429.00 > 409.00 | 2.838  | 2.836  | 0.002  |          | 5885296      | 55.8          | 117  |     |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane | 527.00 > 507.00 | 3.589  | 3.588  | 0.001  | 1.000    | 16850029     | 163.6         | 85.4 |     |       |
| D 42 M2-8:2FTS                        | 529.00 > 509.00 | 3.589  | 3.591  | -0.002 |          | 5764339      | 59.3          | 124  |     |       |
| D 45 d3-NMeFOSAA                      | 573.00 > 419.00 | 3.752  | 3.756  | -0.004 |          | 3953776      | 54.5          | 109  |     |       |
| 44 N-methyl perfluorooctane sulfonami | 570.00 > 419.00 | 3.752  | 3.759  | -0.007 | 1.000    | 13566790     | 199.9         | 99.9 |     |       |
| D 46 d5-NEtFOSAA                      | 589.00 > 419.00 | 3.919  | 3.922  | -0.003 |          | 4091711      | 51.4          | 103  |     |       |
| 49 N-ethyl perfluorooctane sulfonamid | 584.00 > 419.00 | 3.927  | 3.929  | -0.002 | 1.002    | 13047697     | 208.2         | 104  |     |       |
| D 52 d-N-MeFOSA-M                     | 515.00 > 169.00 | 4.052  | 4.051  | 0.001  |          | 5465444      | 52.0          | 104  |     |       |
| 54 MeFOSA                             | 512.00 > 169.00 | 4.061  | 4.057  | 0.004  | 1.000    | 17635948     | 199.7         | 99.8 |     |       |
| D 51 d-N-EtFOSA-M                     | 531.00 > 169.00 | 4.239  | 4.239  | 0.0    |          | 5223764      | 52.7          | 105  |     |       |
| 53 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.249  | 4.245  | 0.003  | 1.000    | 18234509     | 202.8         | 101  |     |       |

**Reagents:**

LCPFC2-L6\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Injection Date: 03-Dec-2016 15:33:40

Instrument ID: A8\_N

Lims ID: IC L6 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 51

Worklist Smp#: 18

Injection Vol: 2.0 ul

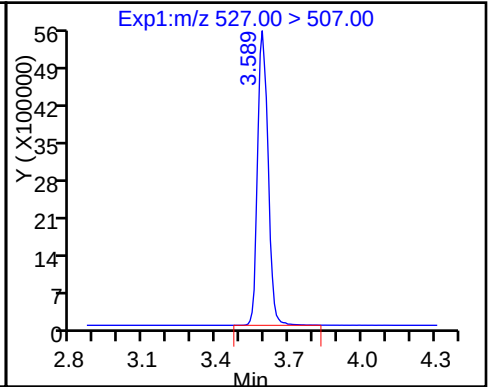
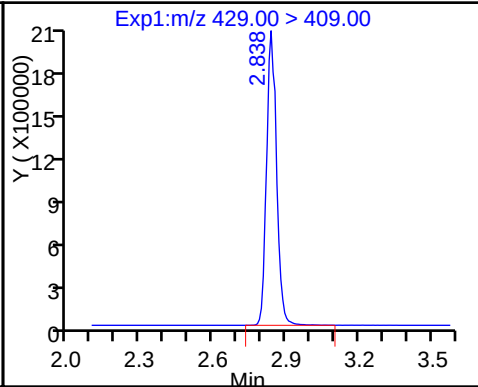
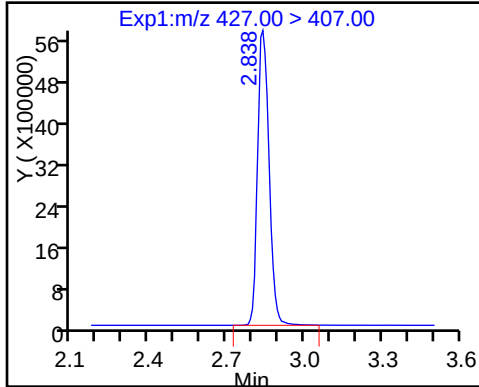
Dil. Factor: 1.0000

Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

48 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate

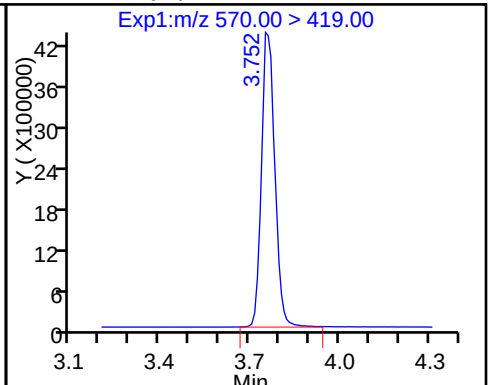
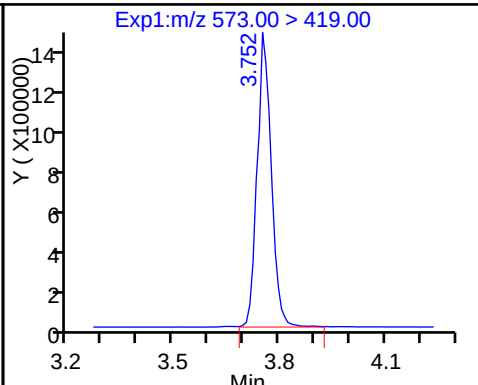
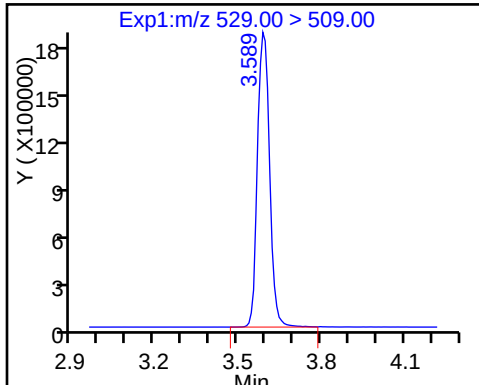
43 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

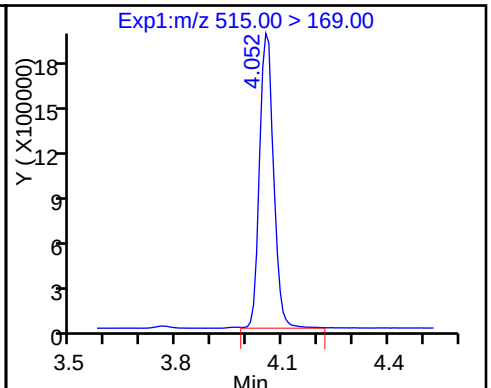
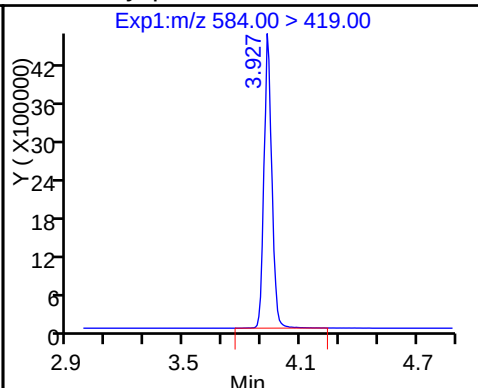
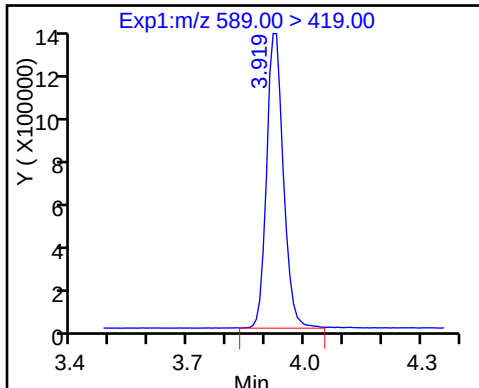
44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamide

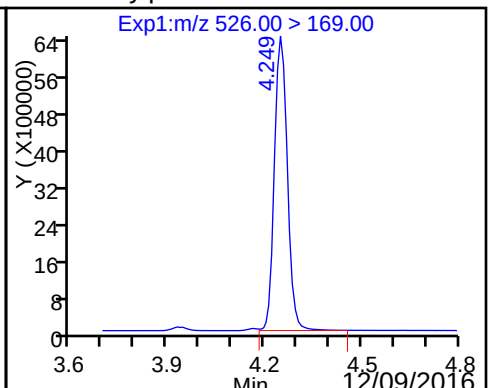
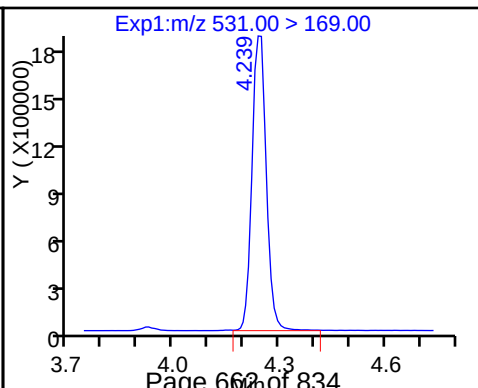
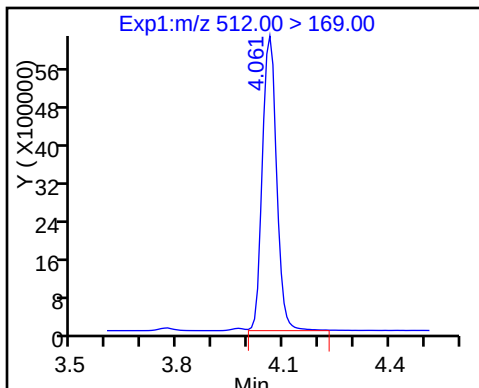
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide





FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-140382/12 Calibration Date: 12/02/2016 11:29  
 Instrument ID: A8\_N Calib Start Date: 12/02/2016 10:29  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/02/2016 12:29  
 Lab File ID: 02DEC2016A\_012.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) | AveID         | 1.613   | 1.563  |         | 42.9           | 44.3            | -3.1  | 25.0      |
| Perfluorooctanoic acid (PFOA)       | AveID         | 1.020   | 0.9852 |         | 48.3           | 50.0            | -3.4  | 25.0      |
| Perfluorooctane Sulfonate (PFOS)    | AveID         | 1.087   | 0.9062 |         | 39.8           | 47.8            | -16.7 | 25.0      |
| 13C4 PFBA                           | Ave           | 340300  | 315108 |         | 46.3           | 50.0            | -7.4  | 50.0      |
| 13C5-PFPeA                          | Ave           | 270194  | 250588 |         | 46.4           | 50.0            | -7.3  | 50.0      |
| 13C2 PFHxA                          | Ave           | 246480  | 226803 |         | 46.0           | 50.0            | -8.0  | 50.0      |
| 13C4-PFHpA                          | Ave           | 210510  | 197868 |         | 47.0           | 50.0            | -6.0  | 50.0      |
| 18O2 PFHxS                          | Ave           | 302453  | 298386 |         | 46.7           | 47.3            | -1.3  | 50.0      |
| 13C4 PFOA                           | Ave           | 219411  | 208024 |         | 47.4           | 50.0            | -5.2  | 50.0      |
| 13C4 PFOS                           | Ave           | 244616  | 241692 |         | 47.2           | 47.8            | -1.2  | 50.0      |
| 13C5 PFNA                           | Ave           | 178109  | 162087 |         | 45.5           | 50.0            | -9.0  | 50.0      |
| 13C8 FOSA                           | Ave           | 414253  | 389267 |         | 47.0           | 50.0            | -6.0  | 50.0      |
| 13C2 PFDA                           | Ave           | 166067  | 160722 |         | 48.4           | 50.0            | -3.2  | 50.0      |
| 13C2 PFUnA                          | Ave           | 125779  | 115580 |         | 45.9           | 50.0            | -8.1  | 50.0      |
| 13C2 PFDoA                          | Ave           | 116905  | 110755 |         | 47.4           | 50.0            | -5.3  | 50.0      |
| 13C2-PFTeDA                         | Ave           | 241899  | 239157 |         | 49.4           | 50.0            | -1.1  | 50.0      |
| 13C2-PFHxDA                         | Ave           | 130373  | 130244 |         | 50.0           | 50.0            | -0.1  | 50.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_012.d  
 Lims ID: ICV  
 Client ID:  
 Sample Type: ICV  
 Inject. Date: 02-Dec-2016 11:29:31 ALS Bottle#: 44 Worklist Smp#: 12  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: ICV\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist:  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 02-Dec-2016 16:10:33 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK025

First Level Reviewer: barnettj Date: 02-Dec-2016 16:10:33

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.598 | 1.615  | -0.017 |        | 15755416 | 46.3         |                 | 92.6 | 1226463 |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.606 | 1.617  | -0.011 | 1.000  | 13527367 | 48.5         |                 |      | 149480  |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.897 | 1.918  | -0.021 |        | 12529404 | 46.4         |                 | 92.7 | 998019  |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.897 | 1.920  | -0.023 | 1.000  | 12023152 | 46.1         |                 |      | 109623  |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.936 | 1.961  | -0.025 | 1.000  | 20638621 | 42.9         |                 |      |         |       |
| 298.90 > 99.00                 | 1.936 | 1.961  | -0.025 | 1.000  | 9604105  |              | 2.15(0.00-0.00) |      |         |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.213 | 2.239  | -0.026 |        | 11340128 | 46.0         |                 | 92.0 | 872752  |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.213 | 2.241  | -0.028 | 1.000  | 10367089 | 47.8         |                 |      | 388218  |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.566 | 2.599  | -0.033 |        | 9893393  | 47.0         |                 | 94.0 | 1263133 |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.573 | 2.600  | -0.027 | 1.000  | 9494636  | 46.4         |                 |      | 159398  |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.589 | 2.614  | -0.025 |        | 14113680 | 46.7         |                 | 98.7 | 888579  |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.589 | 2.615  | -0.026 | 1.000  | 13727834 | 43.4         |                 |      |         |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.951 | 2.984  | -0.033 | 1.000  | 10247185 | 48.3         |                 |      | 136835  |       |
| 413.00 > 169.00                | 2.943 | 2.984  | -0.041 | 0.997  | 6439506  |              | 1.59(0.90-1.10) |      | 319423  |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.951 | 2.984  | -0.033 |        | 10401182 | 47.4         |                 | 94.8 | 602068  |       |

| Signal                           | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 13 Perfluoroheptanesulfonic Acid | 449.00 > 80.00  | 2.960     | 2.986     | -0.026    | 1.000    | 13266199        | 47.0            |      |         |       |
| D 17 13C4 PFOS                   | 503.00 > 80.00  | 3.329     | 3.365     | -0.036    |          | 11552855        | 47.2            | 98.8 | 248324  |       |
| 18 Perfluorooctane sulfonic acid | 499.00 > 80.00  | 3.329     | 3.366     | -0.037    | 1.000    | 10458074        | 39.8            |      | 1887102 |       |
| 499.00 > 99.00                   | 3.329           | 3.366     | -0.037    | 1.000     | 2551302  |                 | 4.10(0.90-1.10) |      | 466085  |       |
| 20 Perfluorononanoic acid        | 463.00 > 419.00 | 3.336     | 3.373     | -0.037    | 1.000    | 7761968         | 48.3            |      | 97406   |       |
| D 19 13C5 PFNA                   | 468.00 > 423.00 | 3.336     | 3.374     | -0.038    |          | 8104346         | 45.5            | 91.0 | 462400  |       |
| D 21 13C8 FOSA                   | 506.00 > 78.00  | 3.633     | 3.651     | -0.018    |          | 19463355        | 47.0            | 94.0 | 341722  |       |
| 22 Perfluorooctane Sulfonamide   | 498.00 > 78.00  | 3.633     | 3.656     | -0.023    | 1.000    | 18143701        | 49.8            |      | 283379  |       |
| 24 Perfluorodecanoic acid        | 513.00 > 469.00 | 3.698     | 3.738     | -0.040    | 1.000    | 7312192         | 46.9            |      | 156765  |       |
| D 23 13C2 PFDA                   | 515.00 > 470.00 | 3.698     | 3.738     | -0.040    |          | 8036093         | 48.4            | 96.8 | 321643  |       |
| 26 Perfluorodecane Sulfonic acid | 599.00 > 80.00  | 4.010     | 4.049     | -0.039    | 1.000    | 6928568         | 45.7            |      |         |       |
| D 27 13C2 PFUnA                  | 565.00 > 520.00 | 4.029     | 4.070     | -0.041    |          | 5778978         | 45.9            | 91.9 | 312840  |       |
| 28 Perfluoroundecanoic acid      | 563.00 > 519.00 | 4.029     | 4.071     | -0.042    | 1.000    | 5413472         | 44.2            |      | 130245  |       |
| D 30 13C2 PFDaA                  | 615.00 > 570.00 | 4.330     | 4.370     | -0.040    |          | 5537768         | 47.4            | 94.7 | 163474  |       |
| 29 Perfluorododecanoic acid      | 613.00 > 569.00 | 4.330     | 4.370     | -0.040    | 1.000    | 4970310         | 47.4            |      | 6635    |       |
| 31 Perfluorotridecanoic acid     | 663.00 > 619.00 | 4.600     | 4.636     | -0.036    | 1.000    | 5107276         | 44.3            |      | 7225    |       |
| D 32 13C2-PFTeDA                 | 715.00 > 670.00 | 4.837     | 4.882     | -0.045    |          | 11957860        | 49.4            | 98.9 | 638807  |       |
| 33 Perfluorotetradecanoic acid   | 712.50 > 668.90 | 4.837     | 4.884     | -0.047    | 1.000    | 10218574        | 47.7            |      | 5085    |       |
| 713.00 > 169.00                  | 4.837           | 4.884     | -0.047    | 1.000     | 1568084  |                 | 6.52(0.00-0.00) |      | 100324  |       |
| D 34 13C2-PFHxDA                 | 815.00 > 770.00 | 5.274     | 5.320     | -0.046    |          | 6512177         | 50.0            | 99.9 | 123170  |       |
| 35 Perfluorohexadecanoic acid    | 813.00 > 769.00 | 5.274     | 5.320     | -0.046    | 1.000    | 5617133         | 50.7            |      | 6502    |       |
| 36 Perfluorooctadecanoic acid    | 913.00 > 869.00 | 5.664     | 5.720     | -0.056    | 1.000    | 5682438         | 65.3            |      | 7600    |       |

## Reagents:

LCPFCIC\_00020

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_012.d

Injection Date: 02-Dec-2016 11:29:31

Instrument ID: A8\_N

Lims ID: ICV

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 44

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

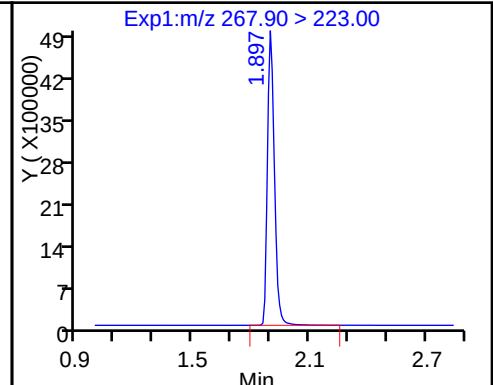
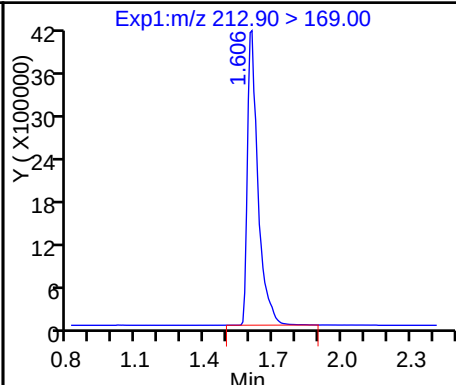
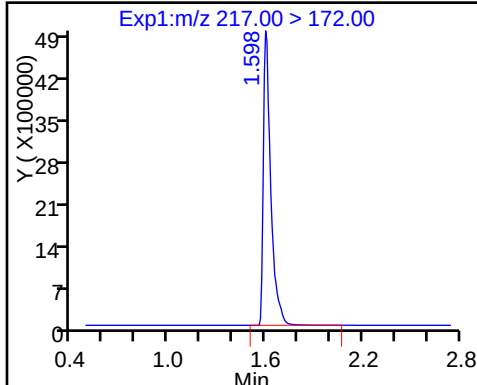
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

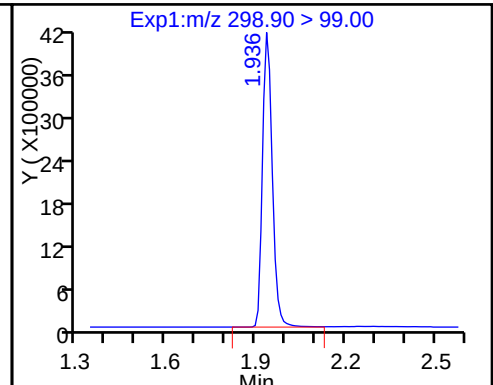
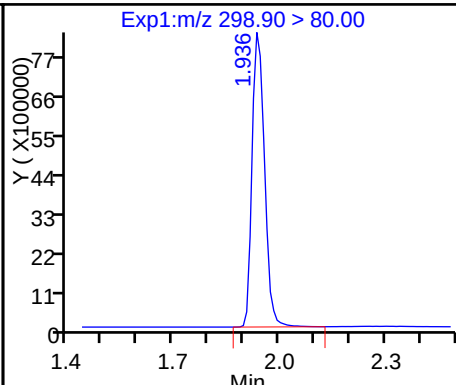
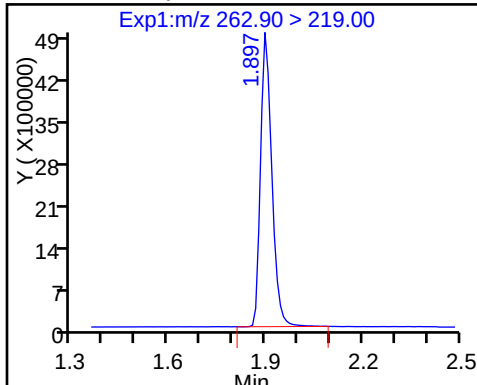
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

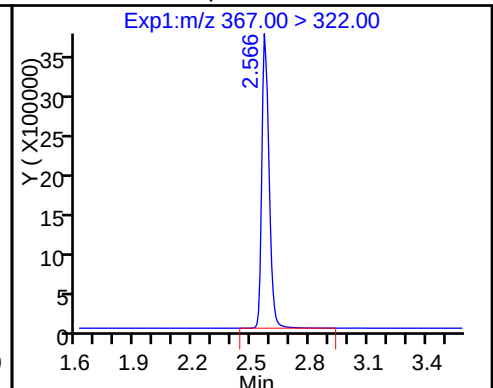
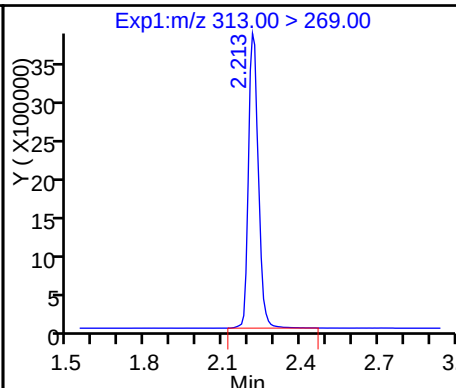
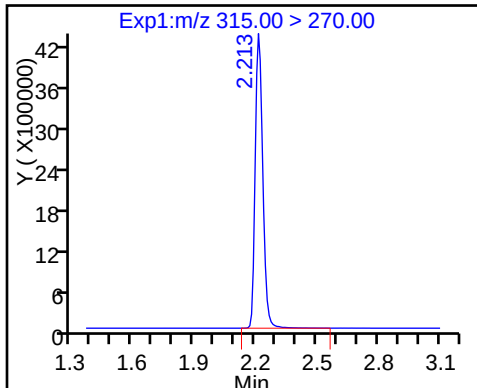
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

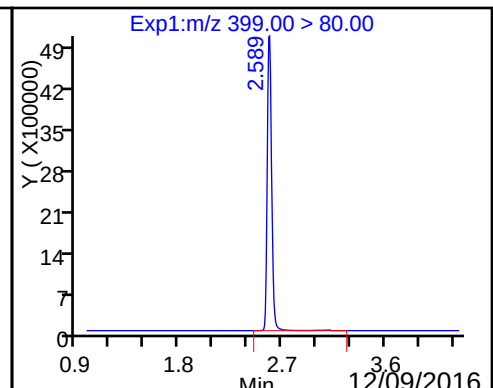
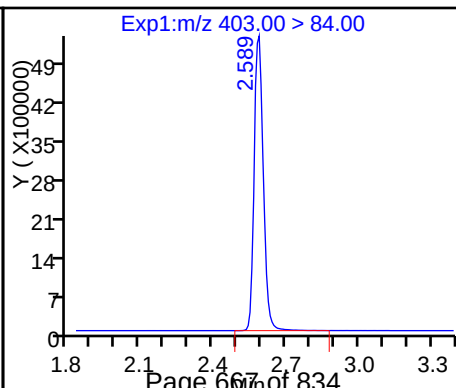
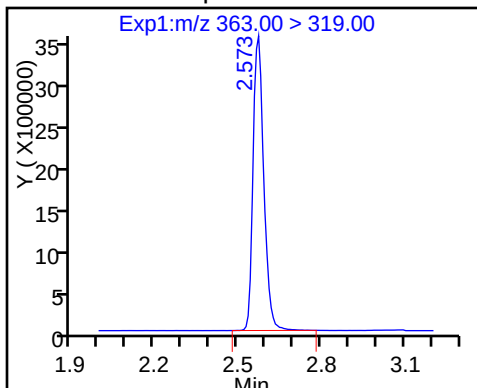
D 11 13C4-PFHpA



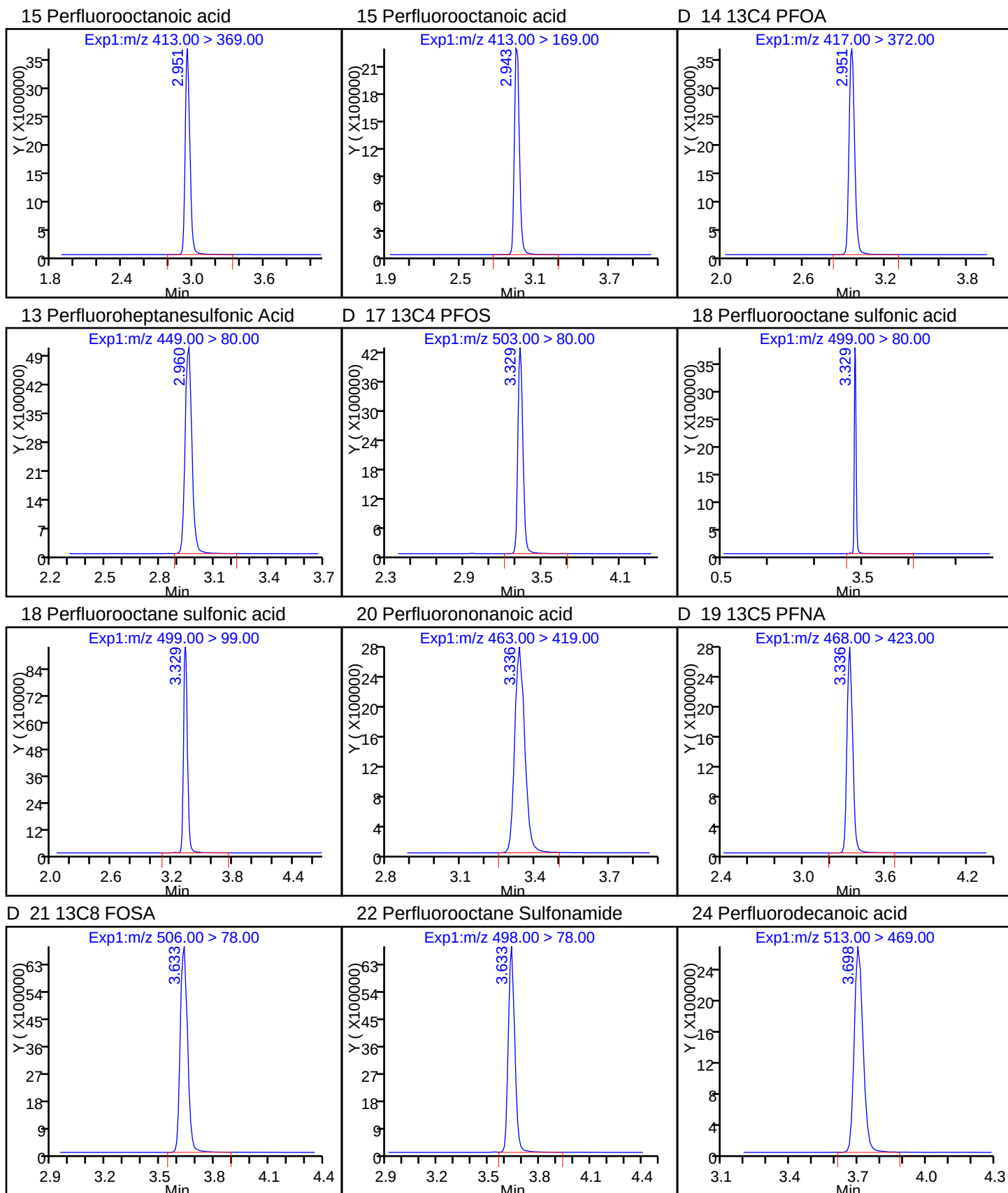
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS

9 Perfluorohexanesulfonic acid



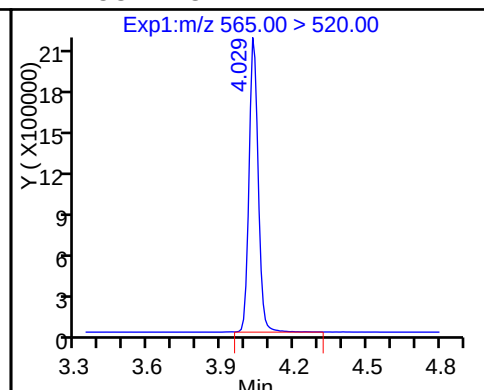
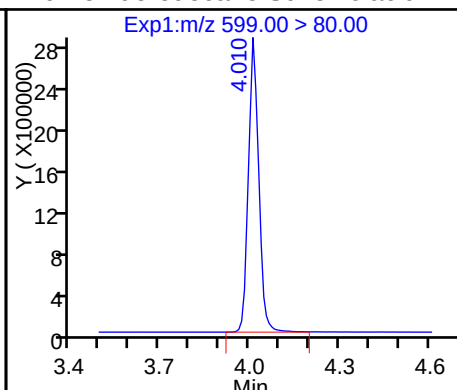
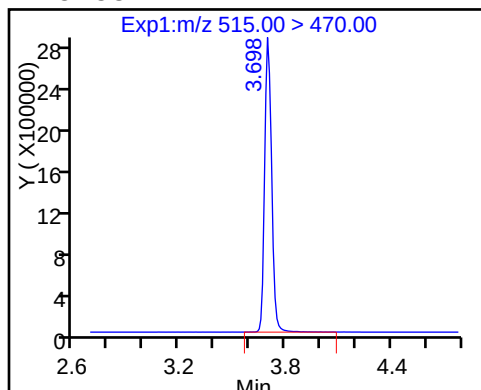




## D 23 13C2 PFDA

## 26 Perfluorodecane Sulfonic acid

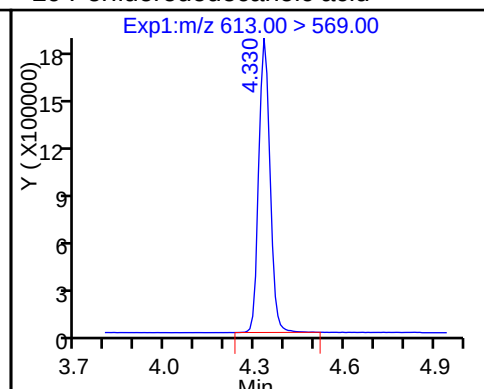
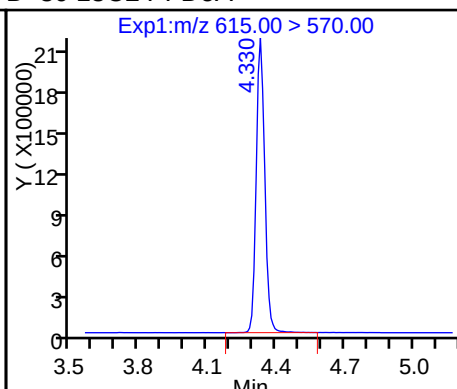
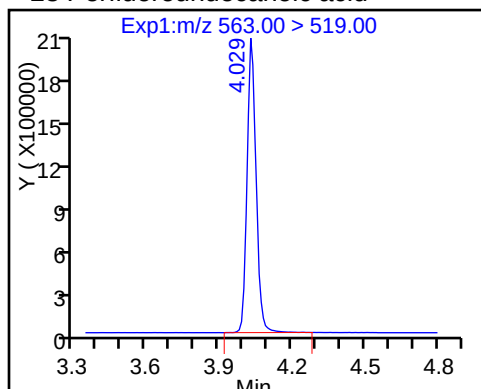
## D 27 13C2 PFUnA



## 28 Perfluoroundecanoic acid

## D 30 13C2 PFDaA

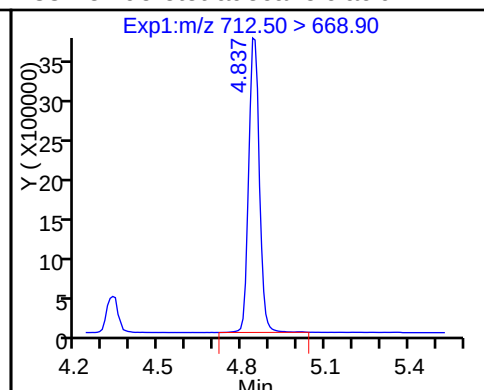
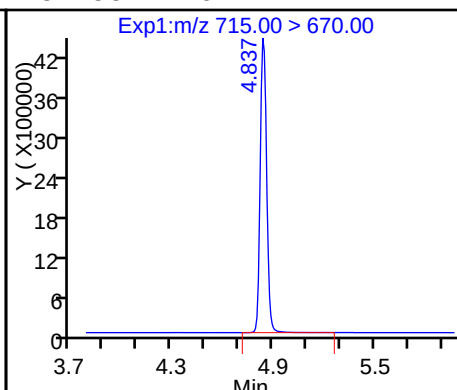
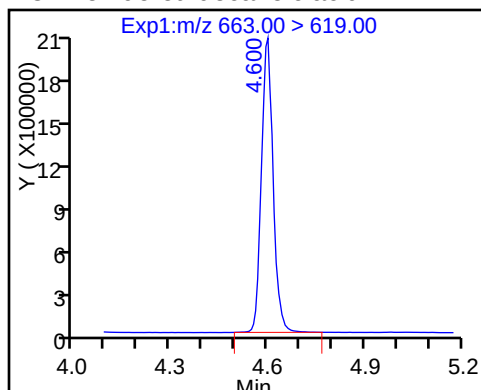
## 29 Perfluorododecanoic acid



## 31 Perfluorotridecanoic acid

## D 32 13C2-PFTeDA

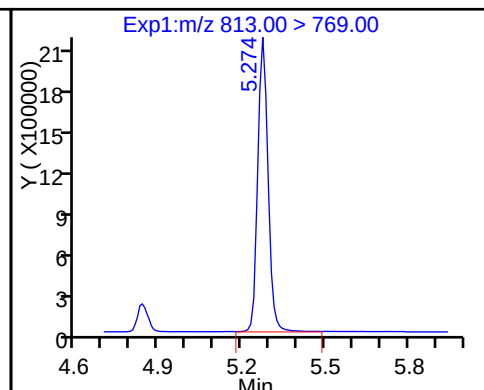
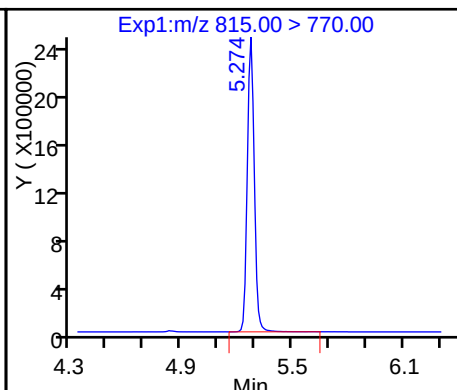
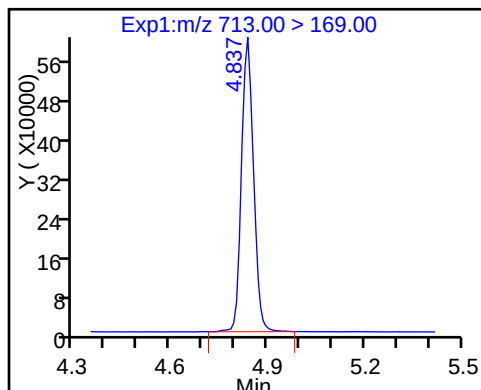
## 33 Perfluorotetradecanoic acid



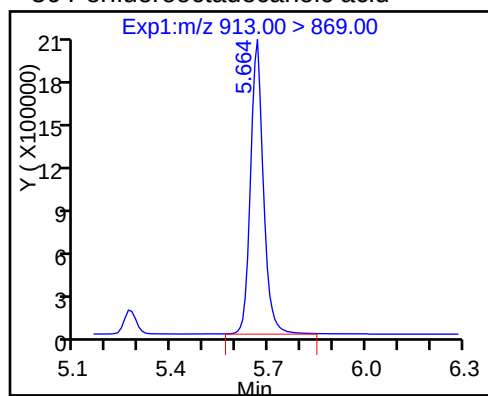
## 33 Perfluorotetradecanoic acid

## D 34 13C2-PFHxDA

## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-140429/2 Calibration Date: 12/02/2016 14:37  
 Instrument ID: A8\_N Calib Start Date: 12/02/2016 10:29  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/02/2016 12:29  
 Lab File ID: 02DEC2016B\_014.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) | AveID         | 1.613   | 1.603  |         | 43.9           | 44.2            | -0.6 | 25.0      |
| Perfluorooctanoic acid (PFOA)       | AveID         | 1.020   | 1.035  |         | 50.7           | 50.0            | 1.5  | 25.0      |
| Perfluorooctane Sulfonate (PFOS)    | AveID         | 1.087   | 1.084  |         | 46.3           | 46.4            | -0.3 | 25.0      |
| 13C4 PFBA                           | Ave           | 340300  | 339545 |         | 49.9           | 50.0            | -0.2 | 50.0      |
| 13C5-PFPeA                          | Ave           | 270194  | 261302 |         | 48.4           | 50.0            | -3.3 | 50.0      |
| 13C2 PFHxA                          | Ave           | 246480  | 229526 |         | 46.6           | 50.0            | -6.9 | 50.0      |
| 13C4-PFHpA                          | Ave           | 210510  | 202011 |         | 48.0           | 50.0            | -4.0 | 50.0      |
| 18O2 PFHxS                          | Ave           | 302453  | 317474 |         | 49.6           | 47.3            | 5.0  | 50.0      |
| 13C4 PFOA                           | Ave           | 219411  | 216146 |         | 49.3           | 50.0            | -1.5 | 50.0      |
| 13C4 PFOS                           | Ave           | 244616  | 251364 |         | 49.1           | 47.8            | 2.8  | 50.0      |
| 13C5 PFNA                           | Ave           | 178109  | 169399 |         | 47.6           | 50.0            | -4.9 | 50.0      |
| 13C8 FOSA                           | Ave           | 414253  | 402881 |         | 48.6           | 50.0            | -2.7 | 50.0      |
| 13C2 PFDA                           | Ave           | 166067  | 161124 |         | 48.5           | 50.0            | -3.0 | 50.0      |
| 13C2 PFUnA                          | Ave           | 125779  | 118770 |         | 47.2           | 50.0            | -5.6 | 50.0      |
| 13C2 PFDoA                          | Ave           | 116905  | 109471 |         | 46.8           | 50.0            | -6.4 | 50.0      |
| 13C2-PFTeDA                         | Ave           | 241899  | 223925 |         | 46.3           | 50.0            | -7.4 | 50.0      |
| 13C2-PFHxDA                         | Ave           | 130373  | 118805 |         | 45.6           | 50.0            | -8.9 | 50.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016B\_014.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCV  
 Inject. Date: 02-Dec-2016 14:37:03 ALS Bottle#: 41 Worklist Smp#: 2  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:06:11 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:06:11

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.574 | 1.574  | 0.0    | 1.000  | 15171458 | 50.5         |                 | 101  | 155330  |       |
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.574 | 1.574  | 0.0    |        | 16977232 | 49.9         |                 | 99.8 | 2771435 |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.868 | 1.868  | 0.0    | 1.000  | 12970874 | 47.7         |                 | 95.4 | 120574  |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.868 | 1.868  | 0.0    |        | 13065075 | 48.4         |                 | 96.7 | 2568563 |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.907 | 1.907  | 0.0    | 1.000  | 22493915 | 43.9         |                 | 99.4 |         |       |
| 298.90 > 99.00                 | 1.907 | 1.907  | 0.0    | 1.000  | 10590632 |              | 2.12(0.00-0.00) |      |         |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.173 | 2.173  | 0.0    | 1.000  | 10840520 | 49.4         |                 | 98.8 | 348131  |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.173 | 2.173  | 0.0    |        | 11476282 | 46.6         |                 | 93.1 | 919645  |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.519 | 2.519  | 0.0    | 1.000  | 10487509 | 50.2         |                 | 100  | 129458  |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.519 | 2.519  | 0.0    |        | 10100555 | 48.0         |                 | 96.0 | 962415  |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.534 | 2.534  | 0.0    | 1.000  | 15406543 | 45.8         |                 | 101  |         |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.534 | 2.534  | 0.0    |        | 15016500 | 49.6         |                 | 105  | 1172460 |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.886 | 2.886  | 0.0    |        | 10807294 | 49.3         |                 | 98.5 | 772353  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 413.00 > 369.00                  | 2.894 | 2.894  | 0.0    | 1.000  | 11190759 | 50.7         |                 | 101  | 205894 |       |
| 413.00 > 169.00                  | 2.894 | 2.894  | 0.0    | 1.000  | 6841143  |              | 1.64(0.90-1.10) |      | 311496 |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |        |       |
| 449.00 > 80.00                   | 2.902 | 2.902  | 0.0    | 1.000  | 14021365 | 47.7         |                 | 100  |        |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 499.00 > 80.00                   | 3.267 | 3.267  | 0.0    | 1.000  | 12644938 | 46.3         |                 | 99.7 | 53281  |       |
| 499.00 > 99.00                   | 3.267 | 3.267  | 0.0    | 1.000  | 2940349  |              | 4.30(0.90-1.10) |      | 339746 |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.267 | 3.267  | 0.0    |        | 12015188 | 49.1         |                 | 103  | 275554 |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 463.00 > 419.00                  | 3.275 | 3.275  | 0.0    | 1.000  | 8262291  | 49.2         |                 | 98.4 | 153747 |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                  | 3.275 | 3.275  | 0.0    |        | 8469930  | 47.6         |                 | 95.1 | 605451 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                   | 3.589 | 3.589  | 0.0    | 1.000  | 18261930 | 48.5         |                 | 96.9 | 733539 |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                   | 3.589 | 3.589  | 0.0    |        | 20144056 | 48.6         |                 | 97.3 | 630987 |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                  | 3.631 | 3.631  | 0.0    |        | 8056201  | 48.5         |                 | 97.0 | 192938 |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                  | 3.631 | 3.631  | 0.0    | 1.000  | 7623608  | 48.8         |                 | 97.6 | 194009 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                   | 3.941 | 3.941  | 0.0    | 1.000  | 8048082  | 51.1         |                 | 106  |        |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                  | 3.959 | 3.959  | 0.0    | 1.000  | 5737327  | 45.6         |                 | 91.2 | 103207 |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                  | 3.967 | 3.967  | 0.0    |        | 5938511  | 47.2         |                 | 94.4 | 310740 |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 613.00 > 569.00                  | 4.259 | 4.259  | 0.0    | 1.000  | 5083644  | 49.1         |                 | 98.1 | 71841  |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                  | 4.259 | 4.259  | 0.0    |        | 5473570  | 46.8         |                 | 93.6 | 186491 |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                  | 4.520 | 4.520  | 0.0    | 1.000  | 5281655  | 46.4         |                 | 92.8 | 6905   |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |        |       |
| 712.50 > 668.90                  | 4.772 | 4.772  | 0.0    | 1.000  | 10203271 | 48.2         |                 | 96.5 | 4031   |       |
| 713.00 > 169.00                  | 4.763 | 4.772  | -0.009 | 0.998  | 1624426  |              | 6.28(0.00-0.00) |      | 120314 |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                  | 4.772 | 4.772  | 0.0    |        | 11196256 | 46.3         |                 | 92.6 | 372028 |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |        |       |
| 815.00 > 770.00                  | 5.184 | 5.184  | 0.0    |        | 5940244  | 45.6         |                 | 91.1 | 99394  |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 813.00 > 769.00                  | 5.194 | 5.194  | 0.0    | 1.000  | 5316696  | 48.5         |                 | 97.0 | 3968   |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 913.00 > 869.00                  | 5.562 | 5.562  | 0.0    | 1.000  | 5707122  | 66.3         |                 | 133  | 7784   |       |

**Reagents:**

LCPFC-L5\_00020

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016B\_014.d

Injection Date: 02-Dec-2016 14:37:03

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 2

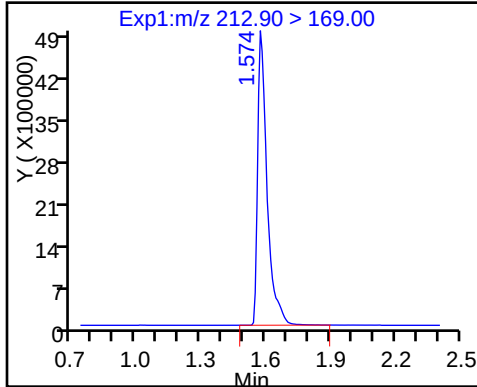
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

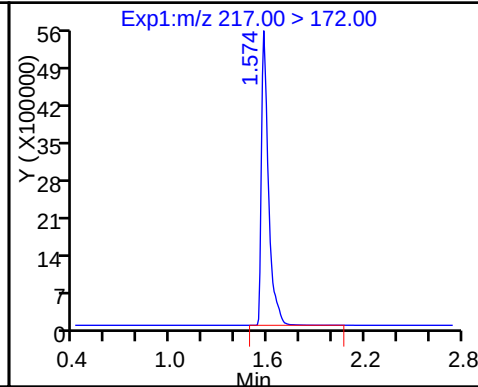
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

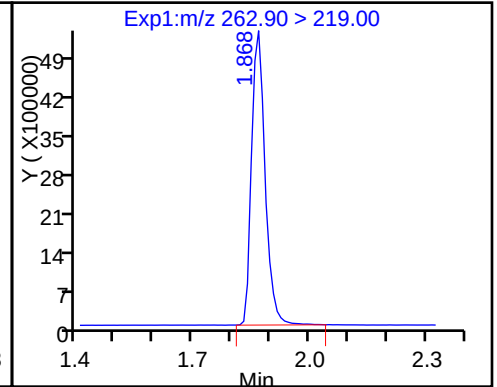
1 Perfluorobutyric acid



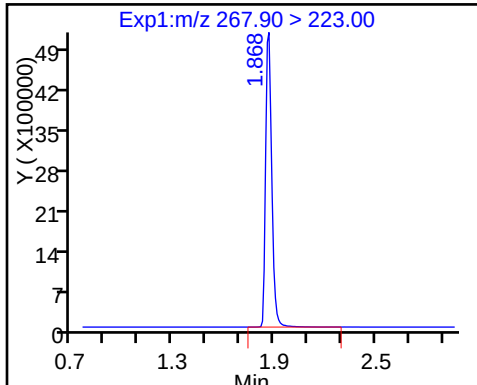
D 2 13C4 PFBA



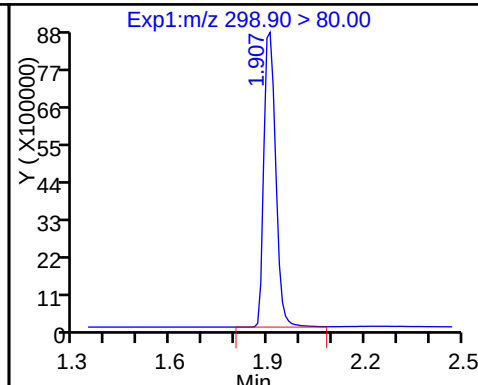
3 Perfluoropentanoic acid



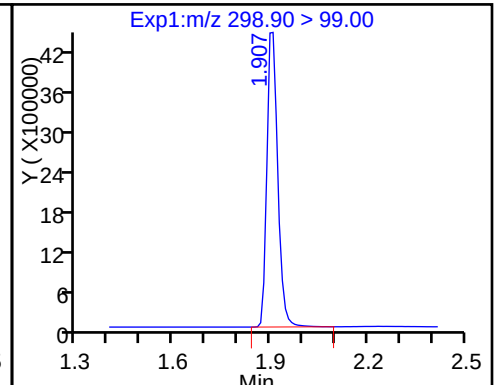
D 4 13C5-PFPeA



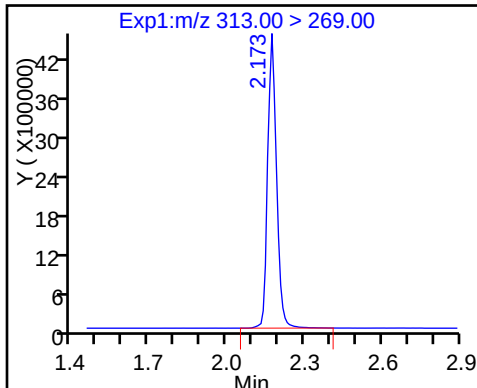
5 Perfluorobutanesulfonic acid



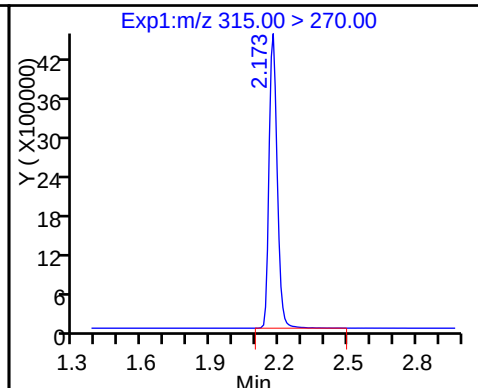
5 Perfluorobutanesulfonic acid



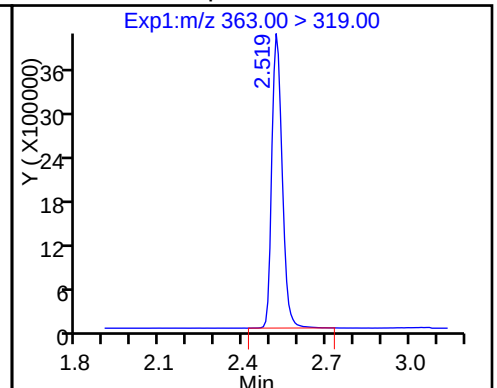
7 Perfluorohexanoic acid



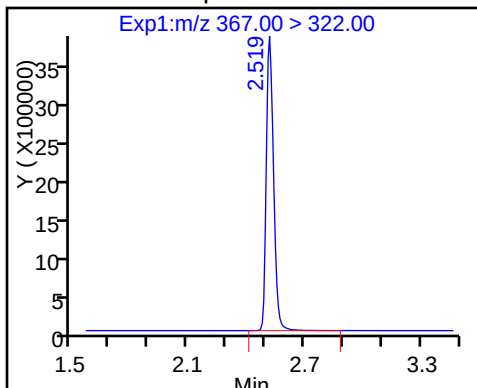
D 6 13C2 PFHxA



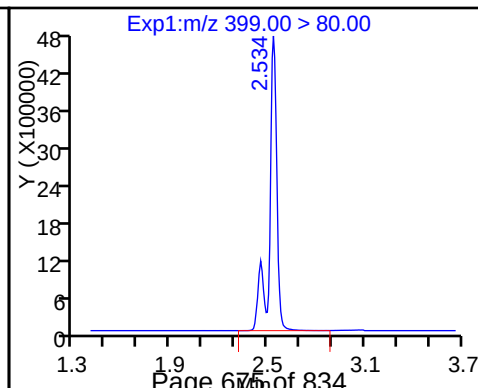
12 Perfluoroheptanoic acid



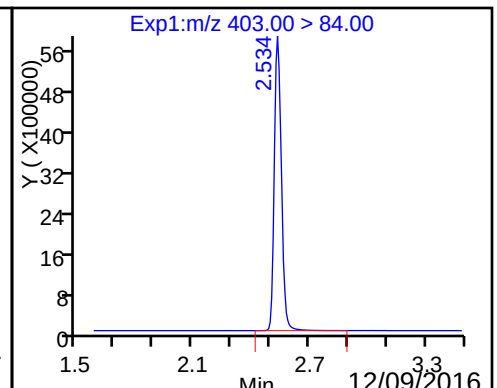
D 11 13C4-PFHpA



9 Perfluorohexanesulfonic acid

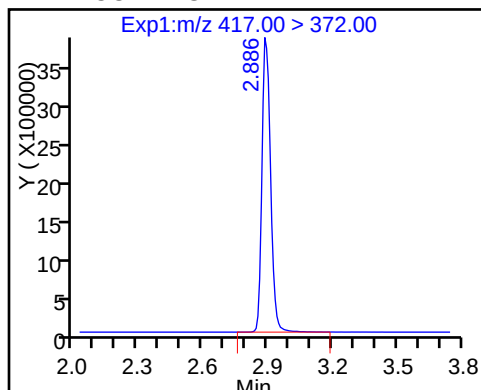


D 10 18O2 PFHxS

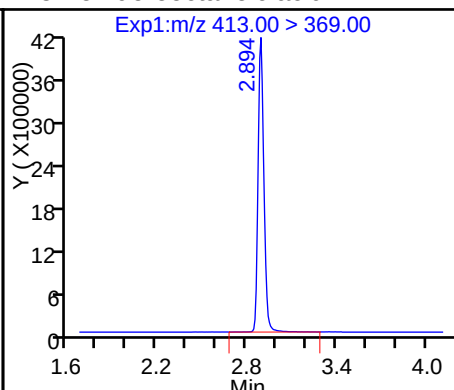




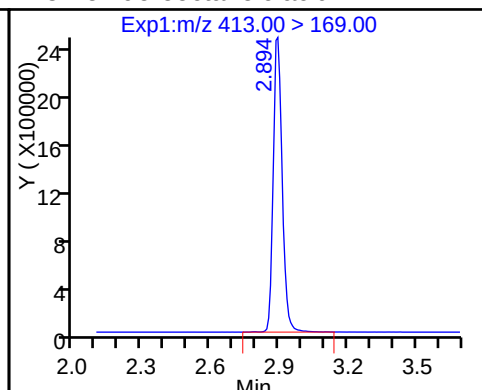
## D 14 13C4 PFOA



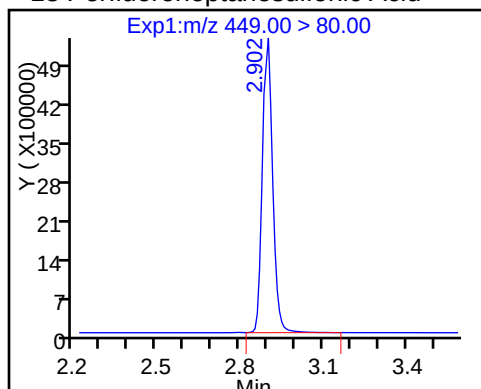
## 15 Perfluorooctanoic acid



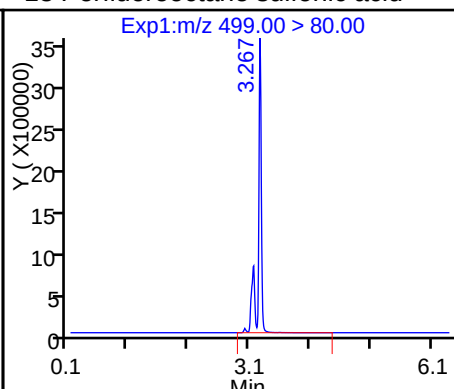
## 15 Perfluorooctanoic acid



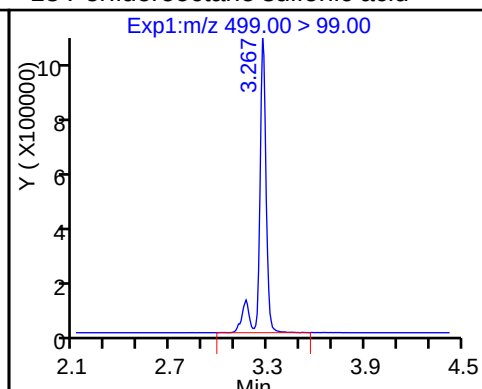
## 13 Perfluoroheptanesulfonic Acid



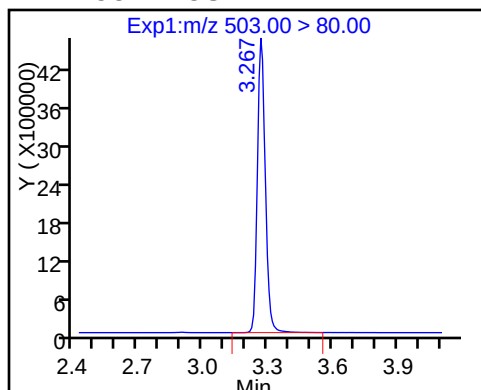
## 18 Perfluorooctane sulfonic acid



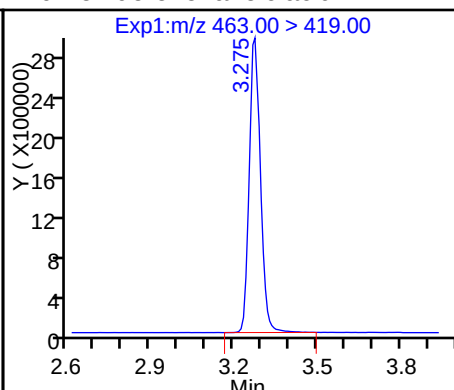
## 18 Perfluorooctane sulfonic acid



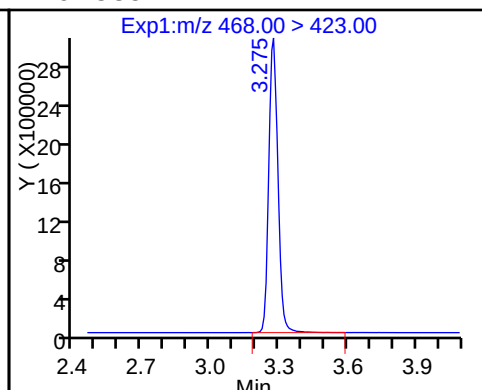
## D 17 13C4 PFOS



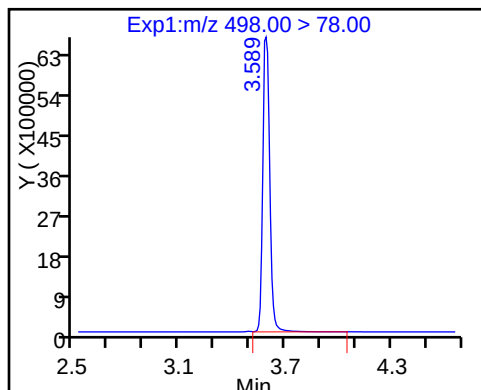
## 20 Perfluorononanoic acid



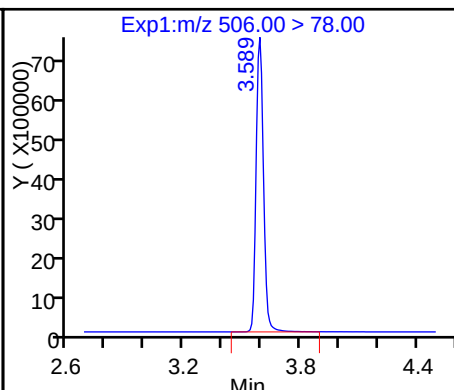
## D 19 13C5 PFNA



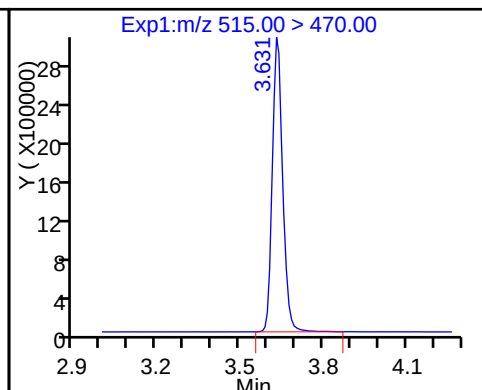
## 22 Perfluorooctane Sulfonamide



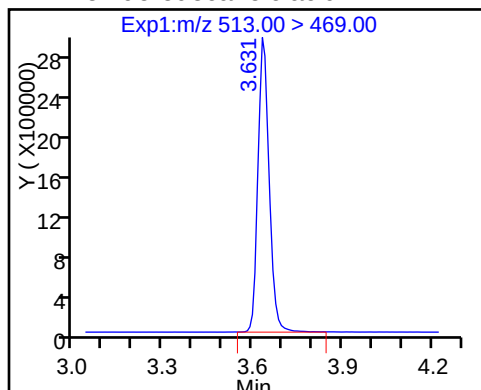
## D 21 13C8 FOSA



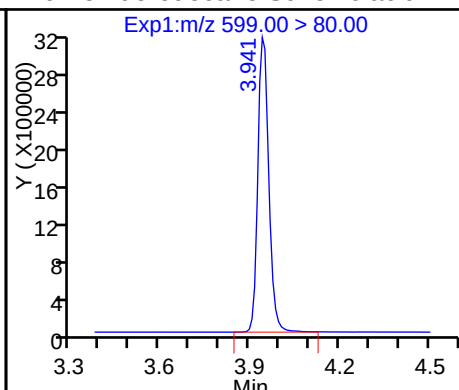
## D 23 13C2 PFDA



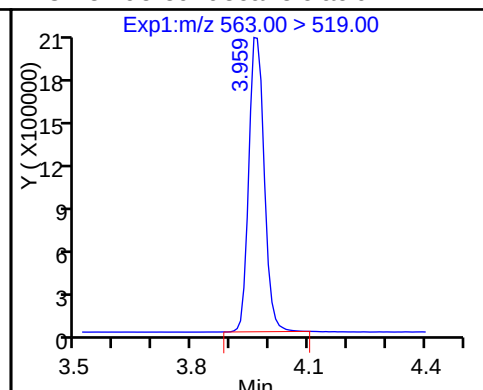
24 Perfluorodecanoic acid



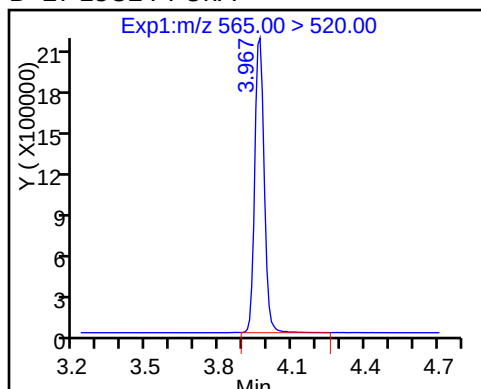
26 Perfluorodecane Sulfonic acid



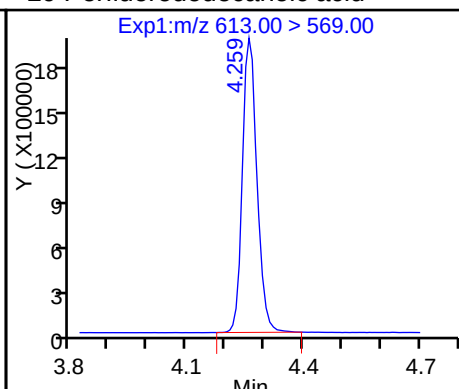
28 Perfluoroundecanoic acid



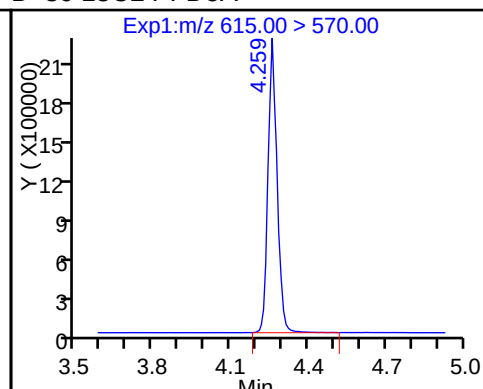
D 27 13C2 PFUnA



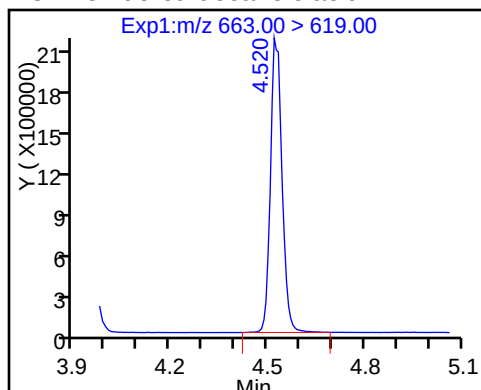
29 Perfluorododecanoic acid



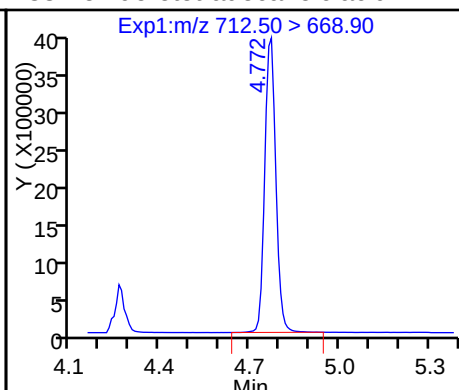
D 30 13C2 PFDaA



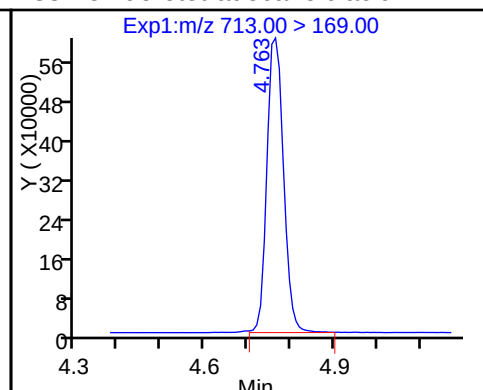
31 Perfluorotridecanoic acid



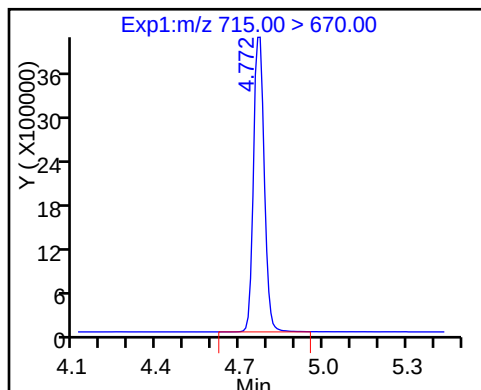
33 Perfluorotetradecanoic acid



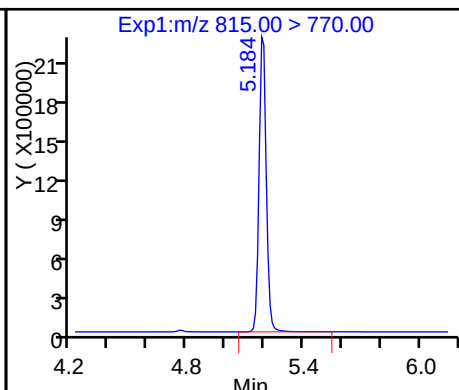
33 Perfluorotetradecanoic acid



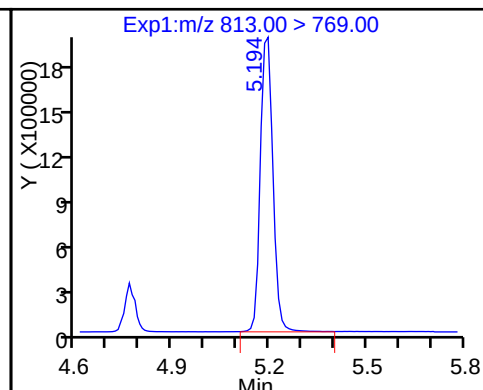
D 32 13C2-PFTeDA



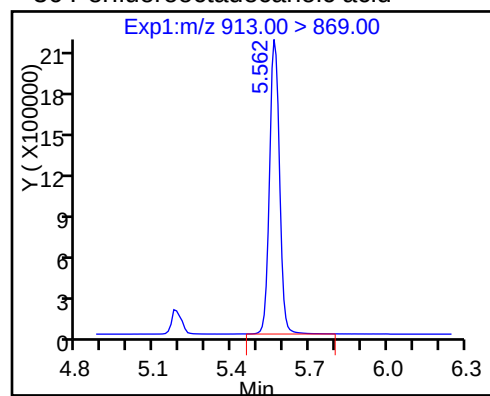
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-140429/16 Calibration Date: 12/02/2016 16:22  
 Instrument ID: A8\_N Calib Start Date: 12/02/2016 10:29  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/02/2016 12:29  
 Lab File ID: 02DEC2016C\_012.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) | AveID         | 1.613   | 1.597  |         | 43.7           | 44.2            | -1.0  | 25.0      |
| Perfluorooctanoic acid (PFOA)       | AveID         | 1.020   | 1.019  |         | 49.9           | 50.0            | -0.1  | 25.0      |
| Perfluorooctane Sulfonate (PFOS)    | AveID         | 1.087   | 1.065  |         | 45.5           | 46.4            | -2.0  | 25.0      |
| 13C4 PFBA                           | Ave           | 340300  | 332191 |         | 48.8           | 50.0            | -2.4  | 50.0      |
| 13C5-PFPeA                          | Ave           | 270194  | 252615 |         | 46.7           | 50.0            | -6.5  | 50.0      |
| 13C2 PFHxA                          | Ave           | 246480  | 228018 |         | 46.3           | 50.0            | -7.5  | 50.0      |
| 13C4-PFHpA                          | Ave           | 210510  | 196748 |         | 46.7           | 50.0            | -6.5  | 50.0      |
| 18O2 PFHxS                          | Ave           | 302453  | 307137 |         | 48.0           | 47.3            | 1.5   | 50.0      |
| 13C4 PFOA                           | Ave           | 219411  | 211412 |         | 48.2           | 50.0            | -3.6  | 50.0      |
| 13C4 PFOS                           | Ave           | 244616  | 252256 |         | 49.3           | 47.8            | 3.1   | 50.0      |
| 13C5 PFNA                           | Ave           | 178109  | 159978 |         | 44.9           | 50.0            | -10.2 | 50.0      |
| 13C8 FOSA                           | Ave           | 414253  | 392650 |         | 47.4           | 50.0            | -5.2  | 50.0      |
| 13C2 PFDA                           | Ave           | 166067  | 151711 |         | 45.7           | 50.0            | -8.6  | 50.0      |
| 13C2 PFUnA                          | Ave           | 125779  | 110399 |         | 43.9           | 50.0            | -12.2 | 50.0      |
| 13C2 PFDoA                          | Ave           | 116905  | 109030 |         | 46.6           | 50.0            | -6.7  | 50.0      |
| 13C2-PFTeDA                         | Ave           | 241899  | 217472 |         | 45.0           | 50.0            | -10.1 | 50.0      |
| 13C2-PFHxDA                         | Ave           | 130373  | 114036 |         | 43.7           | 50.0            | -12.5 | 50.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_012.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCV  
 Inject. Date: 02-Dec-2016 16:22:13 ALS Bottle#: 41 Worklist Smp#: 16  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:06:22 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:06:22

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.574 | 1.574  | 0.0    | 1.000  | 14622963 | 49.7         |                 | 99.4 | 136701  |       |
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.574 | 1.574  | 0.0    |        | 16609540 | 48.8         |                 | 97.6 | 1760564 |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.859 | 1.868  | -0.009 | 1.000  | 12389685 | 47.1         |                 | 94.2 | 143388  |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.859 | 1.868  | -0.009 |        | 12630763 | 46.7         |                 | 93.5 | 1231239 |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.907 | 1.907  | 0.0    | 1.000  | 21678790 | 43.7         |                 | 99.0 |         |       |
| 298.90 > 99.00                 | 1.897 | 1.907  | -0.010 | 0.995  | 10208437 |              | 2.12(0.00-0.00) |      |         |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.171 | 2.173  | -0.003 | 1.000  | 10711219 | 49.1         |                 | 98.3 | 288186  |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.171 | 2.173  | -0.003 |        | 11400916 | 46.3         |                 | 92.5 | 2220908 |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.516 | 2.519  | -0.003 | 1.000  | 10025294 | 49.3         |                 | 98.5 | 148580  |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.516 | 2.519  | -0.003 |        | 9837421  | 46.7         |                 | 93.5 | 979084  |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.532 | 2.534  | -0.002 | 1.000  | 14850728 | 45.6         |                 | 100  |         |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.532 | 2.534  | -0.002 |        | 14527568 | 48.0         |                 | 102  | 761217  |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.890 | 2.886  | 0.004  |        | 10570593 | 48.2         |                 | 96.4 | 786274  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                  | 2.890 | 2.894  | -0.004 | 1.000  | 10770410 | 49.9         |                 | 99.9 | 198921  |       |
| 413.00 > 169.00                  | 2.890 | 2.894  | -0.004 | 1.000  | 6718323  |              | 1.60(0.90-1.10) |      | 592810  |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |         |       |
| 449.00 > 80.00                   | 2.890 | 2.902  | -0.012 | 1.000  | 13560651 | 46.0         |                 | 96.6 |         |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 499.00 > 80.00                   | 3.265 | 3.267  | -0.002 | 1.000  | 12467043 | 45.5         |                 | 98.0 | 3525927 |       |
| 499.00 > 99.00                   | 3.265 | 3.267  | -0.002 | 1.000  | 2716230  |              | 4.59(0.90-1.10) |      | 228232  |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |         |       |
| 503.00 > 80.00                   | 3.265 | 3.267  | -0.002 |        | 12057843 | 49.3         |                 | 103  | 232224  |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 463.00 > 419.00                  | 3.272 | 3.275  | -0.003 | 1.000  | 7963240  | 50.2         |                 | 100  | 144737  |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |         |       |
| 468.00 > 423.00                  | 3.265 | 3.275  | -0.010 |        | 7998877  | 44.9         |                 | 89.8 | 353617  |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |         |       |
| 498.00 > 78.00                   | 3.587 | 3.589  | -0.002 | 1.000  | 18194106 | 49.5         |                 | 99.1 | 536694  |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |         |       |
| 506.00 > 78.00                   | 3.587 | 3.589  | -0.002 |        | 19632521 | 47.4         |                 | 94.8 | 564736  |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |         |       |
| 515.00 > 470.00                  | 3.629 | 3.631  | -0.002 |        | 7585560  | 45.7         |                 | 91.4 | 208800  |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 513.00 > 469.00                  | 3.629 | 3.631  | -0.002 | 1.000  | 7277017  | 49.5         |                 | 99.0 | 199518  |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 599.00 > 80.00                   | 3.938 | 3.941  | -0.003 | 1.000  | 7729327  | 48.9         |                 | 101  |         |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 563.00 > 519.00                  | 3.956 | 3.959  | -0.003 | 1.000  | 5431519  | 46.4         |                 | 92.9 | 112110  |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |         |       |
| 565.00 > 520.00                  | 3.956 | 3.967  | -0.011 |        | 5519927  | 43.9         |                 | 87.8 | 528013  |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 613.00 > 569.00                  | 4.255 | 4.259  | -0.004 | 1.000  | 5067396  | 49.1         |                 | 98.2 | 77314   |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |         |       |
| 615.00 > 570.00                  | 4.246 | 4.259  | -0.013 |        | 5451503  | 46.6         |                 | 93.3 | 157285  |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 663.00 > 619.00                  | 4.521 | 4.520  | 0.001  | 1.000  | 5122725  | 45.2         |                 | 90.3 | 11584   |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |         |       |
| 712.50 > 668.90                  | 4.757 | 4.772  | -0.015 | 1.000  | 9633033  | 45.7         |                 | 91.4 | 4134    |       |
| 713.00 > 169.00                  | 4.748 | 4.772  | -0.024 | 0.998  | 1613548  |              | 5.97(0.00-0.00) |      | 215079  |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |         |       |
| 715.00 > 670.00                  | 4.757 | 4.772  | -0.015 |        | 10873598 | 45.0         |                 | 89.9 | 570141  |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |         |       |
| 815.00 > 770.00                  | 5.173 | 5.184  | -0.011 |        | 5701819  | 43.7         |                 | 87.5 | 107923  |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 813.00 > 769.00                  | 5.184 | 5.194  | -0.010 | 1.000  | 5253333  | 48.1         |                 | 96.2 | 4932    |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 913.00 > 869.00                  | 5.545 | 5.562  | -0.017 | 1.000  | 5747404  | 67.0         |                 | 134  | 6736    |       |

**Reagents:**

LCPFC-L5\_00020

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_012.d

Injection Date: 02-Dec-2016 16:22:13

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 16

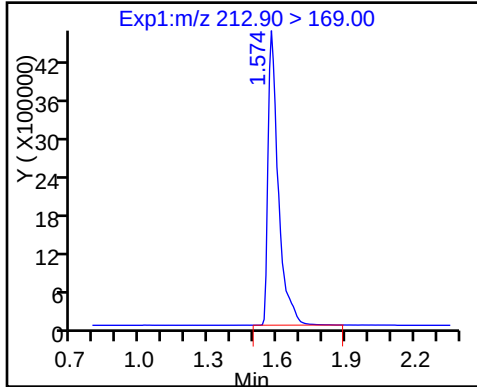
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

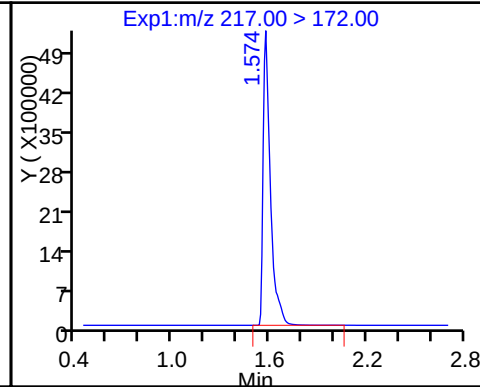
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

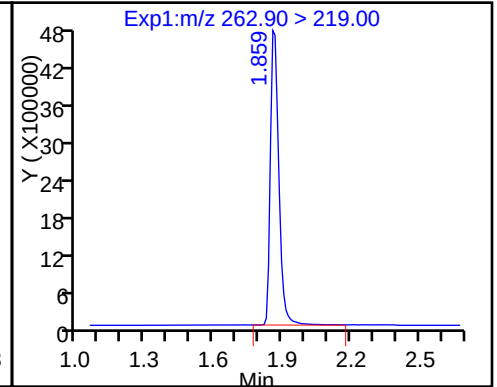
1 Perfluorobutyric acid



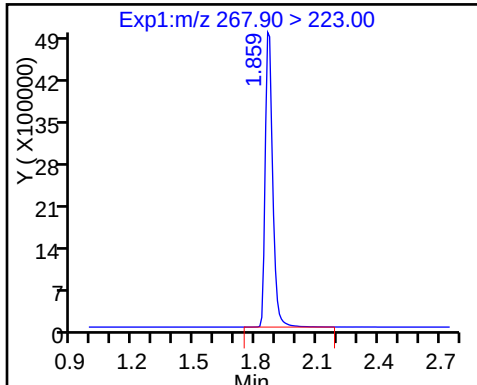
D 2 13C4 PFBA



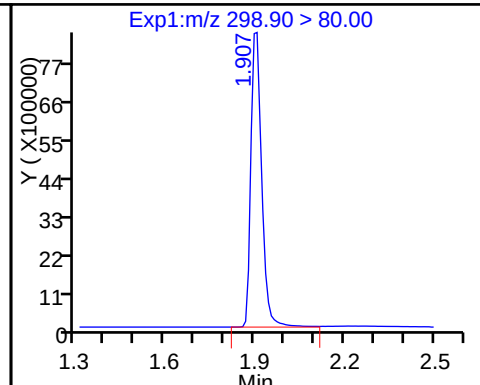
3 Perfluoropentanoic acid



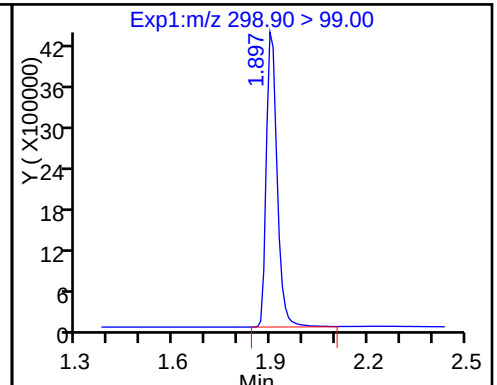
D 4 13C5-PFPeA



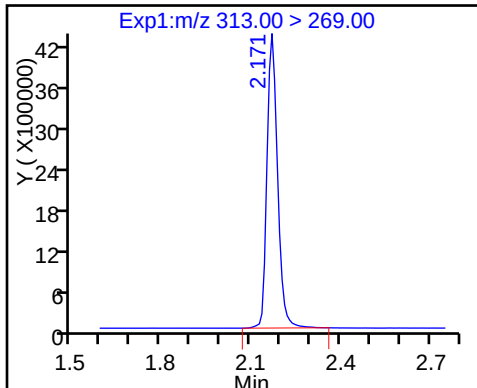
5 Perfluorobutanesulfonic acid



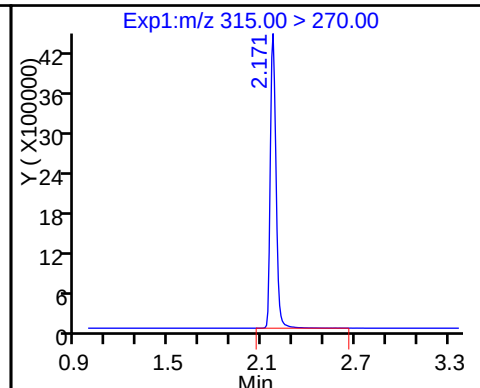
5 Perfluorobutanesulfonic acid



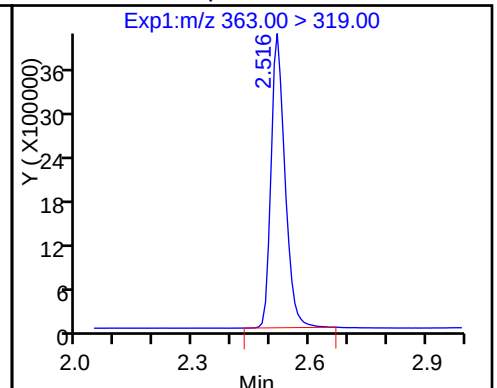
7 Perfluorohexanoic acid



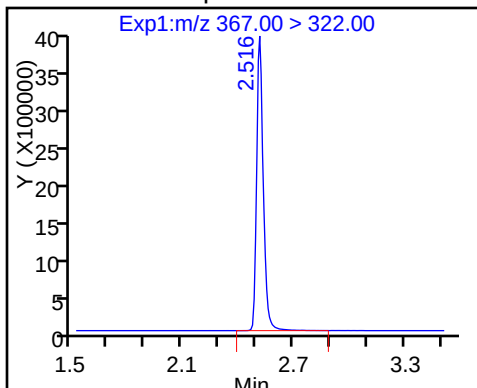
D 6 13C2 PFHxA



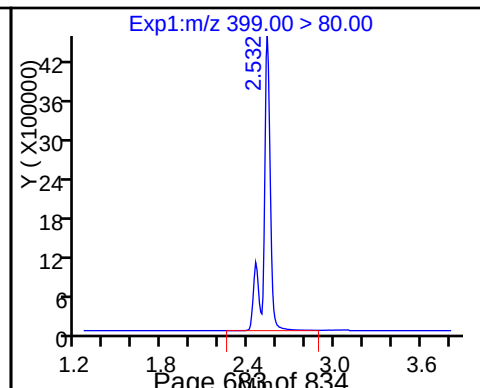
12 Perfluoroheptanoic acid



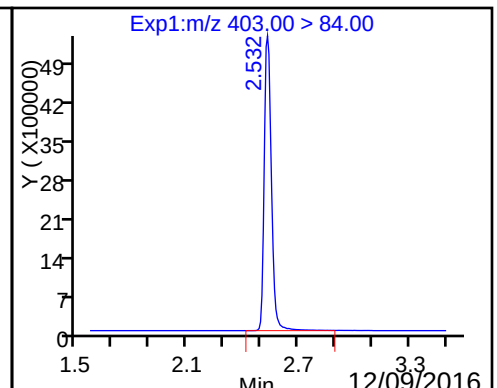
D 11 13C4-PFHpA



9 Perfluorohexanesulfonic acid

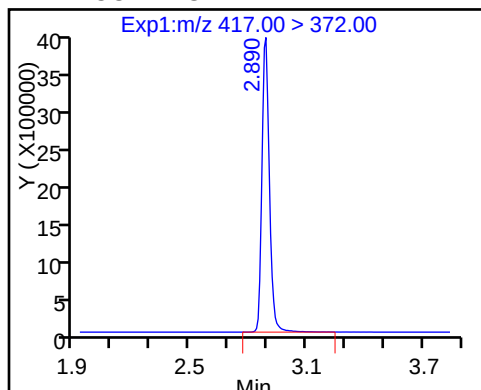


D 10 18O2 PFHxS

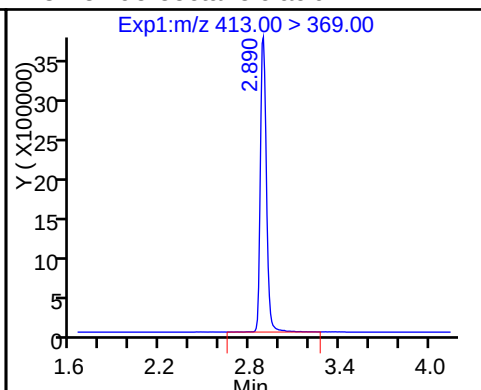




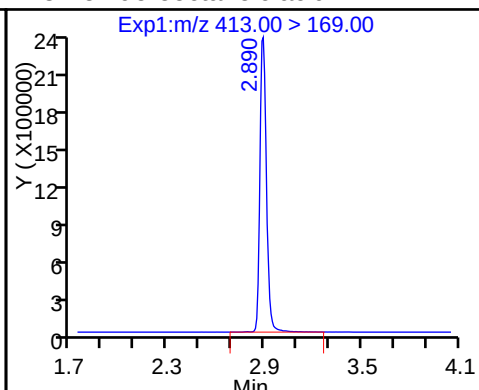
## D 14 13C4 PFOA



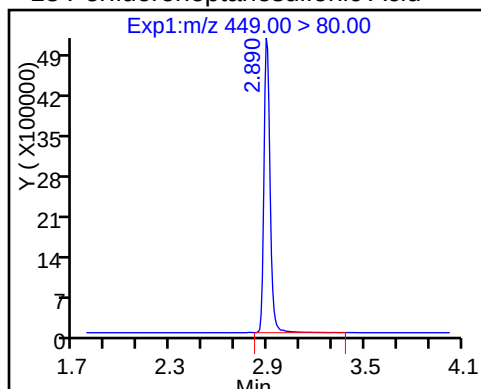
## 15 Perfluorooctanoic acid



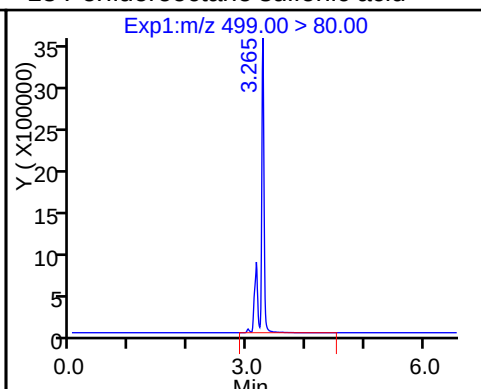
## 15 Perfluorooctanoic acid



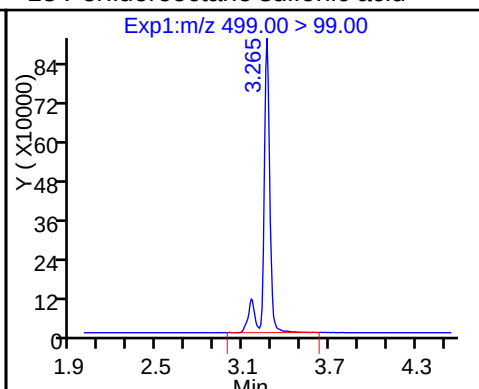
## 13 Perfluoroheptanesulfonic Acid



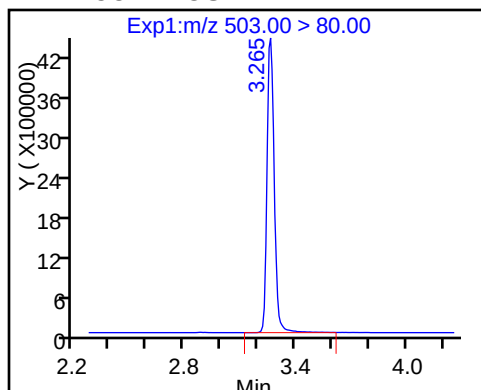
## 18 Perfluorooctane sulfonic acid



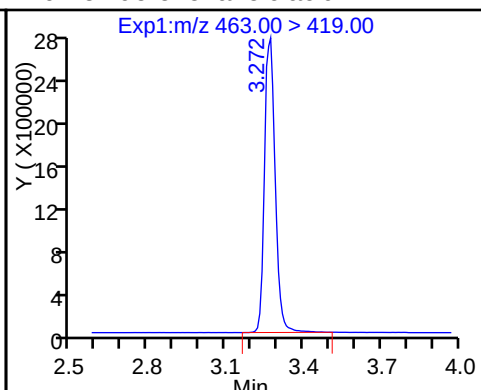
## 18 Perfluorooctane sulfonic acid



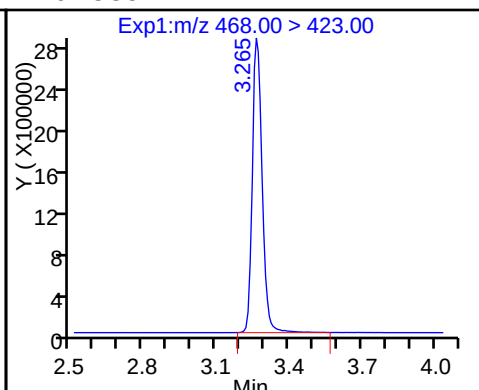
## D 17 13C4 PFOS



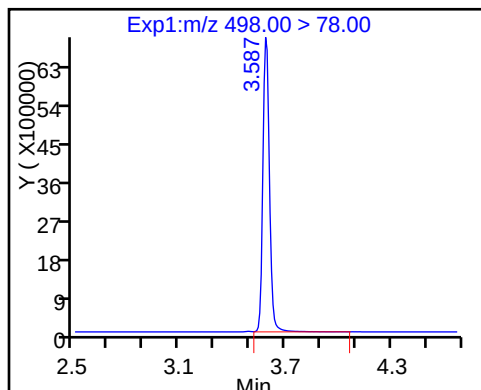
## 20 Perfluorononanoic acid



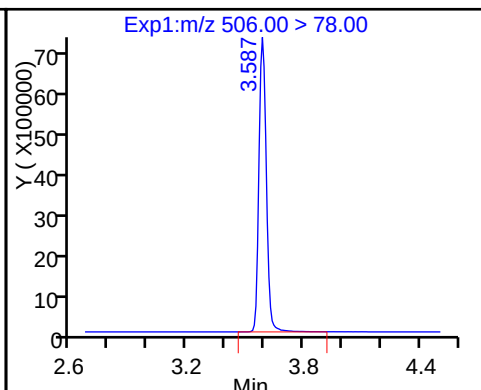
## D 19 13C5 PFNA



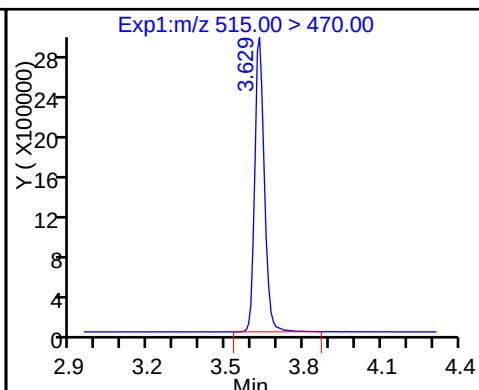
## 22 Perfluorooctane Sulfonamide



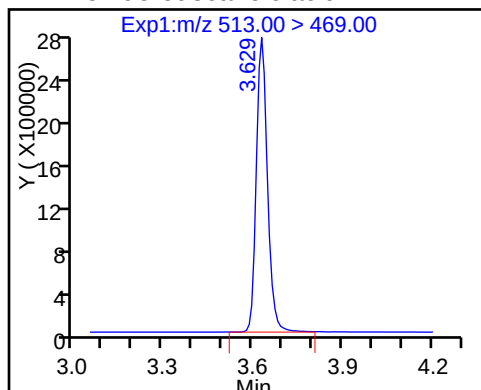
## D 21 13C8 FOSA



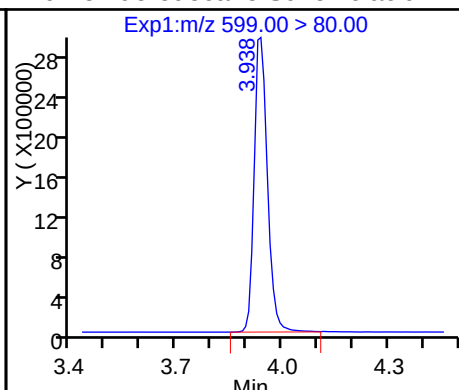
## D 23 13C2 PFDA



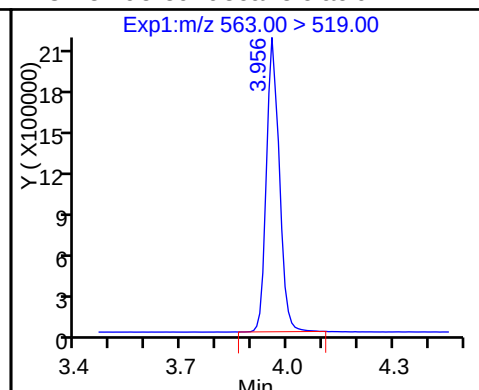
24 Perfluorodecanoic acid



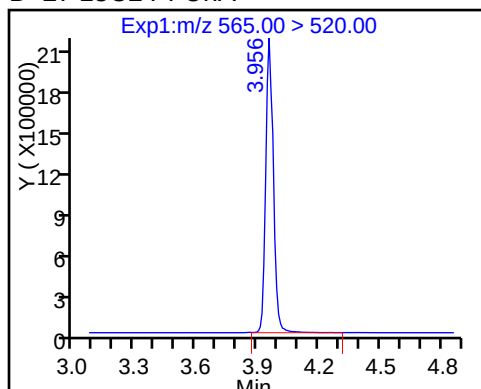
26 Perfluorodecane Sulfonic acid



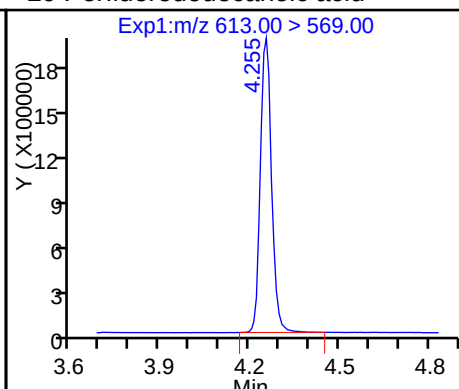
28 Perfluoroundecanoic acid



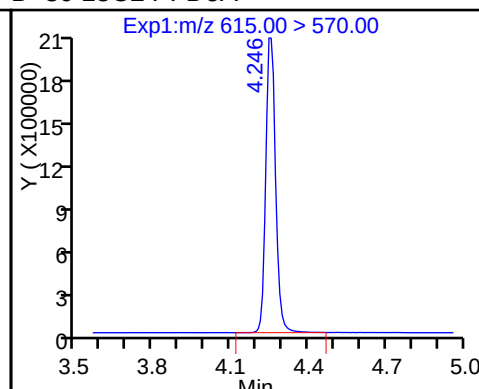
D 27 13C2 PFUnA



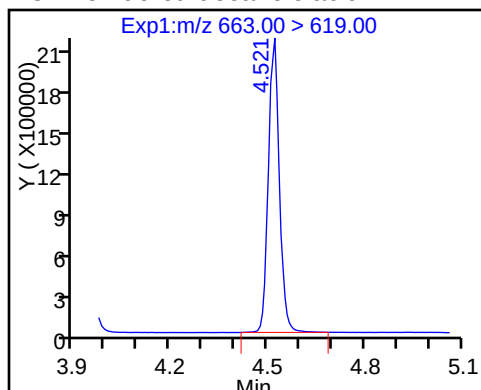
29 Perfluorododecanoic acid



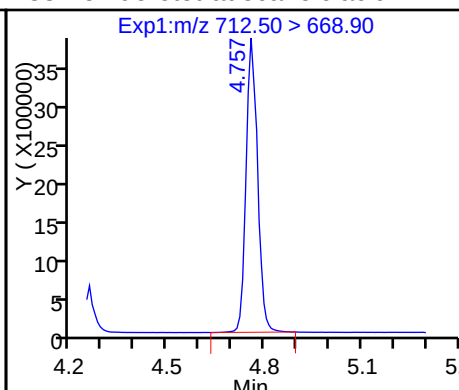
D 30 13C2 PFDaA



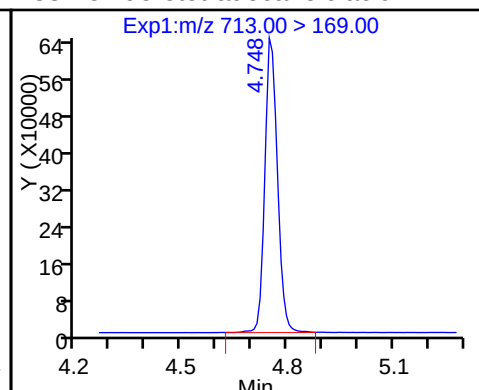
31 Perfluorotridecanoic acid



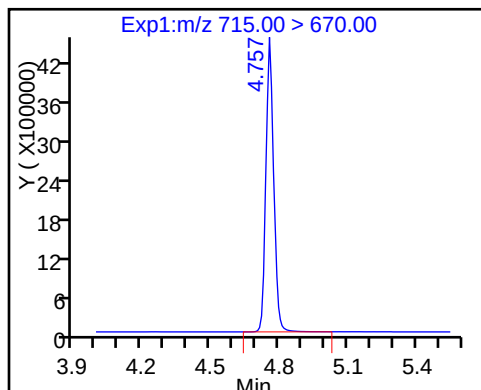
33 Perfluorotetradecanoic acid



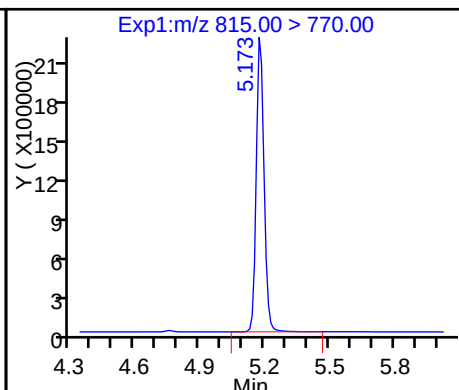
33 Perfluorotetradecanoic acid



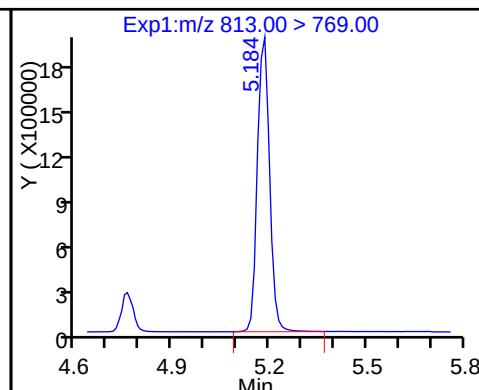
D 32 13C2-PFTeDA



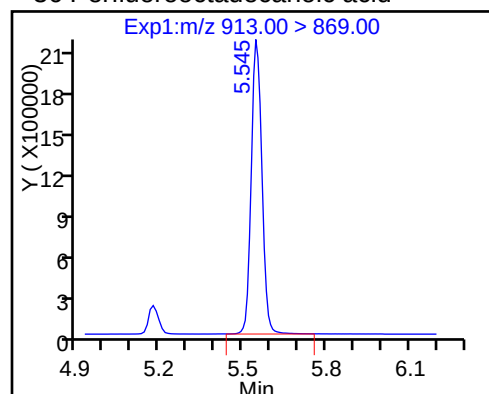
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-140429/26 Calibration Date: 12/02/2016 17:37  
 Instrument ID: A8\_N Calib Start Date: 12/02/2016 10:29  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/02/2016 12:29  
 Lab File ID: 02DEC2016C\_022.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) | AveID         | 1.613   | 1.598  |         | 43.8           | 44.2            | -1.0  | 25.0      |
| Perfluorooctanoic acid (PFOA)       | AveID         | 1.020   | 1.046  |         | 51.3           | 50.0            | 2.5   | 25.0      |
| Perfluorooctane Sulfonate (PFOS)    | AveID         | 1.087   | 1.089  |         | 46.5           | 46.4            | 0.2   | 25.0      |
| 13C4 PFBA                           | Ave           | 340300  | 325436 |         | 47.8           | 50.0            | -4.4  | 50.0      |
| 13C5-PFPeA                          | Ave           | 270194  | 253322 |         | 46.9           | 50.0            | -6.2  | 50.0      |
| 13C2 PFHxA                          | Ave           | 246480  | 222118 |         | 45.1           | 50.0            | -9.9  | 50.0      |
| 13C4-PFHpA                          | Ave           | 210510  | 196792 |         | 46.7           | 50.0            | -6.5  | 50.0      |
| 18O2 PFHxS                          | Ave           | 302453  | 292688 |         | 45.8           | 47.3            | -3.2  | 50.0      |
| 13C4 PFOA                           | Ave           | 219411  | 207834 |         | 47.4           | 50.0            | -5.3  | 50.0      |
| 13C4 PFOS                           | Ave           | 244616  | 231762 |         | 45.3           | 47.8            | -5.3  | 50.0      |
| 13C5 PFNA                           | Ave           | 178109  | 162211 |         | 45.5           | 50.0            | -8.9  | 50.0      |
| 13C8 FOSA                           | Ave           | 414253  | 370800 |         | 44.8           | 50.0            | -10.5 | 50.0      |
| 13C2 PFDA                           | Ave           | 166067  | 151478 |         | 45.6           | 50.0            | -8.8  | 50.0      |
| 13C2 PFUnA                          | Ave           | 125779  | 112787 |         | 44.8           | 50.0            | -10.3 | 50.0      |
| 13C2 PFDoA                          | Ave           | 116905  | 108715 |         | 46.5           | 50.0            | -7.0  | 50.0      |
| 13C2-PFTeDA                         | Ave           | 241899  | 220421 |         | 45.6           | 50.0            | -8.9  | 50.0      |
| 13C2-PFHxDA                         | Ave           | 130373  | 118772 |         | 45.6           | 50.0            | -8.9  | 50.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_022.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCV  
 Inject. Date: 02-Dec-2016 17:37:22 ALS Bottle#: 41 Worklist Smp#: 26  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:31:59 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d

Column 1 : Det: EXP1

Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:31:59

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.575 | 1.574  | 0.001  | 1.000  | 14279480 | 49.6         |                 | 99.1 | 139417  |       |
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.575 | 1.574  | 0.001  |        | 16271795 | 47.8         |                 | 95.6 | 1290471 |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.859 | 1.868  | -0.009 | 1.000  | 12234509 | 46.4         |                 | 92.8 | 122207  |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.859 | 1.868  | -0.009 |        | 12666104 | 46.9         |                 | 93.8 | 1256391 |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.898 | 1.907  | -0.009 | 1.000  | 20670435 | 43.8         |                 | 99.0 |         |       |
| 298.90 > 99.00                 | 1.898 | 1.907  | -0.009 | 1.000  | 9724349  |              | 2.13(0.00-0.00) |      |         |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.164 | 2.173  | -0.009 | 1.000  | 10659778 | 50.2         |                 | 100  | 311210  |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.164 | 2.173  | -0.009 |        | 11105875 | 45.1         |                 | 90.1 | 1390903 |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.511 | 2.519  | -0.008 | 1.000  | 9965121  | 49.0         |                 | 97.9 | 129553  |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.511 | 2.519  | -0.008 |        | 9839617  | 46.7         |                 | 93.5 | 606816  |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         | M     |
| 399.00 > 80.00                 | 2.526 | 2.534  | -0.008 | 1.000  | 13863696 | 44.7         |                 | 98.2 |         | M     |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.526 | 2.534  | -0.008 |        | 13844166 | 45.8         |                 | 96.8 | 284370  |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.877 | 2.886  | -0.009 |        | 10391697 | 47.4         |                 | 94.7 | 923492  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 413.00 > 369.00                  | 2.877 | 2.894  | -0.017 | 1.000  | 10869296 | 51.3         |                 | 103  | 351138 |       |
| 413.00 > 169.00                  | 2.877 | 2.894  | -0.017 | 1.000  | 6481914  |              | 1.68(0.90-1.10) |      | 594276 |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |        |       |
| 449.00 > 80.00                   | 2.885 | 2.902  | -0.017 | 1.000  | 13016744 | 48.0         |                 | 101  |        |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 499.00 > 80.00                   | 3.258 | 3.267  | -0.009 | 1.000  | 11713855 | 46.5         |                 | 100  | 833502 |       |
| 499.00 > 99.00                   | 3.258 | 3.267  | -0.009 | 1.000  | 2574140  |              | 4.55(0.90-1.10) |      | 854286 |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.258 | 3.267  | -0.009 |        | 11078221 | 45.3         |                 | 94.7 | 225908 |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 463.00 > 419.00                  | 3.258 | 3.275  | -0.017 | 1.000  | 7994712  | 49.7         |                 | 99.4 | 111942 |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                  | 3.258 | 3.275  | -0.017 |        | 8110550  | 45.5         |                 | 91.1 | 448870 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                   | 3.579 | 3.589  | -0.010 | 1.000  | 17622504 | 50.8         |                 | 102  | 244916 |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                   | 3.579 | 3.589  | -0.010 |        | 18539988 | 44.8         |                 | 89.5 | 782482 |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                  | 3.621 | 3.631  | -0.010 |        | 7573901  | 45.6         |                 | 91.2 | 477033 |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                  | 3.621 | 3.631  | -0.010 | 1.000  | 7456893  | 50.8         |                 | 102  | 159874 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                   | 3.929 | 3.941  | -0.012 | 1.000  | 7073516  | 48.7         |                 | 101  |        |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                  | 3.947 | 3.959  | -0.012 | 1.000  | 5654902  | 47.3         |                 | 94.6 | 116847 |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                  | 3.947 | 3.967  | -0.020 |        | 5639344  | 44.8         |                 | 89.7 | 266119 |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 613.00 > 569.00                  | 4.243 | 4.259  | -0.016 | 1.000  | 4947736  | 48.1         |                 | 96.2 | 64070  |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                  | 4.243 | 4.259  | -0.016 |        | 5435760  | 46.5         |                 | 93.0 | 206048 |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                  | 4.511 | 4.520  | -0.009 | 1.000  | 5155981  | 45.6         |                 | 91.2 | 17473  |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |        |       |
| 712.50 > 668.90                  | 4.750 | 4.772  | -0.022 | 1.000  | 9673132  | 46.0         |                 | 92.1 | 3806   |       |
| 713.00 > 169.00                  | 4.742 | 4.772  | -0.030 | 0.998  | 1561384  |              | 6.20(0.00-0.00) |      | 311529 |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                  | 4.750 | 4.772  | -0.022 |        | 11021074 | 45.6         |                 | 91.1 | 497299 |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |        |       |
| 815.00 > 770.00                  | 5.167 | 5.184  | -0.017 |        | 5938609  | 45.6         |                 | 91.1 | 101514 |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 813.00 > 769.00                  | 5.177 | 5.194  | -0.017 | 1.000  | 5386746  | 49.5         |                 | 99.0 | 4133   |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 913.00 > 869.00                  | 5.540 | 5.562  | -0.022 | 1.000  | 5609402  | 65.6         |                 | 131  | 7160   |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## Reagents:

LCPFC-L5\_00020

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_022.d

Injection Date: 02-Dec-2016 17:37:22

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

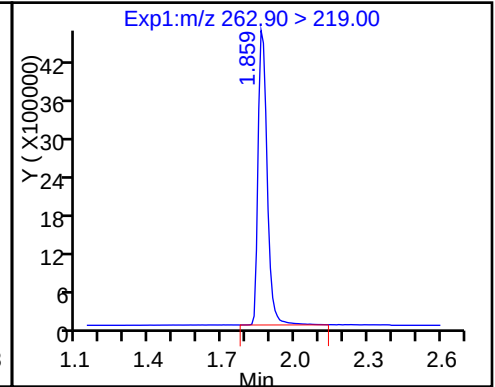
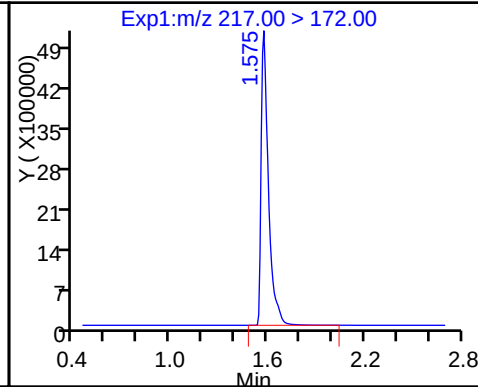
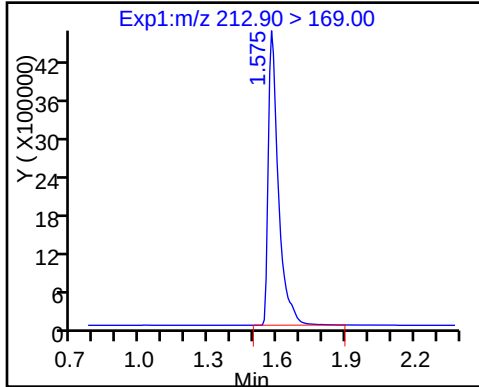
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

1 Perfluorobutyric acid

D 2 13C4 PFBA

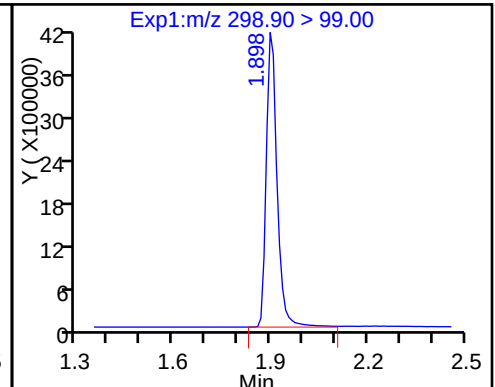
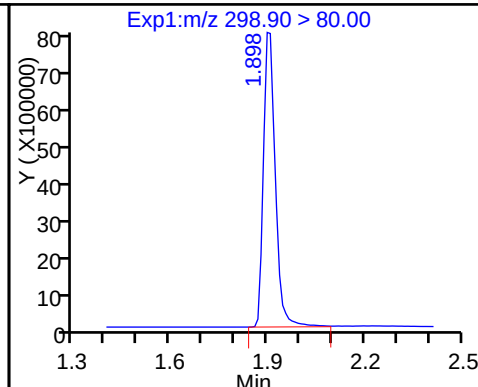
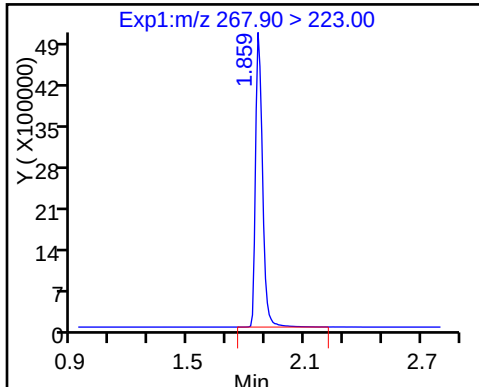
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

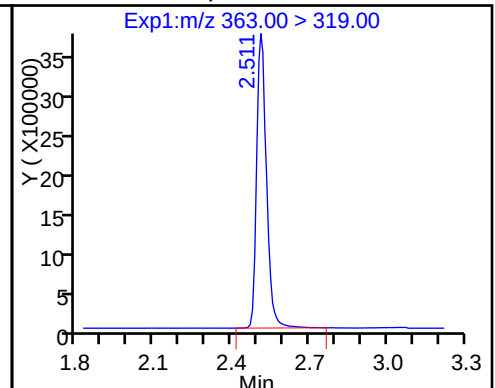
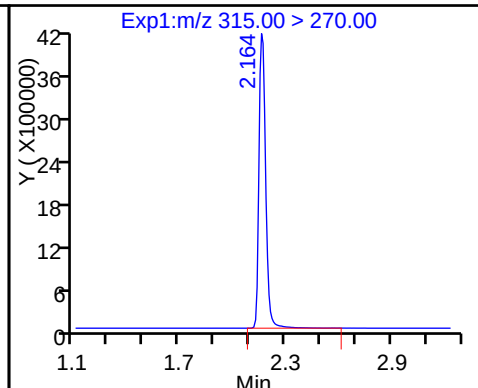
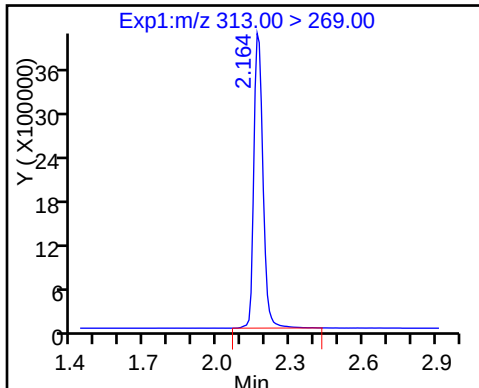
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

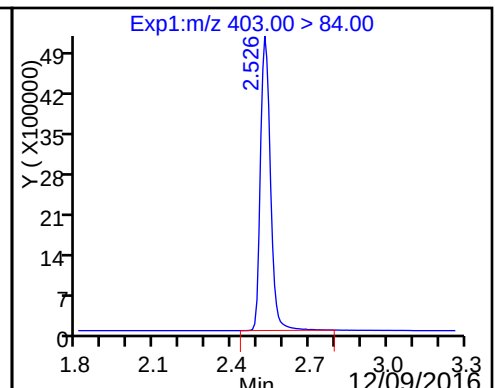
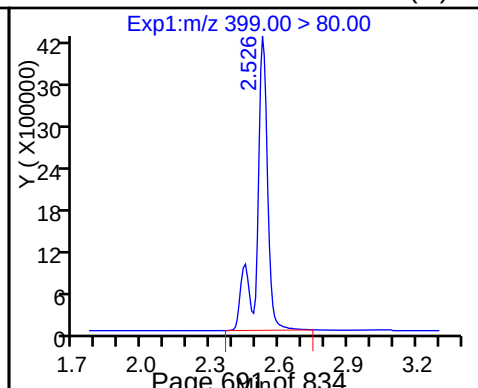
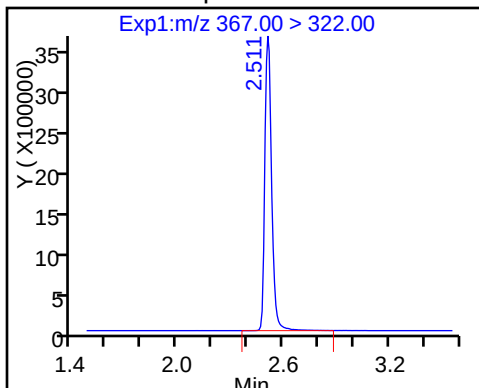
12 Perfluoroheptanoic acid



D 11 13C4-PFHpA

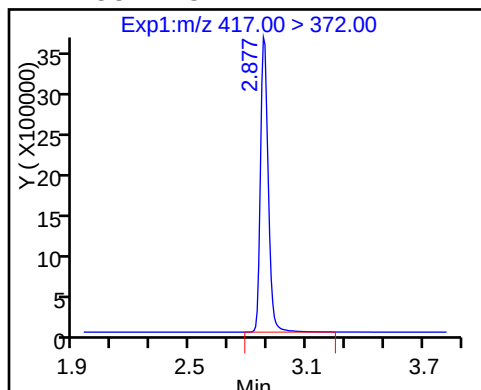
9 Perfluorohexanesulfonic acid (M)

D 10 18O2 PFHxS

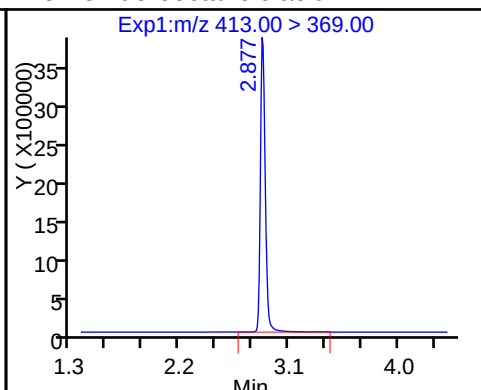




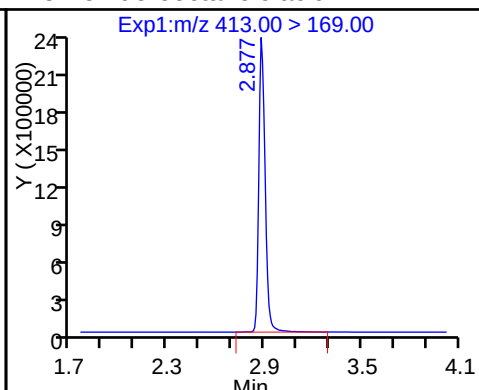
## D 14 13C4 PFOA



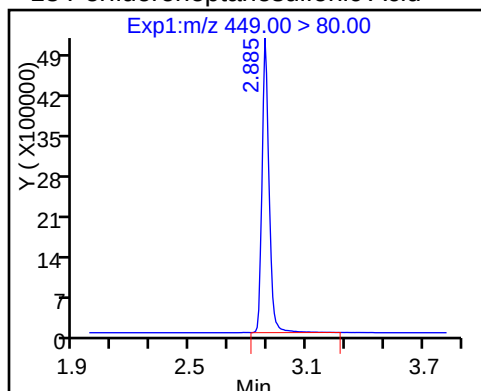
## 15 Perfluorooctanoic acid



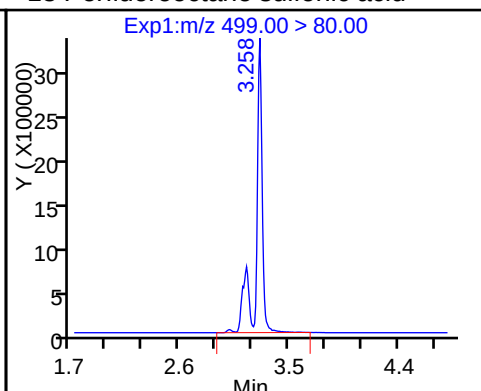
## 15 Perfluorooctanoic acid



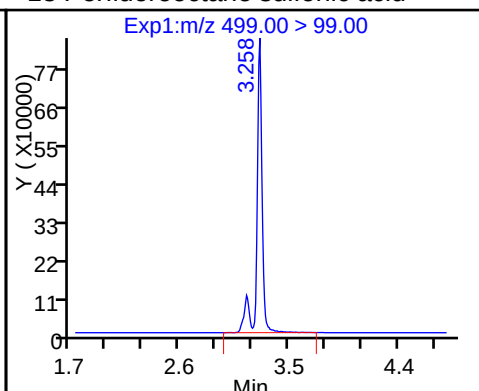
## 13 Perfluoroheptanesulfonic Acid



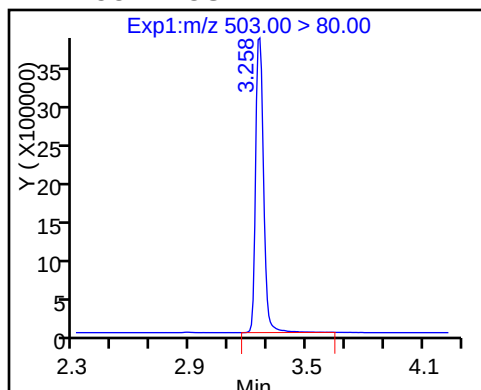
## 18 Perfluorooctane sulfonic acid



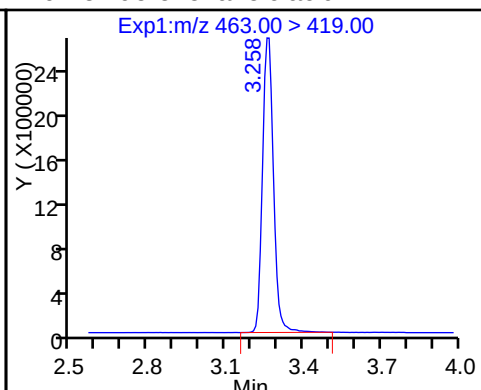
## 18 Perfluorooctane sulfonic acid



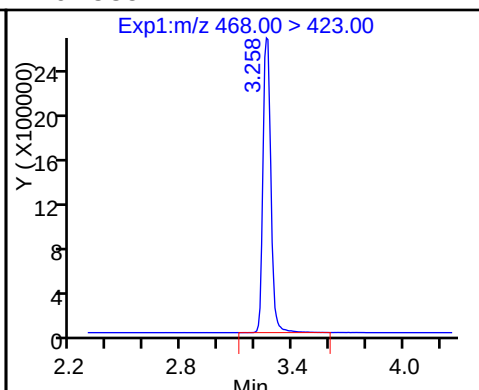
## D 17 13C4 PFOS



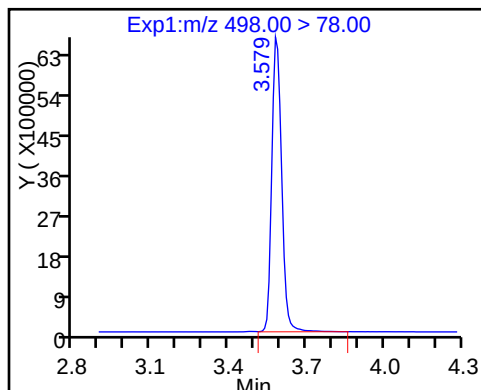
## 20 Perfluorononanoic acid



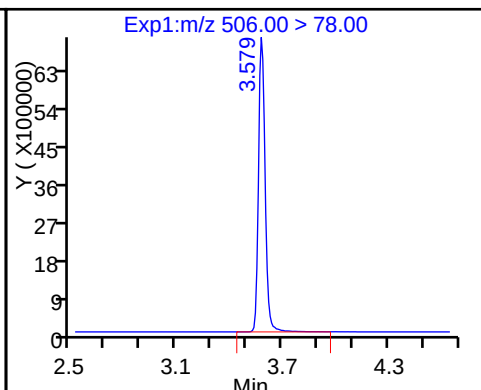
## D 19 13C5 PFNA



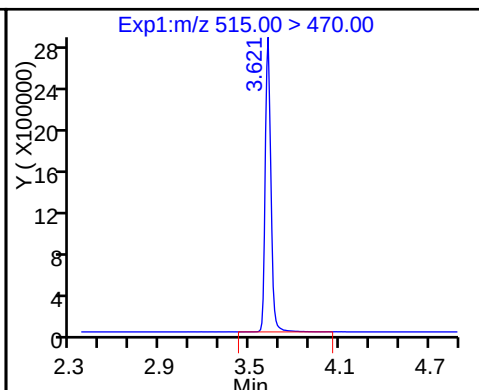
## 22 Perfluorooctane Sulfonamide



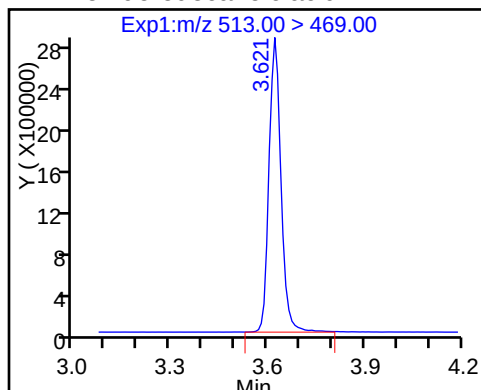
## D 21 13C8 FOSA



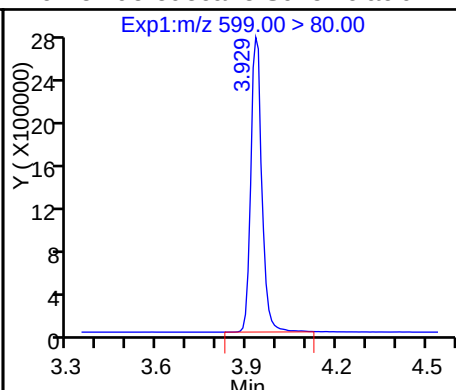
## D 23 13C2 PFDA



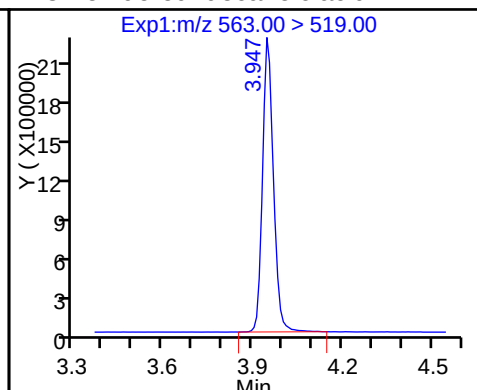
24 Perfluorodecanoic acid



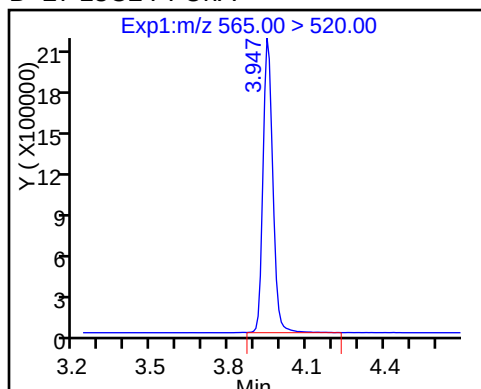
26 Perfluorodecane Sulfonic acid



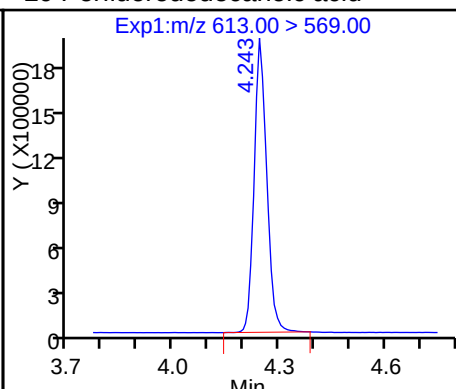
28 Perfluoroundecanoic acid



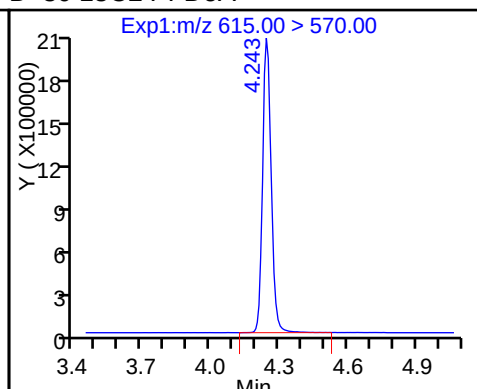
D 27 13C2 PFUnA



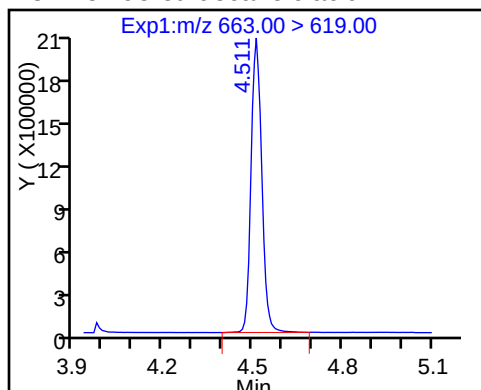
29 Perfluorododecanoic acid



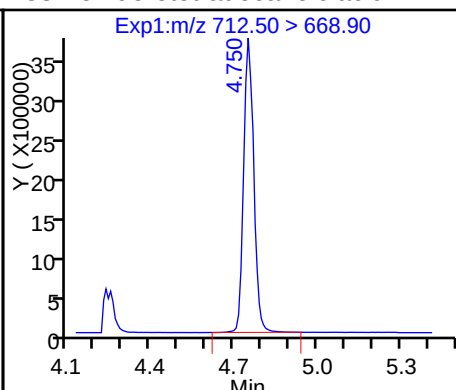
D 30 13C2 PFDa



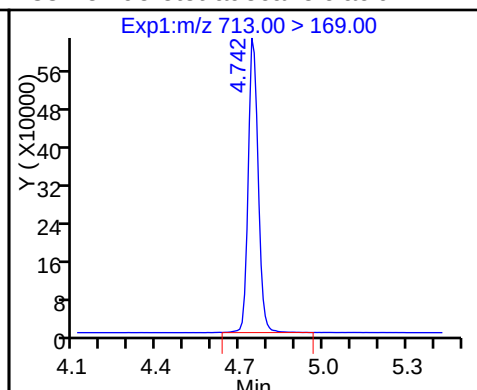
31 Perfluorotridecanoic acid



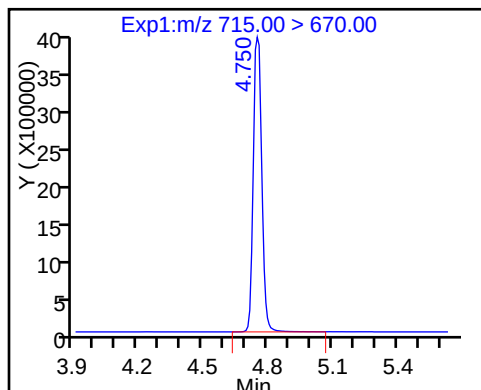
33 Perfluorotetradecanoic acid



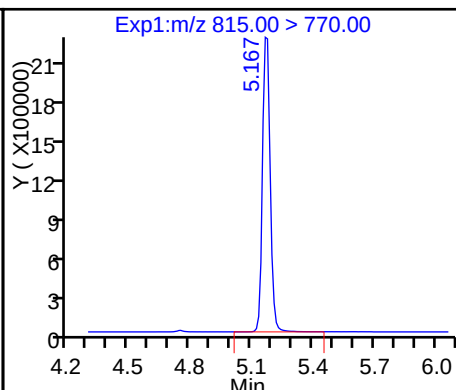
33 Perfluorotetradecanoic acid



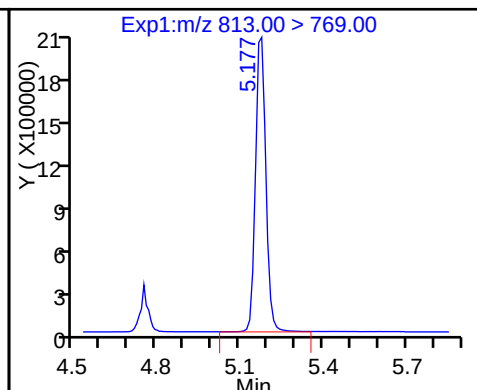
D 32 13C2-PFTeDA



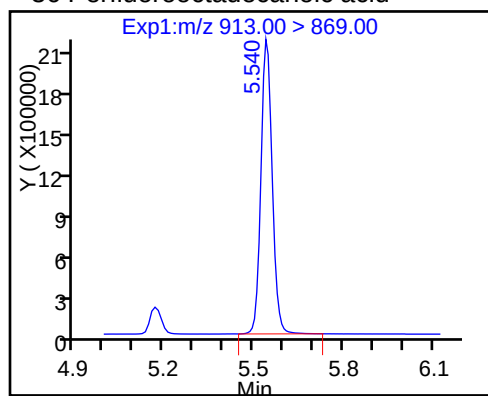
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-140564/11 Calibration Date: 12/03/2016 14:41  
 Instrument ID: A8\_N Calib Start Date: 12/03/2016 13:48  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/03/2016 15:33  
 Lab File ID: 03DEC2016A\_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) | AveID         | 1.596   | 1.545  |         | 42.8           | 44.3            | -3.2  | 25.0      |
| Perfluorooctanoic acid (PFOA)       | AveID         | 1.072   | 0.9942 |         | 46.4           | 50.0            | -7.2  | 25.0      |
| Perfluorooctane Sulfonate (PFOS)    | AveID         | 1.085   | 0.9006 |         | 39.6           | 47.8            | -17.0 | 25.0      |
| 13C4 PFBA                           | Ave           | 335829  | 312410 |         | 46.5           | 50.0            | -7.0  | 50.0      |
| 13C5-PFPeA                          | Ave           | 264545  | 243307 |         | 46.0           | 50.0            | -8.0  | 50.0      |
| 13C2 PFHxA                          | Ave           | 237486  | 229267 |         | 48.3           | 50.0            | -3.5  | 50.0      |
| 13C4-PFHpA                          | Ave           | 207413  | 195333 |         | 47.1           | 50.0            | -5.8  | 50.0      |
| 18O2 PFHxS                          | Ave           | 312342  | 294291 |         | 44.6           | 47.3            | -5.8  | 50.0      |
| 13C4 PFOA                           | Ave           | 219258  | 198224 |         | 45.2           | 50.0            | -9.6  | 50.0      |
| 13C4 PFOS                           | Ave           | 246009  | 225320 |         | 43.8           | 47.8            | -8.4  | 50.0      |
| 13C5 PFNA                           | Ave           | 166415  | 156724 |         | 47.1           | 50.0            | -5.8  | 50.0      |
| 13C8 FOSA                           | Ave           | 402279  | 382595 |         | 47.6           | 50.0            | -4.9  | 50.0      |
| 13C2 PFDA                           | Ave           | 157817  | 146344 |         | 46.4           | 50.0            | -7.3  | 50.0      |
| 13C2 PFUnA                          | Ave           | 118762  | 109554 |         | 46.1           | 50.0            | -7.8  | 50.0      |
| 13C2 PFDoA                          | Ave           | 112084  | 109278 |         | 48.7           | 50.0            | -2.5  | 50.0      |
| 13C2-PFTeDA                         | Ave           | 231173  | 214390 |         | 46.4           | 50.0            | -7.3  | 50.0      |
| 13C2-PFHxDA                         | Ave           | 129725  | 121978 |         | 47.0           | 50.0            | -6.0  | 50.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_011.d  
 Lims ID: ICV  
 Client ID:  
 Sample Type: ICV  
 Inject. Date: 03-Dec-2016 14:41:13 ALS Bottle#: 44 Worklist Smp#: 11  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: ICV\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist:  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:26:23 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:47:22

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
|--------|----|--------|--------|--------|----------|--------------|---------------|------|-----|-------|

D 2 13C4 PFBA

217.00 > 172.00 1.566 1.574 -0.008 15620513 46.5 93.0 1612048

1 Perfluorobutyric acid

212.90 > 169.00 1.566 1.577 -0.011 1.000 13190679 48.3 70053

3 Perfluoropentanoic acid

262.90 > 219.00 1.848 1.861 -0.013 1.000 11502032 46.6 76938

D 4 13C5-PFPeA

267.90 > 223.00 1.848 1.861 -0.013 12165345 46.0 92.0 911947

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.887 1.900 -0.013 1.000 20121282 42.8  
 298.90 > 99.00 1.887 1.900 -0.013 1.000 9272505 2.17(0.00-0.00)

7 Perfluorohexanoic acid

313.00 > 269.00 2.158 2.164 -0.006 1.000 10017573 45.8 244705

D 6 13C2 PFHxA

315.00 > 270.00 2.158 2.164 -0.006 11463370 48.3 96.5 672140

D 11 13C4-PFHpA

367.00 > 322.00 2.499 2.511 -0.012 9766668 47.1 94.2 852072

12 Perfluoroheptanoic acid

363.00 > 319.00 2.499 2.512 -0.013 1.000 9294490 46.3 100010

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.514 2.531 -0.017 1.000 13456842 41.7

D 10 18O2 PFHxS

403.00 > 84.00 2.514 2.531 -0.017 13919947 44.6 94.2 810316

D 14 13C4 PFOA

417.00 > 372.00 2.870 2.880 -0.010 9911203 45.2 90.4 548349

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                  | 2.870 | 2.887  | -0.017 | 1.000  | 9853753  | 46.4         |                 |      | 123535  |       |
| 413.00 > 169.00                  | 2.862 | 2.887  | -0.025 | 0.997  | 6029090  |              | 1.63(0.90-1.10) |      | 244064  |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |         |       |
| 449.00 > 80.00                   | 2.870 | 2.888  | -0.018 | 1.000  | 13003397 | 49.0         |                 |      |         |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 499.00 > 80.00                   | 3.244 | 3.258  | -0.014 | 1.000  | 9689735  | 39.6         |                 |      | 1641854 |       |
| 499.00 > 99.00                   | 3.235 | 3.258  | -0.023 | 0.997  | 2361166  |              | 4.10(0.90-1.10) |      | 256440  |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |         |       |
| 503.00 > 80.00                   | 3.235 | 3.259  | -0.024 |        | 10770309 | 43.8         |                 | 91.6 | 336185  |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |         |       |
| 468.00 > 423.00                  | 3.244 | 3.263  | -0.019 |        | 7836220  | 47.1         |                 | 94.2 | 638662  |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 463.00 > 419.00                  | 3.244 | 3.263  | -0.019 | 1.000  | 7315987  | 46.9         |                 |      | 101636  |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |         |       |
| 506.00 > 78.00                   | 3.557 | 3.571  | -0.014 |        | 19129770 | 47.6         |                 | 95.1 | 889404  |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |         |       |
| 498.00 > 78.00                   | 3.565 | 3.574  | -0.009 | 1.000  | 16827146 | 47.1         |                 |      | 307442  |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 513.00 > 469.00                  | 3.607 | 3.623  | -0.016 | 1.000  | 6727679  | 47.9         |                 |      | 161083  |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |         |       |
| 515.00 > 470.00                  | 3.607 | 3.626  | -0.019 |        | 7317194  | 46.4         |                 | 92.7 | 293278  |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 599.00 > 80.00                   | 3.912 | 3.936  | -0.024 | 1.000  | 6797886  | 47.2         |                 |      |         |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 563.00 > 519.00                  | 3.938 | 3.955  | -0.017 | 1.000  | 5226274  | 44.8         |                 |      | 120213  |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |         |       |
| 565.00 > 520.00                  | 3.938 | 3.958  | -0.020 |        | 5477711  | 46.1         |                 | 92.2 | 312875  |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 613.00 > 569.00                  | 4.224 | 4.250  | -0.026 | 1.000  | 4931801  | 47.6         |                 |      | 90828   |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |         |       |
| 615.00 > 570.00                  | 4.232 | 4.251  | -0.019 |        | 5463889  | 48.7         |                 | 97.5 | 309492  |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 663.00 > 619.00                  | 4.503 | 4.518  | -0.015 | 1.000  | 4773745  | 46.0         |                 |      | 36970   |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |         |       |
| 715.00 > 670.00                  | 4.732 | 4.759  | -0.027 |        | 10719523 | 46.4         |                 | 92.7 | 360593  |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |         |       |
| 712.50 > 668.90                  | 4.740 | 4.761  | -0.021 | 1.000  | 9370597  | 46.3         |                 |      | 4744    |       |
| 713.00 > 169.00                  | 4.732 | 4.761  | -0.029 | 0.998  | 1459995  |              | 6.42(0.00-0.00) |      | 102221  |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |         |       |
| 815.00 > 770.00                  | 5.158 | 5.186  | -0.028 |        | 6098899  | 47.0         |                 | 94.0 | 113553  |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 813.00 > 769.00                  | 5.158 | 5.186  | -0.028 | 1.000  | 5084325  | 46.1         |                 |      | 4219    |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 913.00 > 869.00                  | 5.523 | 5.559  | -0.036 | 1.000  | 5482963  | 50.5         |                 |      | 9364    |       |

**Reagents:**

LCPFCIC\_00020

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_011.d

Injection Date: 03-Dec-2016 14:41:13

Instrument ID: A8\_N

Lims ID: ICV

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 44

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

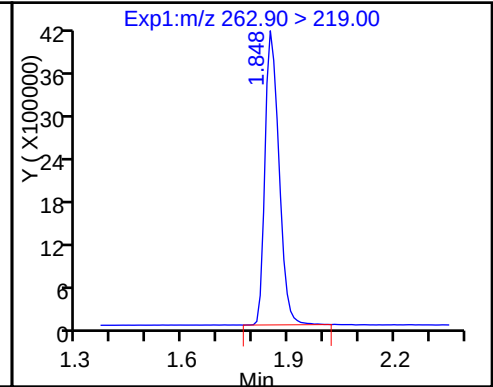
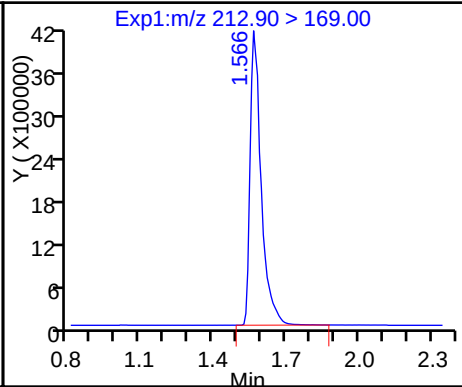
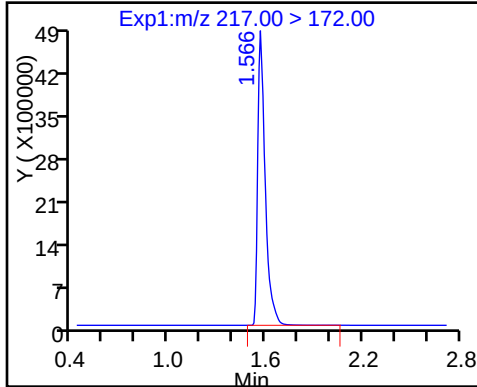
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

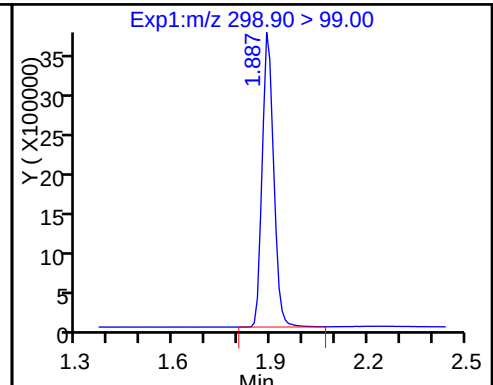
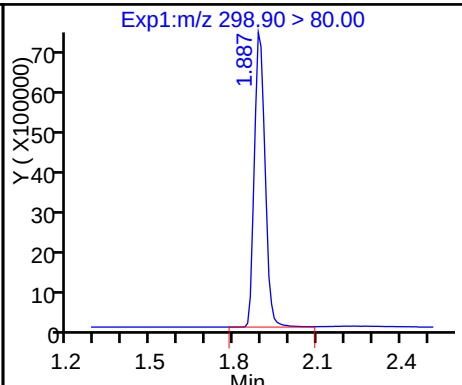
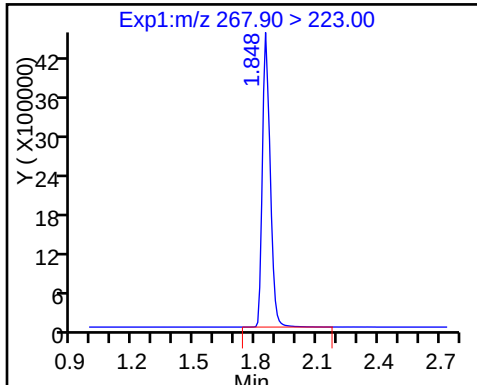
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

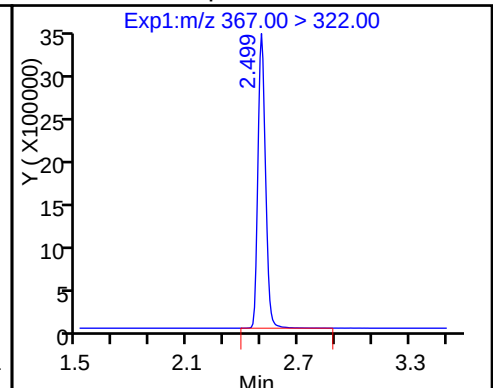
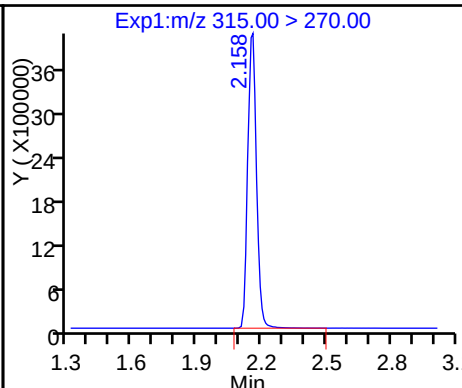
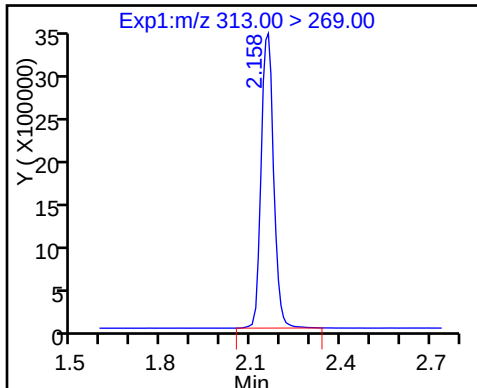
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

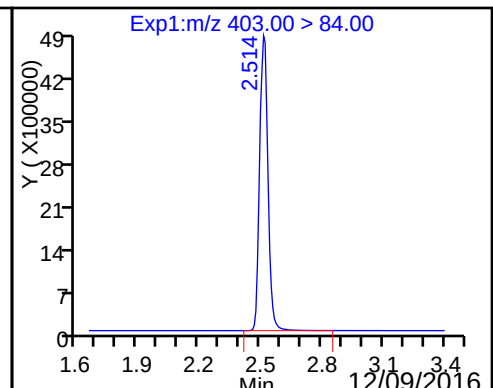
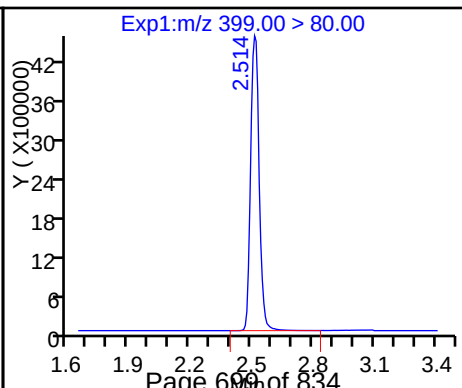
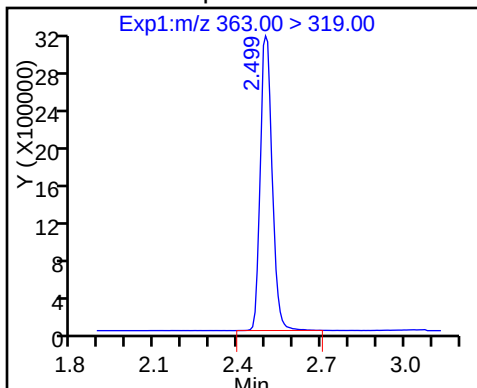
D 11 13C4-PFHpA



12 Perfluoroheptanoic acid

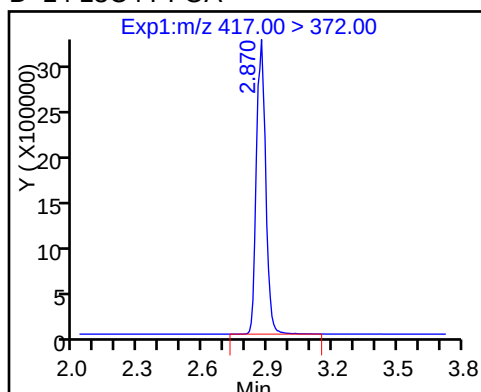
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS

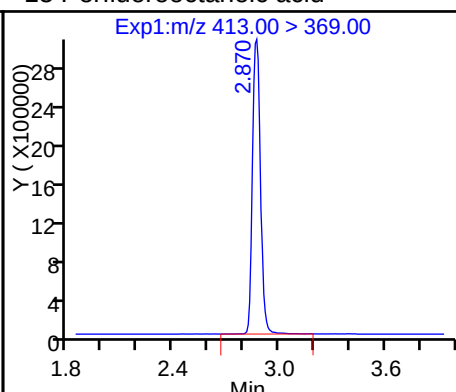




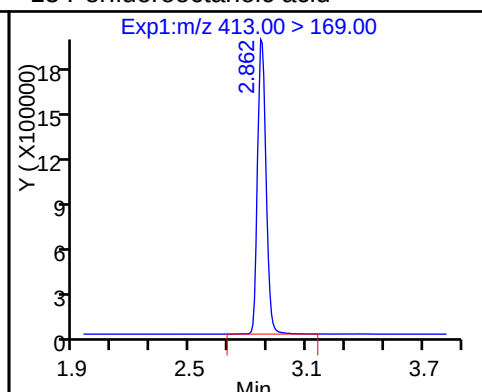
## D 14 13C4 PFOA



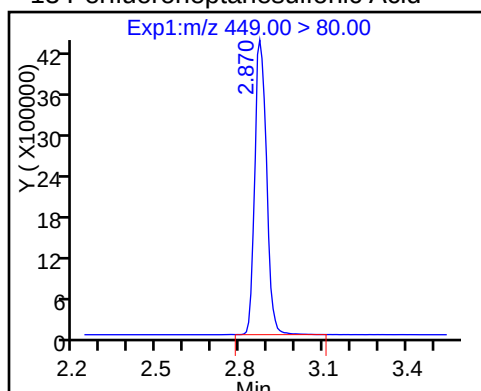
## 15 Perfluorooctanoic acid



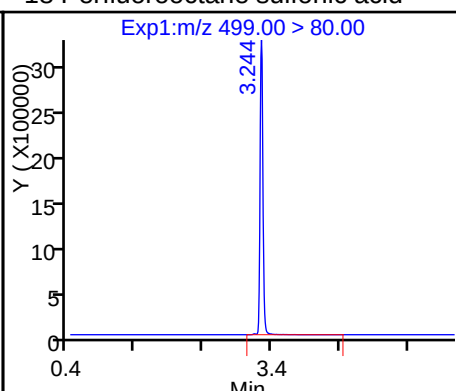
## 15 Perfluorooctanoic acid



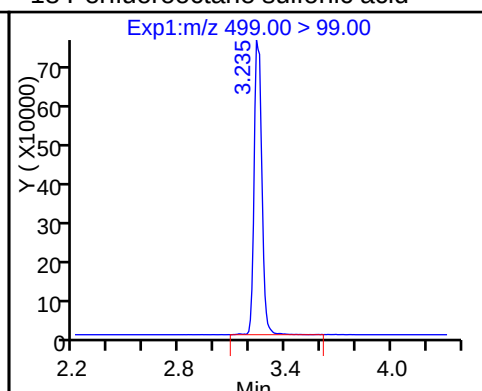
## 13 Perfluoroheptanesulfonic Acid



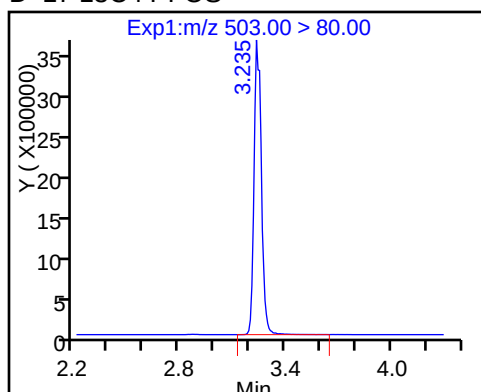
## 18 Perfluorooctane sulfonic acid



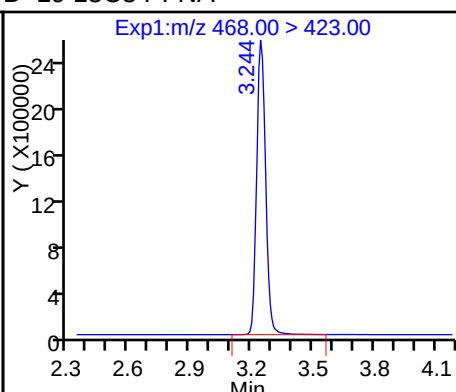
## 18 Perfluorooctane sulfonic acid



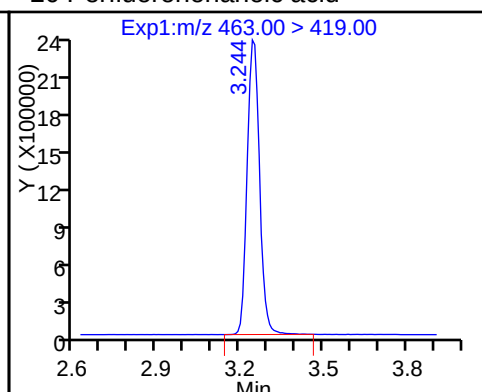
## D 17 13C4 PFOS



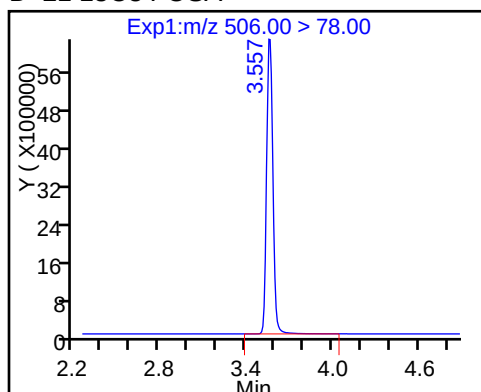
## D 19 13C5 PFNA



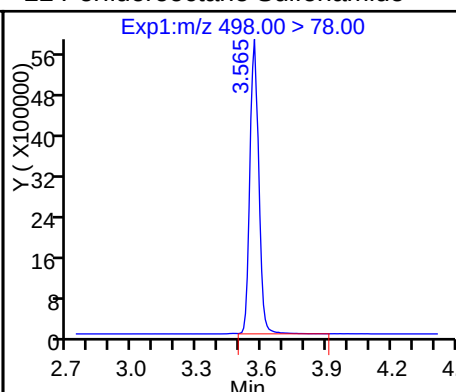
## 20 Perfluorononanoic acid



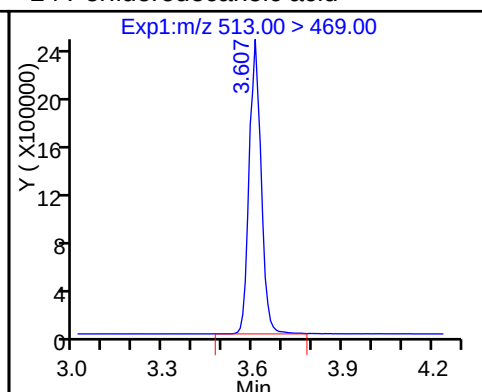
## D 21 13C8 FOSA



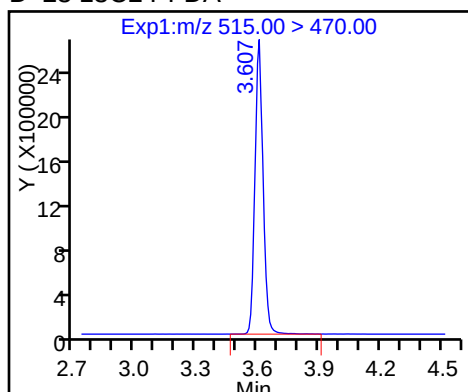
## 22 Perfluorooctane Sulfonamide



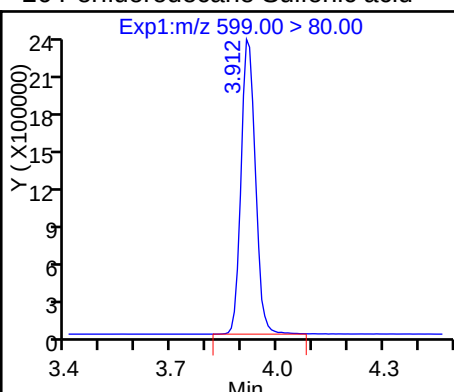
## 24 Perfluorodecanoic acid



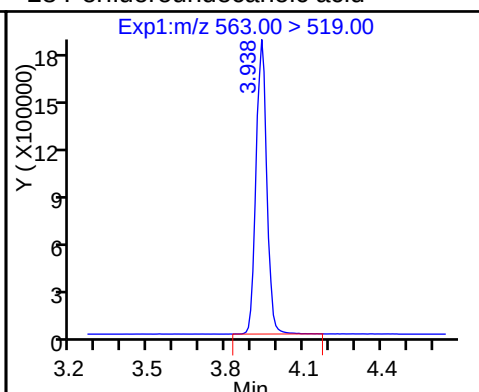
## D 23 13C2 PFDA



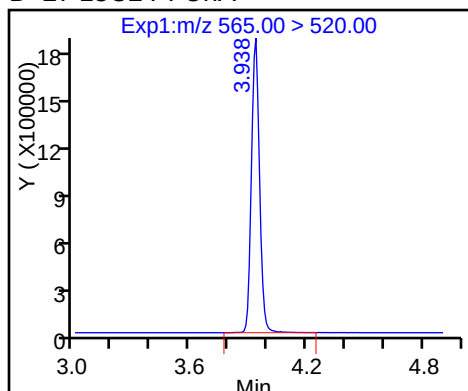
## 26 Perfluorodecane Sulfonic acid



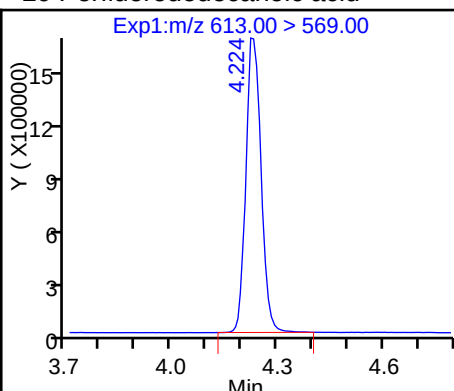
## 28 Perfluoroundecanoic acid



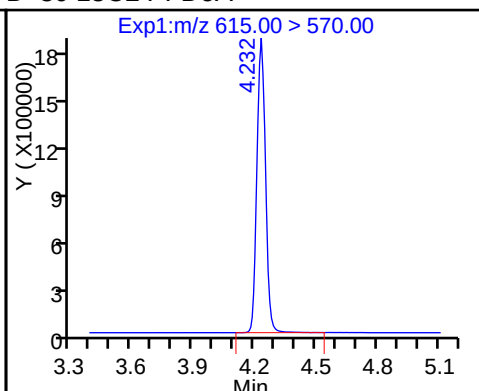
## D 27 13C2 PFUnA



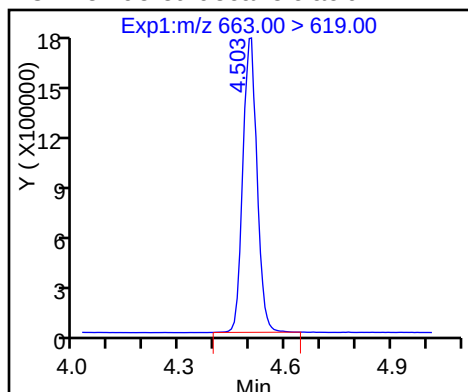
## 29 Perfluorododecanoic acid



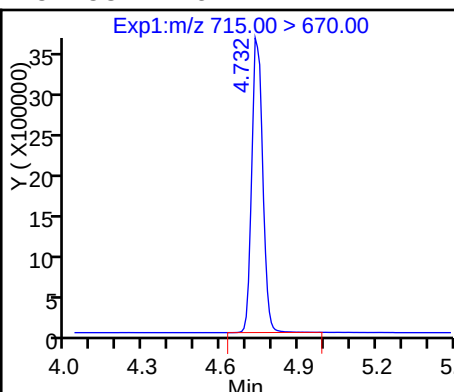
## D 30 13C2 PFDaA



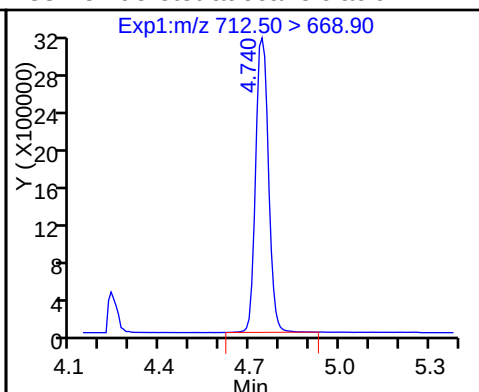
## 31 Perfluorotridecanoic acid



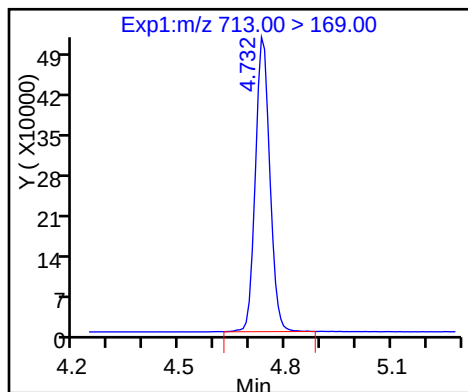
## D 32 13C2-PFTeDA



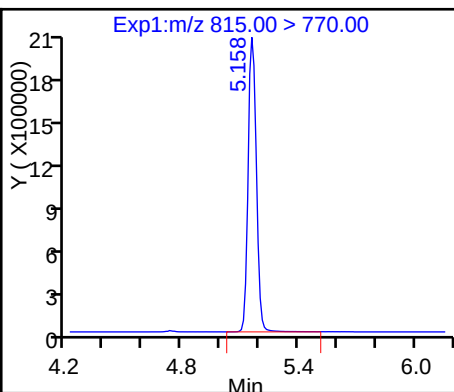
## 33 Perfluorotetradecanoic acid



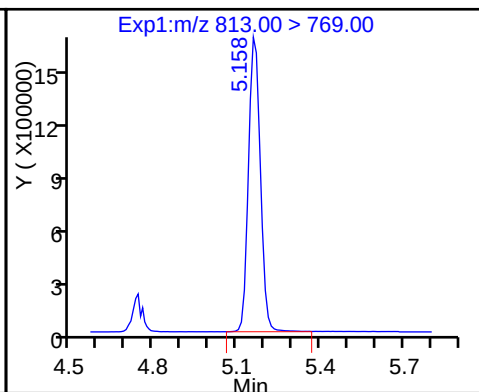
## 33 Perfluorotetradecanoic acid



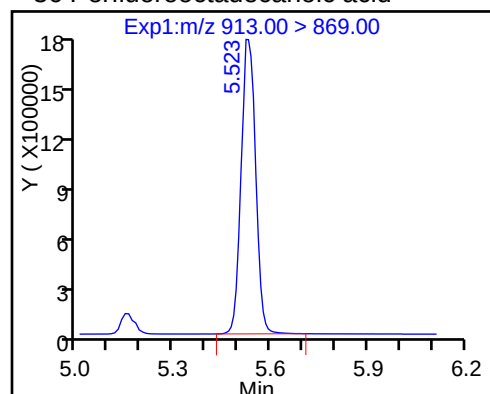
## D 34 13C2-PFHxDA



## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-140564/30 Calibration Date: 12/03/2016 17:03  
 Instrument ID: A8\_N Calib Start Date: 12/03/2016 13:48  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/03/2016 15:33  
 Lab File ID: 03DEC2016B\_009.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) | AveID         | 1.596   | 1.566  |         | 43.4           | 44.2            | -1.9  | 25.0      |
| Perfluorooctanoic acid (PFOA)       | AveID         | 1.072   | 1.016  |         | 47.4           | 50.0            | -5.2  | 25.0      |
| Perfluorooctane Sulfonate (PFOS)    | AveID         | 1.085   | 1.059  |         | 45.3           | 46.4            | -2.4  | 25.0      |
| 13C4 PFBA                           | Ave           | 335829  | 313361 |         | 46.7           | 50.0            | -6.7  | 50.0      |
| 13C5-PFPeA                          | Ave           | 264545  | 244850 |         | 46.3           | 50.0            | -7.4  | 50.0      |
| 13C2 PFHxA                          | Ave           | 237486  | 217160 |         | 45.7           | 50.0            | -8.6  | 50.0      |
| 13C4-PFHpA                          | Ave           | 207413  | 186664 |         | 45.0           | 50.0            | -10.0 | 50.0      |
| 18O2 PFHxS                          | Ave           | 312342  | 300362 |         | 45.5           | 47.3            | -3.8  | 50.0      |
| 13C4 PFOA                           | Ave           | 219258  | 202399 |         | 46.2           | 50.0            | -7.7  | 50.0      |
| 13C4 PFOS                           | Ave           | 246009  | 229171 |         | 44.5           | 47.8            | -6.8  | 50.0      |
| 13C5 PFNA                           | Ave           | 166415  | 153229 |         | 46.0           | 50.0            | -7.9  | 50.0      |
| 13C8 FOSA                           | Ave           | 402279  | 368306 |         | 45.8           | 50.0            | -8.4  | 50.0      |
| 13C2 PFDA                           | Ave           | 157817  | 144055 |         | 45.6           | 50.0            | -8.7  | 50.0      |
| 13C2 PFUnA                          | Ave           | 118762  | 107655 |         | 45.3           | 50.0            | -9.4  | 50.0      |
| 13C2 PFDoA                          | Ave           | 112084  | 107351 |         | 47.9           | 50.0            | -4.2  | 50.0      |
| 13C2-PFTeDA                         | Ave           | 231173  | 206686 |         | 44.7           | 50.0            | -10.6 | 50.0      |
| 13C2-PFHxDA                         | Ave           | 129725  | 113111 |         | 43.6           | 50.0            | -12.8 | 50.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_009.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCV  
 Inject. Date: 03-Dec-2016 17:03:44 ALS Bottle#: 41 Worklist Smp#: 30  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:37:10 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 10:37:10

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|

D 2 13C4 PFBA

217.00 > 172.00 1.566 1.574 -0.008 15668067 46.7 93.3 1212976

1 Perfluorobutyric acid

212.90 > 169.00 1.566 1.577 -0.011 1.000 13737697 50.2 100 89841

3 Perfluoropentanoic acid

262.90 > 219.00 1.849 1.861 -0.012 1.000 12128535 48.8 97.6 97785

D 4 13C5-PFPeA

267.90 > 223.00 1.849 1.861 -0.012 12242489 46.3 92.6 1494339

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.887 1.900 -0.013 1.000 20785751 43.4 98.1

298.90 > 99.00 1.887 1.900 -0.013 1.000 9458185 2.20(0.00-0.00)

7 Perfluorohexanoic acid

313.00 > 269.00 2.143 2.164 -0.021 1.000 10257258 49.6 99.1 206256

D 6 13C2 PFHxA

315.00 > 270.00 2.143 2.164 -0.021 10858019 45.7 91.4 619877

D 11 13C4-PFHpA

367.00 > 322.00 2.489 2.511 -0.022 9333205 45.0 90.0 537737

12 Perfluoroheptanoic acid

363.00 > 319.00 2.489 2.512 -0.023 1.000 9428316 49.2 98.4 112468

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.497 2.531 -0.034 1.000 14202827 43.1 94.7

D 10 18O2 PFHxS

403.00 > 84.00 2.497 2.531 -0.034 14207124 45.5 96.2 1003243

D 14 13C4 PFOA

417.00 > 372.00 2.854 2.880 -0.026 10119935 46.2 92.3 562804

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 15 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 413.00 > 369.00                  | 2.854 | 2.887  | -0.033 | 1.000  | 10284066 | 47.4         |                 | 94.8 | 202666 |       |
| 413.00 > 169.00                  | 2.846 | 2.887  | -0.041 | 0.997  | 6248942  |              | 1.65(0.90-1.10) |      | 339460 |       |
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |        |       |
| 449.00 > 80.00                   | 2.862 | 2.888  | -0.026 | 1.000  | 12744705 | 47.2         |                 | 99.3 |        |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 499.00 > 80.00                   | 3.226 | 3.258  | -0.032 | 1.000  | 11265789 | 45.3         |                 | 97.6 | 979499 |       |
| 499.00 > 99.00                   | 3.226 | 3.258  | -0.032 | 1.000  | 2568331  |              | 4.39(0.90-1.10) |      | 255539 |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.217 | 3.259  | -0.042 |        | 10954381 | 44.5         |                 | 93.2 | 236210 |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                  | 3.226 | 3.263  | -0.037 |        | 7661469  | 46.0         |                 | 92.1 | 827542 |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 463.00 > 419.00                  | 3.226 | 3.263  | -0.037 | 1.000  | 7595586  | 49.8         |                 | 99.5 | 106584 |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                   | 3.548 | 3.571  | -0.023 |        | 18415295 | 45.8         |                 | 91.6 | 652368 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                   | 3.548 | 3.574  | -0.026 | 1.000  | 16711764 | 48.6         |                 | 97.2 | 326893 |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                  | 3.582 | 3.623  | -0.041 | 1.000  | 6874163  | 49.7         |                 | 99.4 | 240558 |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                  | 3.582 | 3.626  | -0.044 |        | 7202726  | 45.6         |                 | 91.3 | 250402 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                   | 3.893 | 3.936  | -0.043 | 1.000  | 6912445  | 47.1         |                 | 97.8 |        |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                  | 3.919 | 3.955  | -0.036 | 1.000  | 5278542  | 46.0         |                 | 92.0 | 157895 |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                  | 3.919 | 3.958  | -0.039 |        | 5382740  | 45.3         |                 | 90.6 | 645693 |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 613.00 > 569.00                  | 4.212 | 4.250  | -0.038 | 1.000  | 5011838  | 49.2         |                 | 98.4 | 94279  |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                  | 4.212 | 4.251  | -0.039 |        | 5367554  | 47.9         |                 | 95.8 | 118003 |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                  | 4.484 | 4.518  | -0.034 | 1.000  | 4658317  | 45.7         |                 | 91.4 | 52356  |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                  | 4.714 | 4.759  | -0.045 |        | 10334299 | 44.7         |                 | 89.4 | 298039 |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |        |       |
| 712.50 > 668.90                  | 4.714 | 4.761  | -0.047 | 1.000  | 8894154  | 44.7         |                 | 89.4 | 6477   |       |
| 713.00 > 169.00                  | 4.714 | 4.761  | -0.047 | 1.000  | 1446397  |              | 6.15(0.00-0.00) |      | 164686 |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |        |       |
| 815.00 > 770.00                  | 5.132 | 5.186  | -0.054 |        | 5655535  | 43.6         |                 | 87.2 | 107822 |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 813.00 > 769.00                  | 5.132 | 5.186  | -0.054 | 1.000  | 5063795  | 46.7         |                 | 93.5 | 6291   |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 913.00 > 869.00                  | 5.494 | 5.559  | -0.065 | 1.000  | 5010861  | 47.0         |                 | 94.0 | 8065   |       |

**Reagents:**

LCPFC-L5\_00020

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_009.d

Injection Date: 03-Dec-2016 17:03:44

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 30

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

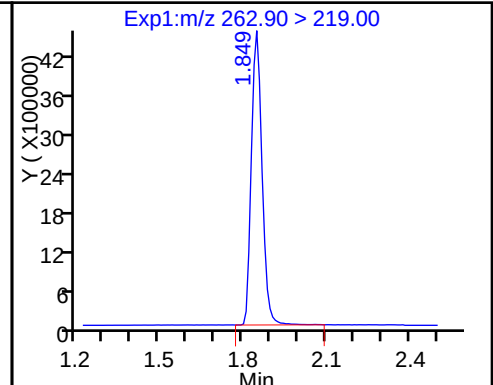
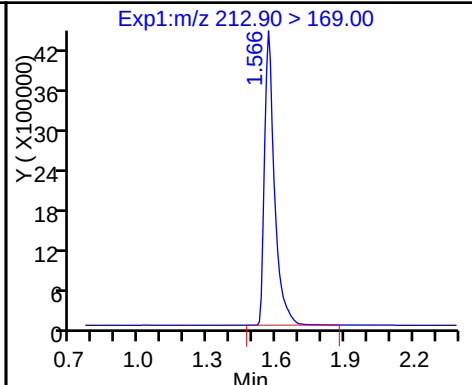
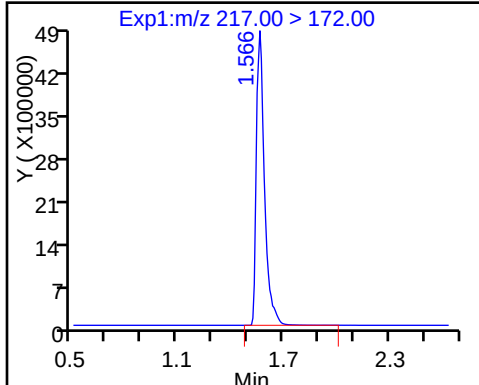
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

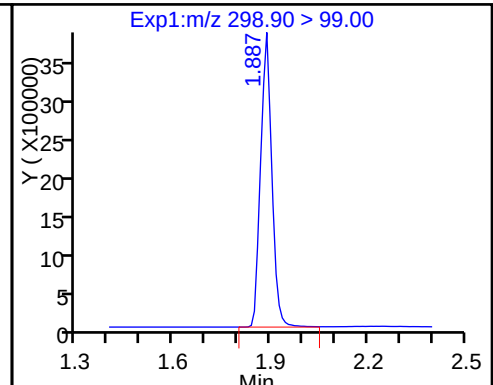
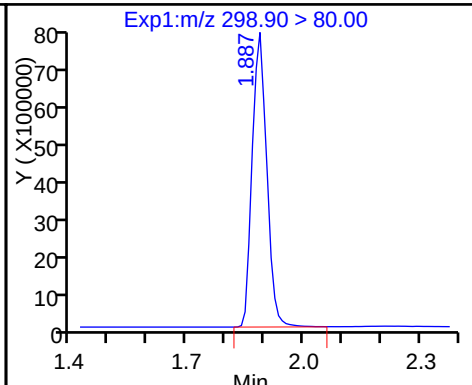
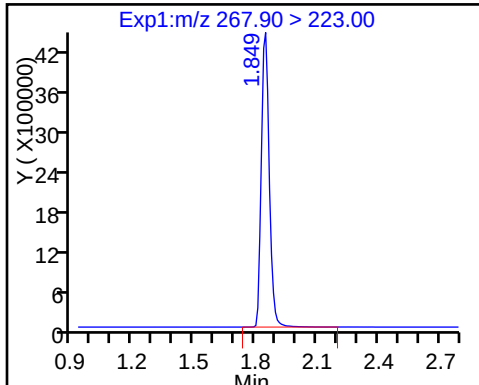
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

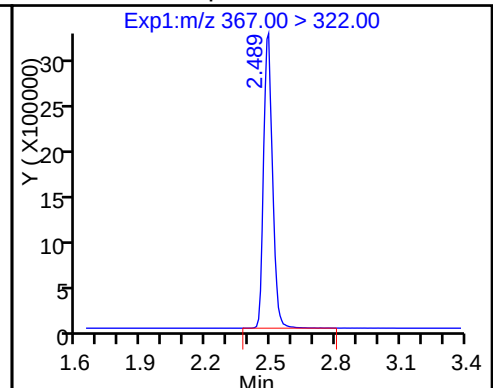
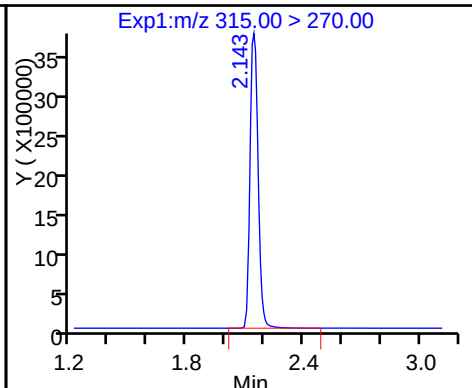
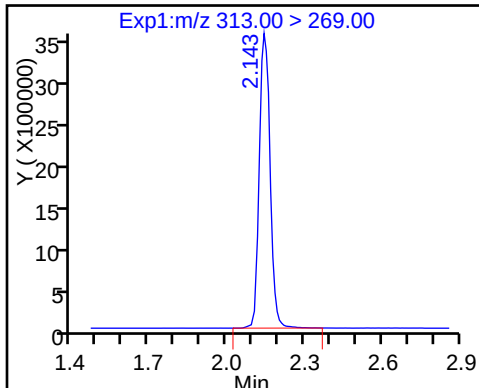
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

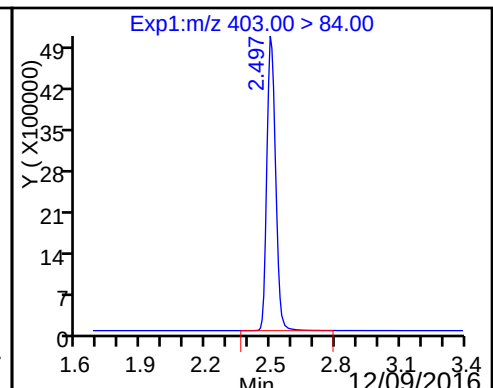
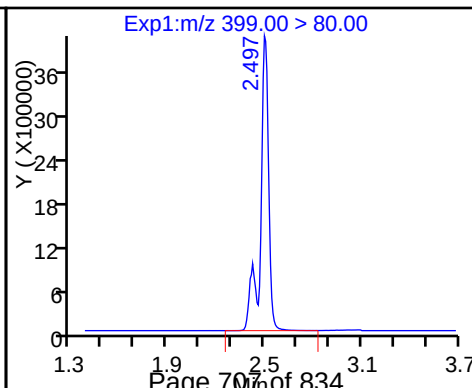
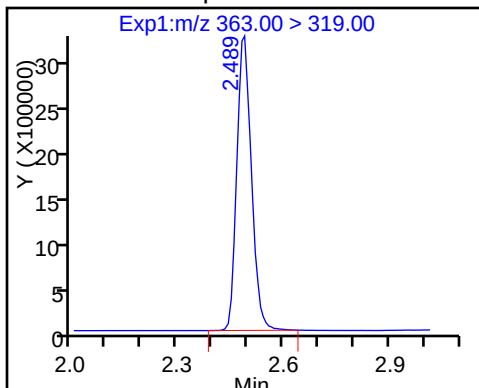
D 11 13C4-PFHpA



12 Perfluoroheptanoic acid

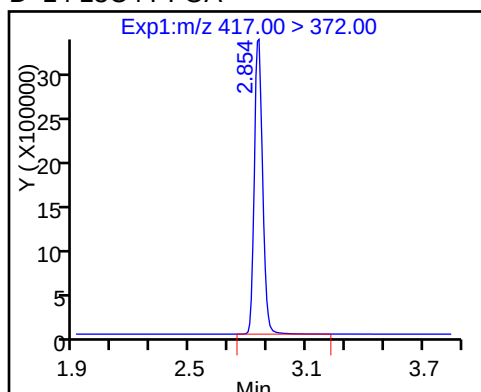
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS

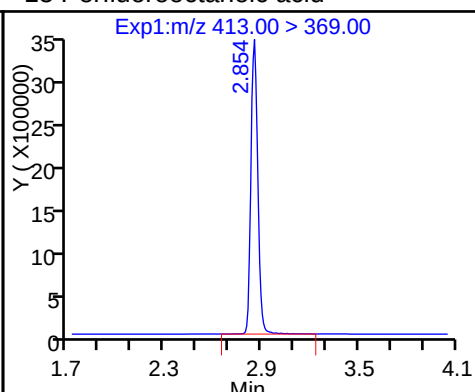




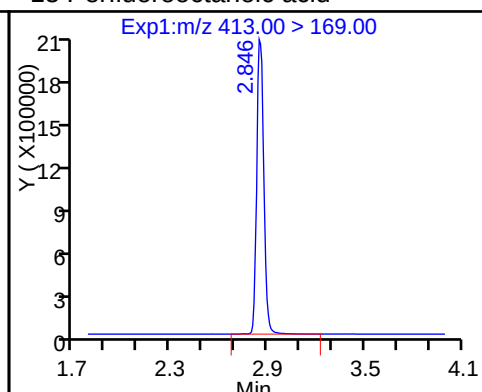
## D 14 13C4 PFOA



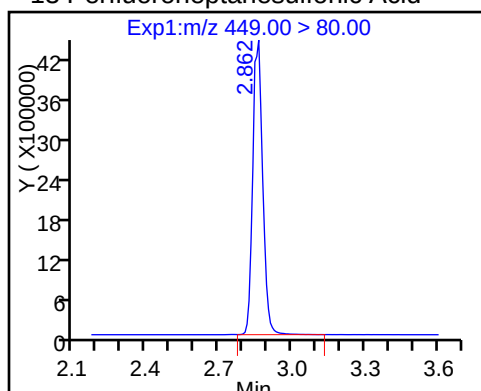
## 15 Perfluorooctanoic acid



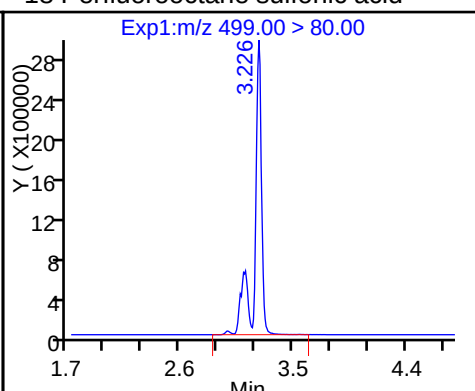
## 15 Perfluorooctanoic acid



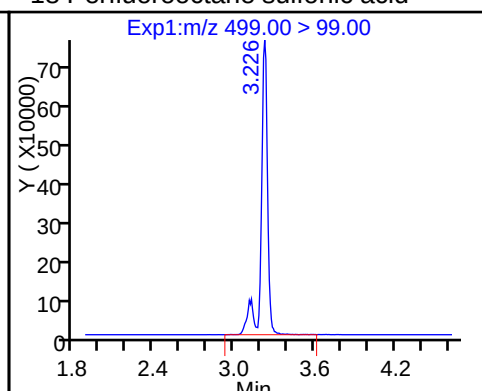
## 13 Perfluoroheptanesulfonic Acid



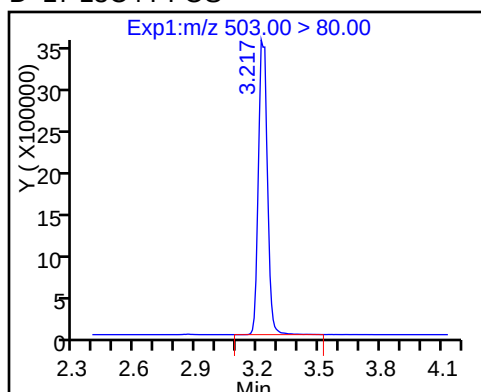
## 18 Perfluorooctane sulfonic acid



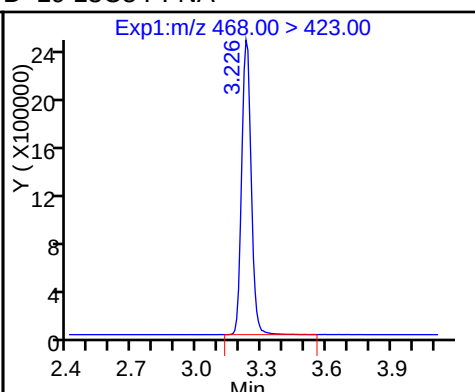
## 18 Perfluorooctane sulfonic acid



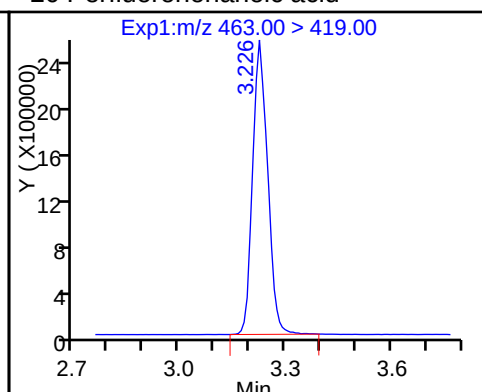
## D 17 13C4 PFOS



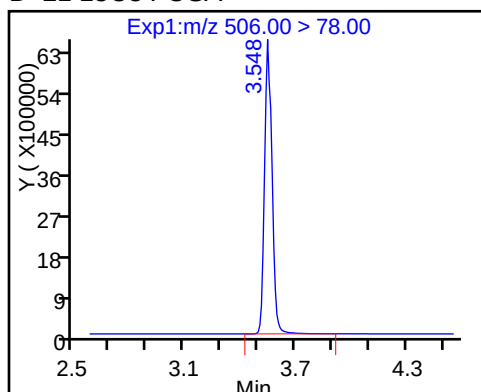
## D 19 13C5 PFNA



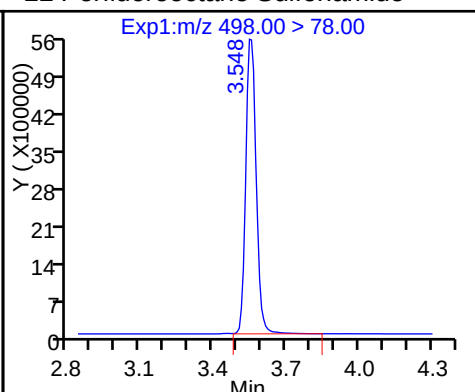
## 20 Perfluorononanoic acid



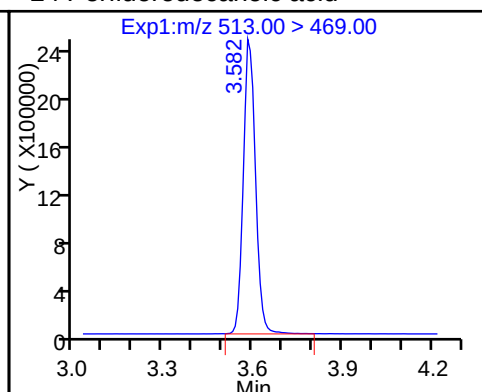
## D 21 13C8 FOSA



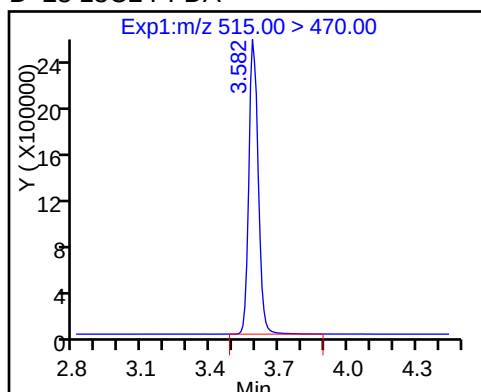
## 22 Perfluorooctane Sulfonamide



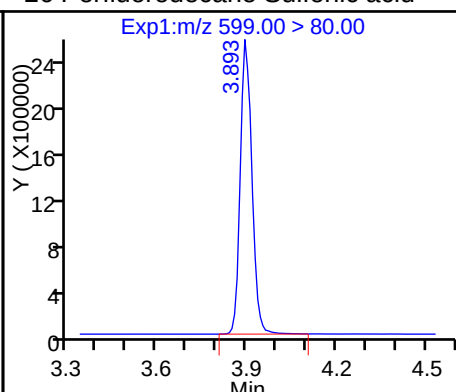
## 24 Perfluorodecanoic acid



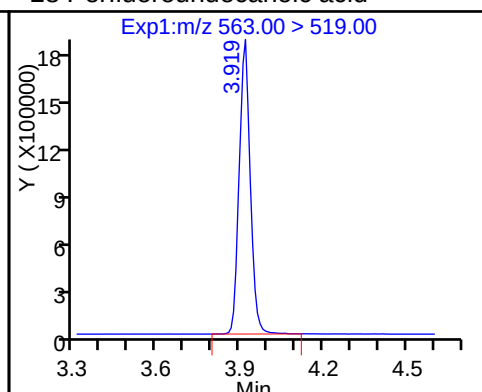
## D 23 13C2 PFDA



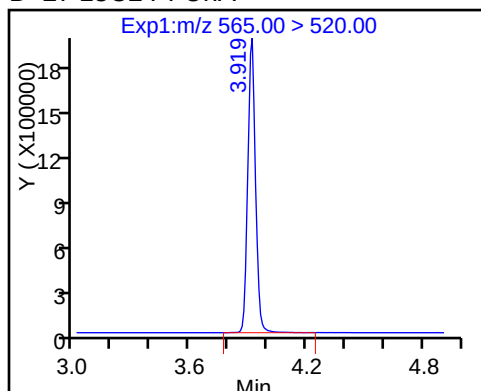
## 26 Perfluorodecane Sulfonic acid



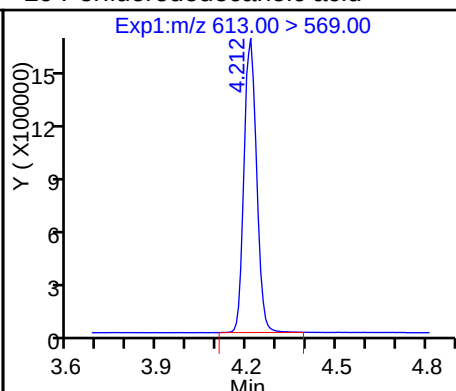
## 28 Perfluoroundecanoic acid



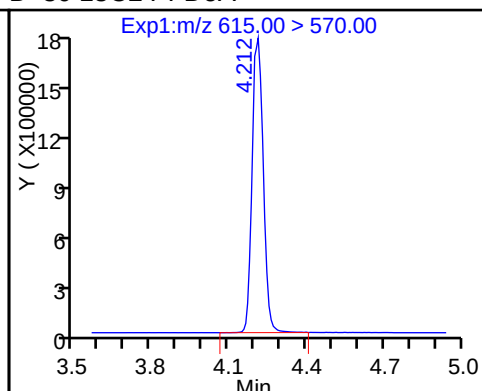
## D 27 13C2 PFUnA



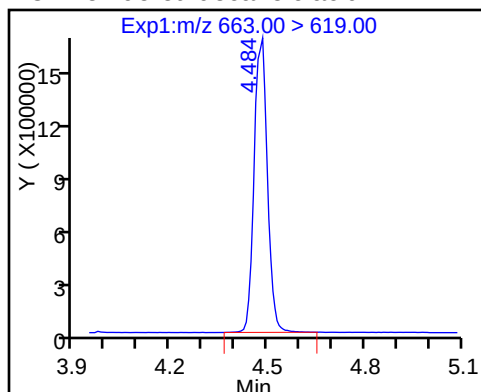
## 29 Perfluorododecanoic acid



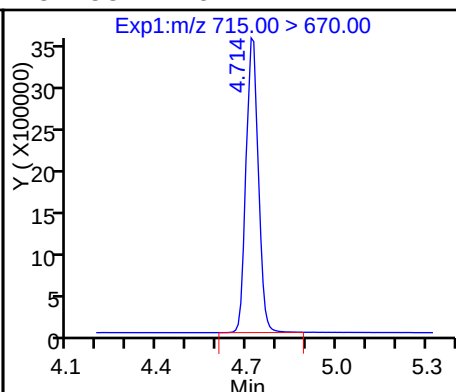
## D 30 13C2 PFDaA



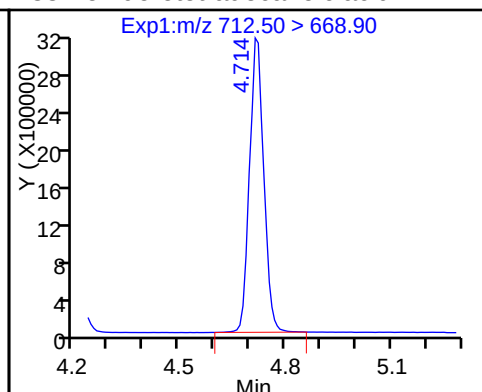
## 31 Perfluorotridecanoic acid



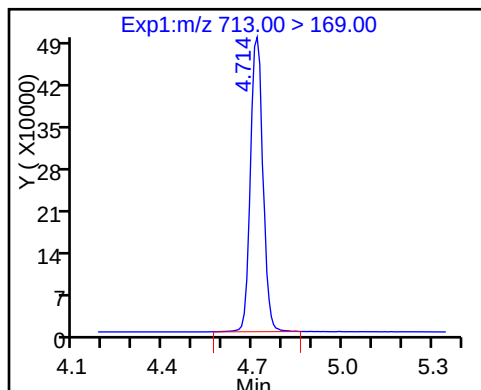
## D 32 13C2-PFTeDA



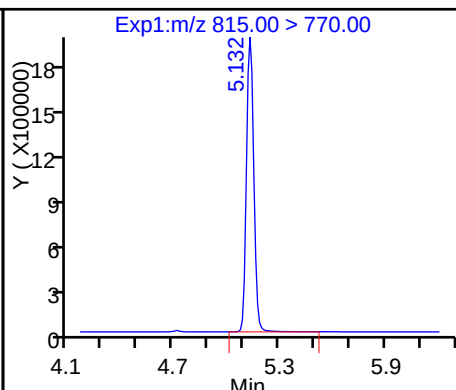
## 33 Perfluorotetradecanoic acid



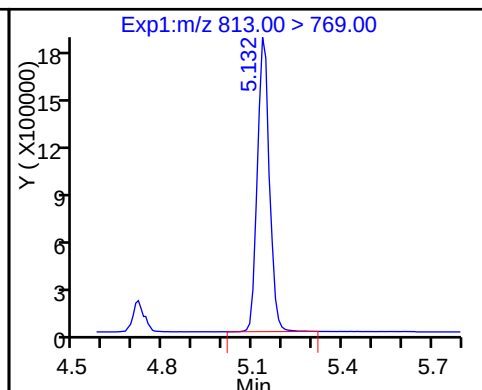
## 33 Perfluorotetradecanoic acid



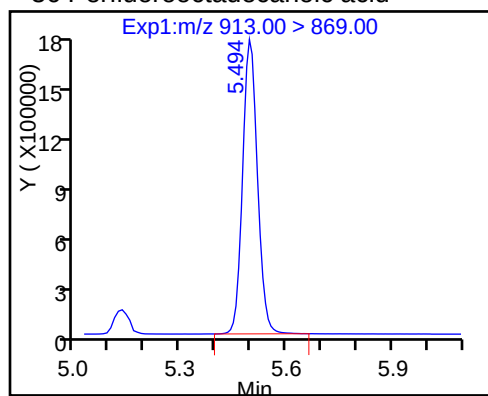
## D 34 13C2-PFHxDA



## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-141054/5 Calibration Date: 12/07/2016 12:33  
 Instrument ID: A8\_N Calib Start Date: 12/03/2016 13:48  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/03/2016 15:33  
 Lab File ID: 07DEC2016A\_003.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) | AveID         | 1.596   | 1.541  |         | 0.854          | 0.884           | -3.4  | 50.0      |
| Perfluorooctanoic acid (PFOA)       | AveID         | 1.072   | 1.129  |         | 1.05           | 1.00            | 5.3   | 50.0      |
| Perfluorooctane Sulfonate (PFOS)    | AveID         | 1.085   | 1.033  |         | 0.883          | 0.928           | -4.8  | 50.0      |
| 13C4 PFBA                           | Ave           | 335829  | 347833 |         | 51.8           | 50.0            | 3.6   | 50.0      |
| 13C5-PFPeA                          | Ave           | 264545  | 268424 |         | 50.7           | 50.0            | 1.5   | 50.0      |
| 13C2 PFHxA                          | Ave           | 237486  | 238270 |         | 50.2           | 50.0            | 0.3   | 50.0      |
| 13C4-PFHpA                          | Ave           | 207413  | 222068 |         | 53.5           | 50.0            | 7.1   | 50.0      |
| 18O2 PFHxS                          | Ave           | 312342  | 329175 |         | 49.8           | 47.3            | 5.4   | 50.0      |
| 13C4 PFOA                           | Ave           | 219258  | 238888 |         | 54.5           | 50.0            | 9.0   | 50.0      |
| 13C4 PFOS                           | Ave           | 246009  | 260205 |         | 50.6           | 47.8            | 5.8   | 50.0      |
| 13C5 PFNA                           | Ave           | 166415  | 172520 |         | 51.8           | 50.0            | 3.7   | 50.0      |
| 13C8 FOSA                           | Ave           | 402279  | 413977 |         | 51.5           | 50.0            | 2.9   | 50.0      |
| 13C2 PFDA                           | Ave           | 157817  | 150832 |         | 47.8           | 50.0            | -4.4  | 50.0      |
| 13C2 PFUnA                          | Ave           | 118762  | 116003 |         | 48.8           | 50.0            | -2.3  | 50.0      |
| 13C2 PFDoA                          | Ave           | 112084  | 106415 |         | 47.5           | 50.0            | -5.1  | 50.0      |
| 13C2-PFTeDA                         | Ave           | 231173  | 215301 |         | 46.6           | 50.0            | -6.9  | 50.0      |
| 13C2-PFHxDA                         | Ave           | 129725  | 113138 |         | 43.6           | 50.0            | -12.8 | 50.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37599.b\07DEC2016A\_003.d  
 Lims ID: CCV L2  
 Client ID:  
 Sample Type: CCVL  
 Inject. Date: 07-Dec-2016 12:33:22 ALS Bottle#: 38 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: RB  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37599.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 07-Dec-2016 16:54:02 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK029

First Level Reviewer: westendorfc

Date: 07-Dec-2016 13:15:35

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.549 | 1.545  | 0.004  |        | 17391644 | 51.8         |                 | 104  | 1100126 |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.549 | 1.553  | -0.004 | 1.000  | 306359   | 1.01         |                 | 101  | 2645    |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.819 | 1.823  | -0.004 | 1.000  | 277648   | 1.02         |                 | 102  | 2023    |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.829 | 1.823  | 0.006  |        | 13421195 | 50.7         |                 | 101  | 972065  |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.858 | 1.861  | -0.003 | 1.000  | 448461   | 0.8536       |                 | 96.6 |         |       |
| 298.90 > 99.00                 | 1.858 | 1.861  | -0.003 | 1.000  | 193951   |              | 2.31(0.00-0.00) |      |         |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.114 | 2.114  | 0.0    |        | 11913489 | 50.2         |                 | 100  | 718986  |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.122 | 2.114  | 0.008  | 1.000  | 229334   | 1.01         |                 | 101  | 8638    |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.460 | 2.458  | 0.002  |        | 11103394 | 53.5         |                 | 107  | 1285501 |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.460 | 2.458  | 0.002  | 1.000  | 226253   | 0.99         |                 | 99.2 | 2493    |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.400 | 2.476  | -0.076 | 1.000  | 360442   | 1.00         |                 | 110  |         |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.469 | 2.476  | -0.007 |        | 15569961 | 49.8         |                 | 105  | 806616  |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.820 | 2.817  | 0.003  | 1.000  | 269704   | 1.05         |                 | 105  | 3455    |       |
| 413.00 > 169.00                | 2.820 | 2.817  | 0.003  | 1.000  | 155122   |              | 1.74(0.90-1.10) |      | 11443   |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.820 | 2.817  | 0.003  |        | 11944378 | 54.5         |                 | 109  | 834384  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |        |       |
| 449.00 > 80.00                   | 2.828 | 2.825  | 0.003  | 1.000  | 283824   | 0.9266       |                 | 97.3 |        |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.196 | 3.195  | 0.001  |        | 12437802 | 50.6         |                 | 106  | 530071 |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                  | 3.196 | 3.195  | 0.001  |        | 8625976  | 51.8         |                 | 104  | 470795 |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 499.00 > 80.00                   | 3.196 | 3.195  | 0.001  | 1.000  | 249466   | 0.8834       |                 | 95.2 | 22889  |       |
| 499.00 > 99.00                   | 3.188 | 3.195  | -0.007 | 0.997  | 55540    |              | 4.49(0.90-1.10) |      | 4147   |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 463.00 > 419.00                  | 3.196 | 3.195  | 0.001  | 1.000  | 170815   | 0.99         |                 | 99.4 | 3586   |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                   | 3.528 | 3.528  | 0.0    |        | 20698866 | 51.5         |                 | 103  | 424878 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                   | 3.528 | 3.528  | 0.0    | 1.000  | 394931   | 1.02         |                 | 102  | 35277  |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                  | 3.554 | 3.553  | 0.001  | 1.000  | 137775   | 0.9510       |                 | 95.1 | 4027   |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                  | 3.554 | 3.562  | -0.008 |        | 7541616  | 47.8         |                 | 95.6 | 223929 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                   | 3.866 | 3.867  | -0.001 | 1.000  | 148657   | 0.8930       |                 | 92.6 |        |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                  | 3.884 | 3.884  | 0.0    |        | 5800144  | 48.8         |                 | 97.7 | 519081 |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                  | 3.884 | 3.884  | 0.0    | 1.000  | 120975   | 0.9785       |                 | 97.9 | 3375   |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 613.00 > 569.00                  | 4.178 | 4.173  | 0.005  | 1.000  | 98011    | 0.9705       |                 | 97.1 | 2182   |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                  | 4.178 | 4.173  | 0.005  |        | 5320731  | 47.5         |                 | 94.9 | 273006 |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                  | 4.443 | 4.452  | -0.009 | 1.000  | 98135    | 0.9709       |                 | 97.1 | 1794   |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |        |       |
| 712.50 > 668.90                  | 4.681 | 4.684  | -0.003 | 1.000  | 198704   | 1.01         |                 | 101  | 759    |       |
| 713.00 > 169.00                  | 4.681 | 4.684  | -0.003 | 1.000  | 32416    |              | 6.13(0.00-0.00) |      | 11795  |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                  | 4.690 | 4.693  | -0.003 |        | 10765061 | 46.6         |                 | 93.1 | 966268 |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 813.00 > 769.00                  | 5.102 | 5.104  | -0.002 | 1.000  | 164498   | 0.8024       |                 | 80.2 | 178    |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |        |       |
| 815.00 > 770.00                  | 5.102 | 5.104  | -0.002 |        | 5656875  | 43.6         |                 | 87.2 | 101566 |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 913.00 > 869.00                  | 5.460 | 5.462  | -0.002 | 1.000  | 101370   | 0.9594       |                 | 95.9 | 121    |       |

## Reagents:

LCPFC-L2\_00022

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37599.b\07DEC2016A\_003.d

Injection Date: 07-Dec-2016 12:33:22

Instrument ID: A8\_N

Lims ID: CCV L2

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 38

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

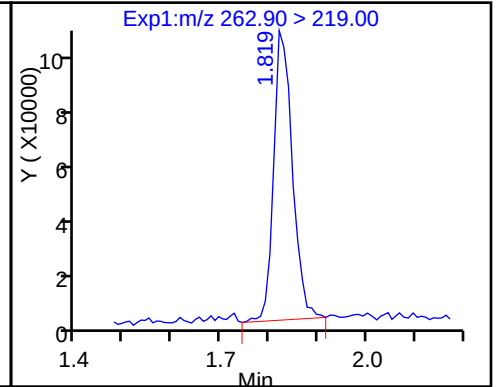
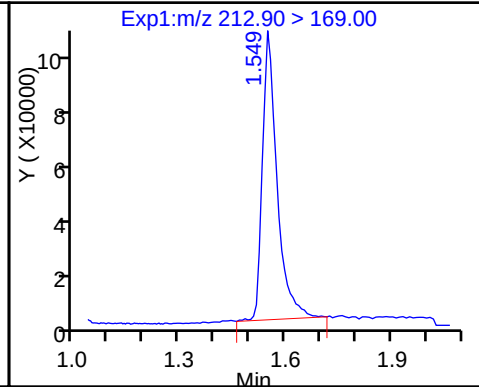
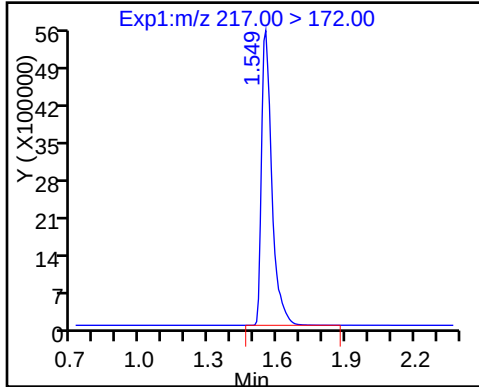
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

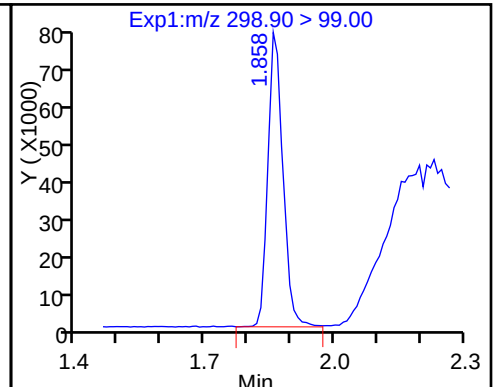
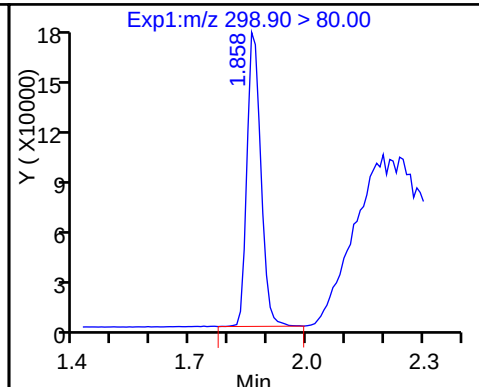
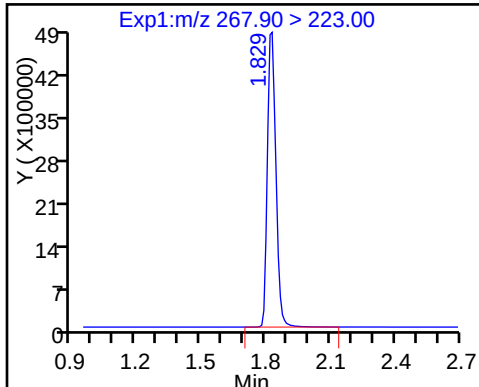
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

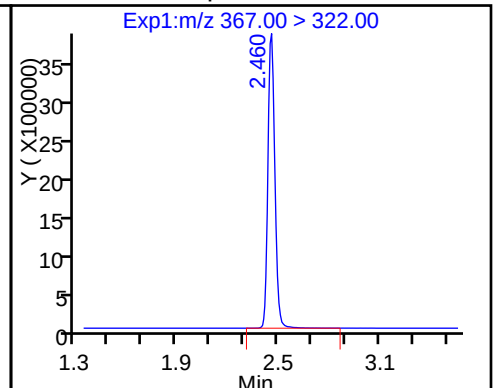
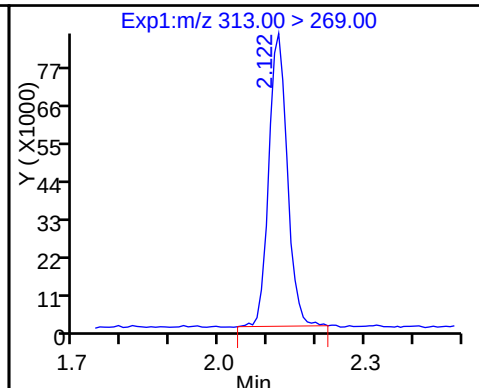
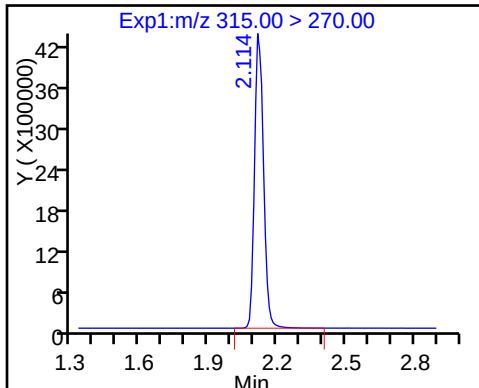
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

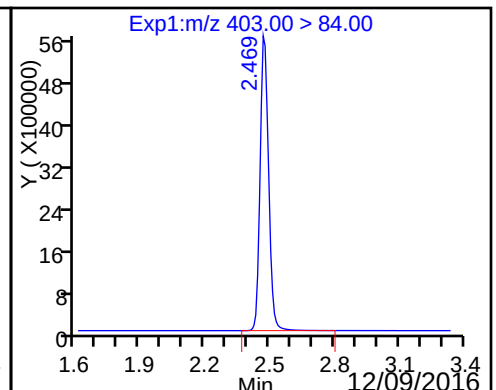
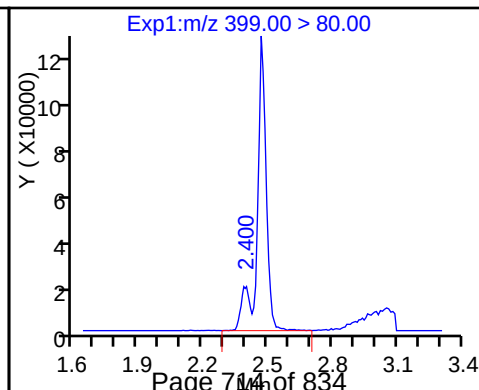
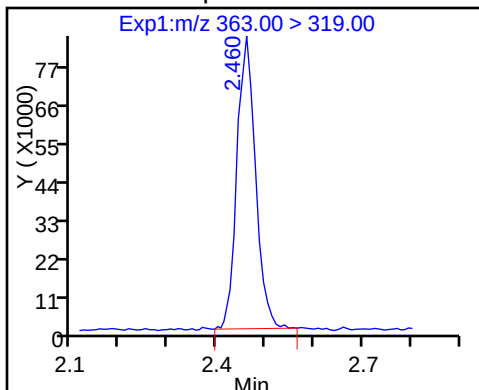
D 11 13C4-PFHpA

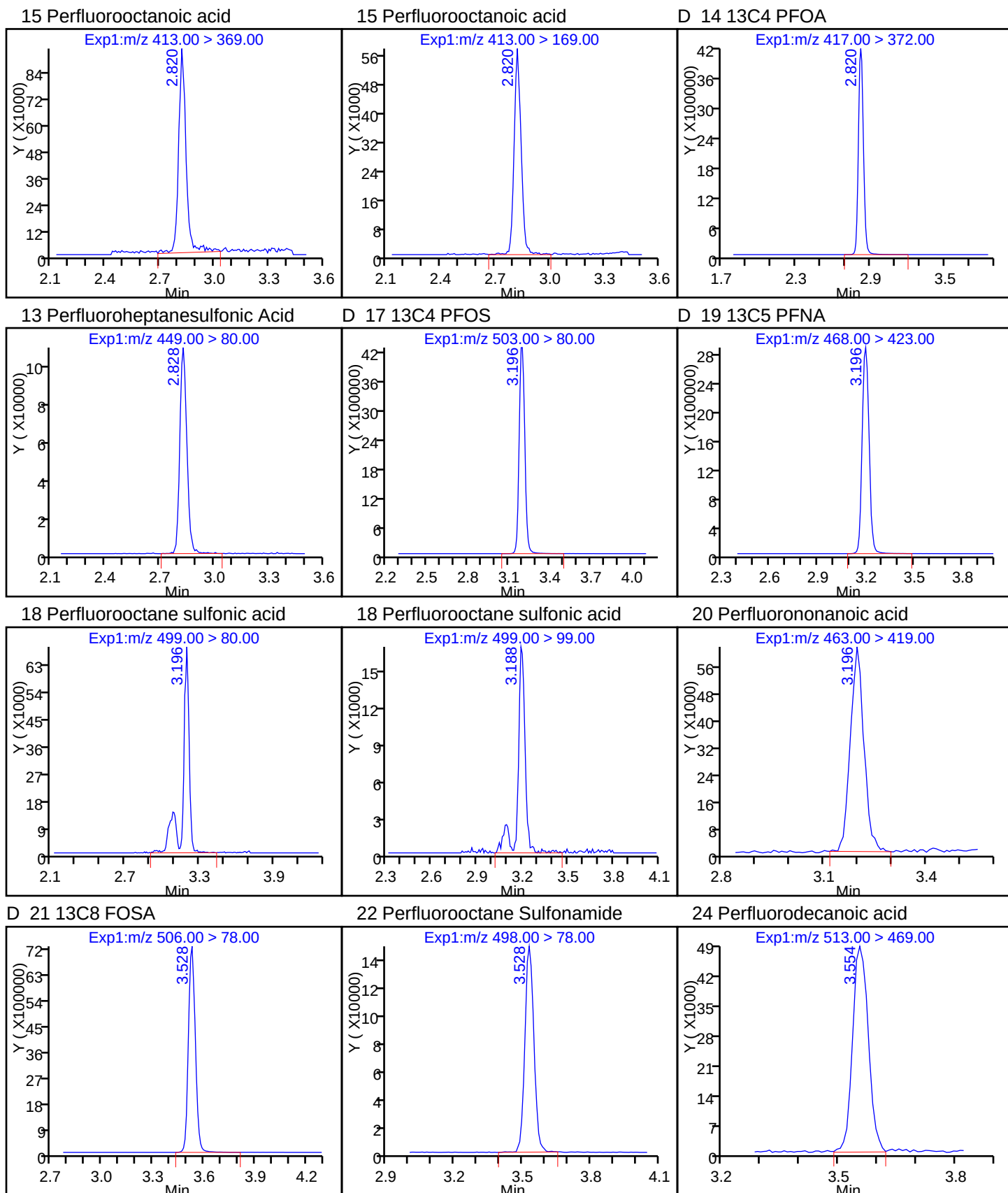


12 Perfluoroheptanoic acid

9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS



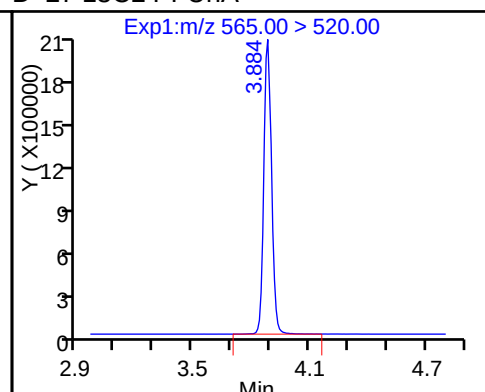
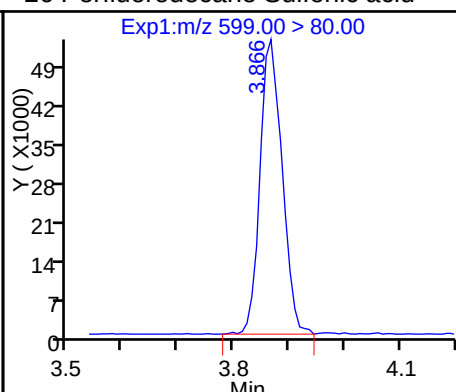
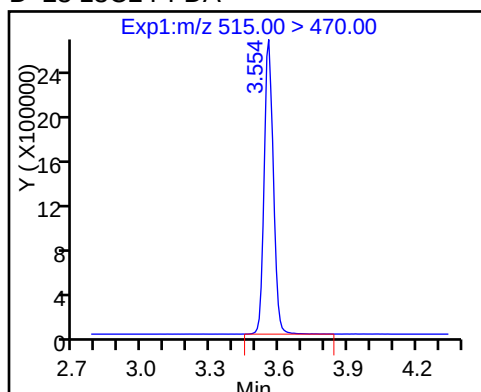




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

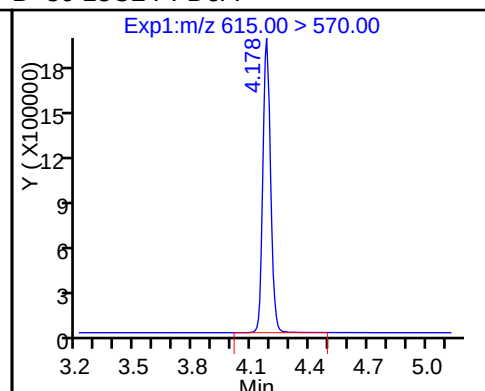
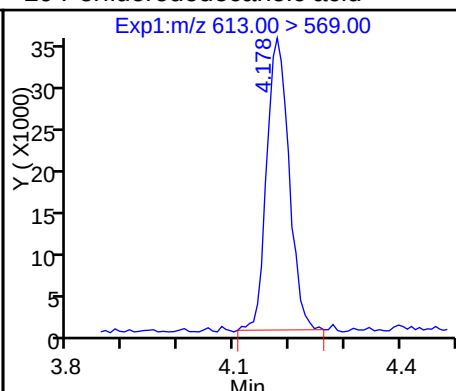
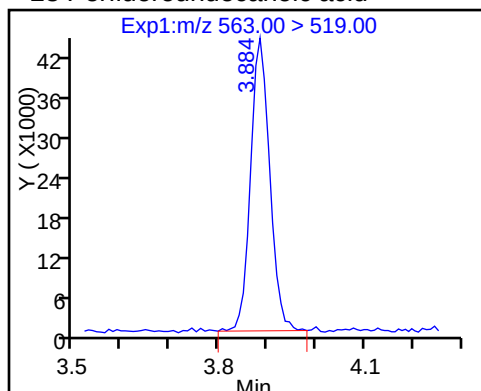
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

29 Perfluorododecanoic acid

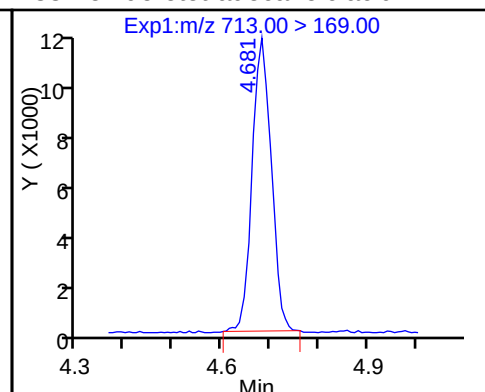
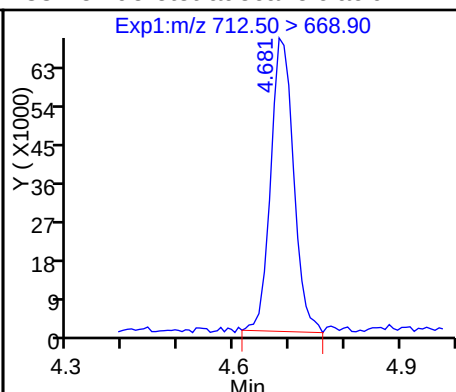
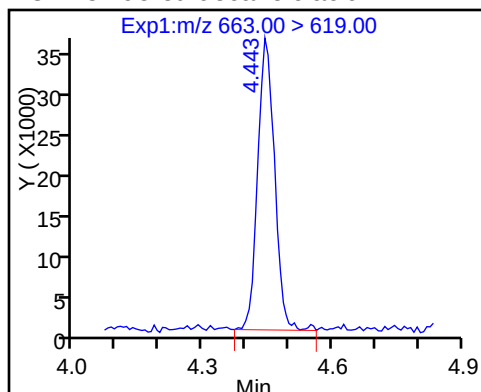
D 30 13C2 PFDaA



31 Perfluorotridecanoic acid

33 Perfluorotetradecanoic acid

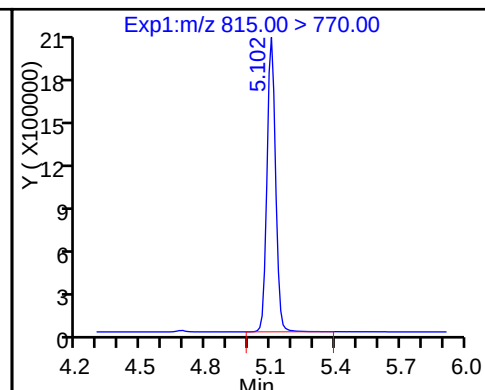
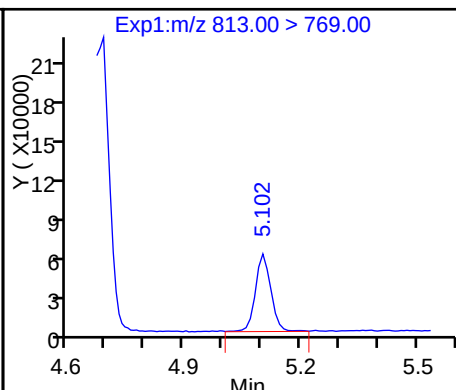
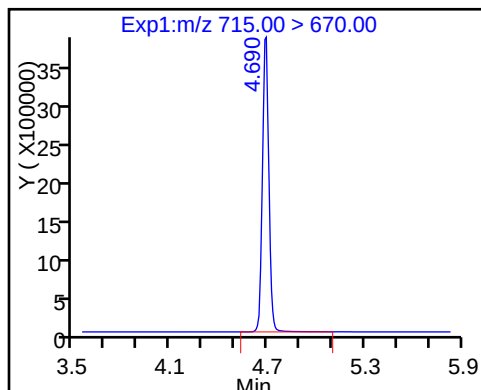
33 Perfluorotetradecanoic acid



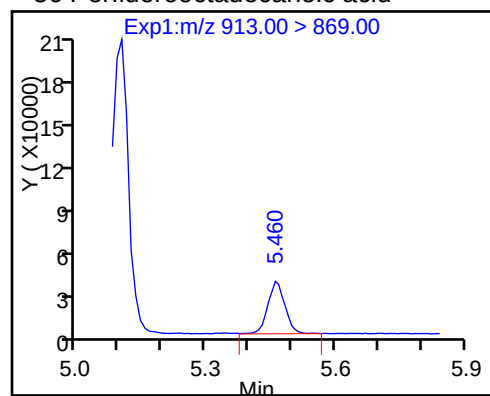
D 32 13C2-PFTeDA

35 Perfluorohexadecanoic acid

D 34 13C2-PFHxDA



## 36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-141062/2 Calibration Date: 12/07/2016 16:40  
 Instrument ID: A8\_N Calib Start Date: 12/03/2016 13:48  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/03/2016 15:33  
 Lab File ID: 07DEC2016B\_002.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) | AveID         | 1.596   | 1.604  |         | 44.4           | 44.2            | 0.5   | 25.0      |
| Perfluorooctanoic acid (PFOA)       | AveID         | 1.072   | 1.030  |         | 48.1           | 50.0            | -3.9  | 25.0      |
| Perfluorooctane Sulfonate (PFOS)    | AveID         | 1.085   | 1.058  |         | 45.2           | 46.4            | -2.5  | 25.0      |
| 13C4 PFBA                           | Ave           | 335829  | 312725 |         | 46.6           | 50.0            | -6.9  | 50.0      |
| 13C5-PFPeA                          | Ave           | 264545  | 238010 |         | 45.0           | 50.0            | -10.0 | 50.0      |
| 13C2 PFHxA                          | Ave           | 237486  | 220594 |         | 46.4           | 50.0            | -7.1  | 50.0      |
| 13C4-PFHpA                          | Ave           | 207413  | 194634 |         | 46.9           | 50.0            | -6.2  | 50.0      |
| 18O2 PFHxS                          | Ave           | 312342  | 293298 |         | 44.4           | 47.3            | -6.1  | 50.0      |
| 13C4 PFOA                           | Ave           | 219258  | 195672 |         | 44.6           | 50.0            | -10.8 | 50.0      |
| 13C4 PFOS                           | Ave           | 246009  | 231701 |         | 45.0           | 47.8            | -5.8  | 50.0      |
| 13C5 PFNA                           | Ave           | 166415  | 147510 |         | 44.3           | 50.0            | -11.4 | 50.0      |
| 13C8 FOSA                           | Ave           | 402279  | 362301 |         | 45.0           | 50.0            | -9.9  | 50.0      |
| 13C2 PFDA                           | Ave           | 157817  | 134346 |         | 42.6           | 50.0            | -14.9 | 50.0      |
| 13C2 PFUnA                          | Ave           | 118762  | 97918  |         | 41.2           | 50.0            | -17.6 | 50.0      |
| 13C2 PFDoA                          | Ave           | 112084  | 94048  |         | 42.0           | 50.0            | -16.1 | 50.0      |
| 13C2-PFTeDA                         | Ave           | 231173  | 194632 |         | 42.1           | 50.0            | -15.8 | 50.0      |
| 13C2-PFHxDA                         | Ave           | 129725  | 101977 |         | 39.3           | 50.0            | -21.4 | 50.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_002.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCV  
 Inject. Date: 07-Dec-2016 16:40:57 ALS Bottle#: 41 Worklist Smp#: 2  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 08-Dec-2016 09:41:52 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 08-Dec-2016 08:54:04

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |        |       |
| 217.00 > 172.00                | 1.534 | 1.534  | 0.0    |        | 15636225 | 46.6         |                 | 93.1 | 828932 |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |        |       |
| 212.90 > 169.00                | 1.542 | 1.542  | 0.0    | 1.000  | 14059236 | 51.4         |                 | 103  | 115968 |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 262.90 > 219.00                | 1.820 | 1.820  | 0.0    | 1.000  | 11828155 | 49.0         |                 | 97.9 | 115349 |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |        |       |
| 267.90 > 223.00                | 1.820 | 1.820  | 0.0    |        | 11900494 | 45.0         |                 | 90.0 | 856965 |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 298.90 > 80.00                 | 1.848 | 1.848  | 0.0    | 1.000  | 20799502 | 44.4         |                 | 101  |        |       |
| 298.90 > 99.00                 | 1.848 | 1.848  | 0.0    | 1.000  | 9409891  |              | 2.21(0.00-0.00) |      |        |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |        |       |
| 313.00 > 269.00                | 2.109 | 2.109  | 0.0    | 1.000  | 10356594 | 49.3         |                 | 98.5 | 312643 |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |        |       |
| 315.00 > 270.00                | 2.109 | 2.109  | 0.0    |        | 11029718 | 46.4         |                 | 92.9 | 661333 |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 399.00 > 80.00                 | 2.460 | 2.460  | 0.0    | 1.000  | 13971121 | 43.4         |                 | 95.4 |        |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 363.00 > 319.00                | 2.442 | 2.442  | 0.0    | 1.000  | 9773894  | 48.9         |                 | 97.8 | 121575 |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |        |       |
| 367.00 > 322.00                | 2.442 | 2.442  | 0.0    |        | 9731721  | 46.9         |                 | 93.8 | 578610 |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |        |       |
| 403.00 > 84.00                 | 2.460 | 2.460  | 0.0    |        | 13872989 | 44.4         |                 | 93.9 | 620057 |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 413.00 > 369.00                | 2.802 | 2.802  | 0.0    | 1.000  | 10081606 | 48.1         |                 | 96.1 | 359116 |       |
| 413.00 > 169.00                | 2.802 | 2.802  | 0.0    | 1.000  | 6185316  |              | 1.63(0.90-1.10) |      | 319378 |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |        |       |
| 417.00 > 372.00                | 2.802 | 2.802  | 0.0    |        | 9783577  | 44.6         |                 | 89.2 | 488275 |       |

| Signal                           | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 13 Perfluoroheptanesulfonic Acid | 449.00 > 80.00  | 2.810     | 2.810     | 0.0       | 1.000    | 12791414        | 46.9            | 98.5 |        |       |
| 18 Perfluorooctane sulfonic acid | 499.00 > 80.00  | 3.061     | 3.061     | 0.0       | 1.000    | 11372952        | 45.2            | 97.5 | 335166 |       |
|                                  | 499.00 > 99.00  | 3.169     | 3.061     | 0.108     | 1.035    | 2453380         | 4.64(0.90-1.10) |      | 368490 |       |
| D 17 13C4 PFOS                   | 503.00 > 80.00  | 3.169     | 3.169     | 0.0       |          | 11075310        | 45.0            | 94.2 | 277945 |       |
| D 19 13C5 PFNA                   | 468.00 > 423.00 | 3.169     | 3.169     | 0.0       |          | 7375490         | 44.3            | 88.6 | 411723 |       |
| 20 Perfluorononanoic acid        | 463.00 > 419.00 | 3.177     | 3.177     | 0.0       | 1.000    | 7589604         | 51.6            | 103  | 141598 |       |
| D 21 13C8 FOSA                   | 506.00 > 78.00  | 3.510     | 3.510     | 0.0       |          | 18115044        | 45.0            | 90.1 | 375780 |       |
| 22 Perfluorooctane Sulfonamide   | 498.00 > 78.00  | 3.510     | 3.510     | 0.0       | 1.000    | 16706372        | 49.4            | 98.7 | 452673 |       |
| D 23 13C2 PFDA                   | 515.00 > 470.00 | 3.535     | 3.535     | 0.0       |          | 6717315         | 42.6            | 85.1 | 273157 |       |
| 24 Perfluorodecanoic acid        | 513.00 > 469.00 | 3.535     | 3.535     | 0.0       | 1.000    | 6363067         | 49.3            | 98.6 | 193170 |       |
| 26 Perfluorodecane Sulfonic acid | 599.00 > 80.00  | 3.846     | 3.846     | 0.0       | 1.000    | 6864650         | 46.3            | 96.1 |        |       |
| D 27 13C2 PFUnA                  | 565.00 > 520.00 | 3.863     | 3.863     | 0.0       |          | 4895890         | 41.2            | 82.4 | 448575 |       |
| 28 Perfluoroundecanoic acid      | 563.00 > 519.00 | 3.863     | 3.863     | 0.0       | 1.000    | 4698388         | 45.0            | 90.0 | 113052 |       |
| 29 Perfluorododecanoic acid      | 613.00 > 569.00 | 4.153     | 4.153     | 0.0       | 1.000    | 4298857         | 48.2            | 96.3 | 84147  |       |
| D 30 13C2 PFDaA                  | 615.00 > 570.00 | 4.153     | 4.153     | 0.0       |          | 4702404         | 42.0            | 83.9 | 230400 |       |
| 31 Perfluorotridecanoic acid     | 663.00 > 619.00 | 4.418     | 4.418     | 0.0       | 1.000    | 4305616         | 48.2            | 96.4 | 70801  |       |
| 33 Perfluorotetradecanoic acid   | 712.50 > 668.90 | 4.661     | 4.661     | 0.0       | 1.000    | 8283755         | 47.5            | 95.0 | 100455 |       |
|                                  | 713.00 > 169.00 | 4.661     | 4.661     | 0.0       | 1.000    | 1285114         | 6.45(0.00-0.00) |      | 117470 |       |
| D 32 13C2-PFTeDA                 | 715.00 > 670.00 | 4.661     | 4.661     | 0.0       |          | 9731605         | 42.1            | 84.2 | 838305 |       |
| 35 Perfluorohexadecanoic acid    | 813.00 > 769.00 | 5.079     | 5.079     | 0.0       | 1.000    | 4650460         | 49.0            | 98.1 | 5313   |       |
| D 34 13C2-PFHxDA                 | 815.00 > 770.00 | 5.079     | 5.079     | 0.0       |          | 5098842         | 39.3            | 78.6 | 99009  |       |
| 36 Perfluorooctadecanoic acid    | 913.00 > 869.00 | 5.436     | 5.436     | 0.0       | 1.000    | 4554958         | 48.8            | 97.6 | 6248   |       |

## Reagents:

LCPFC-L5\_00020

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_002.d

Injection Date: 07-Dec-2016 16:40:57

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

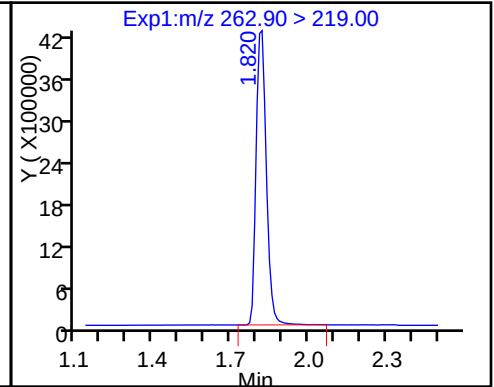
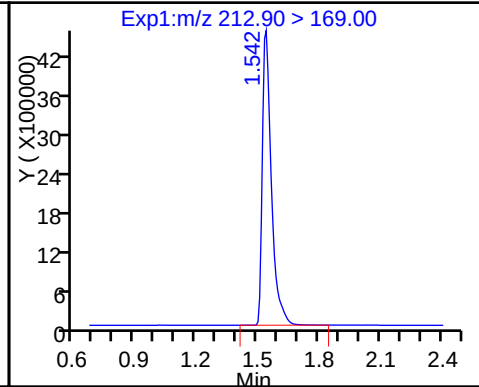
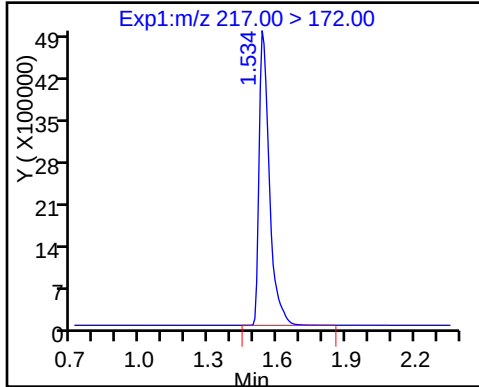
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

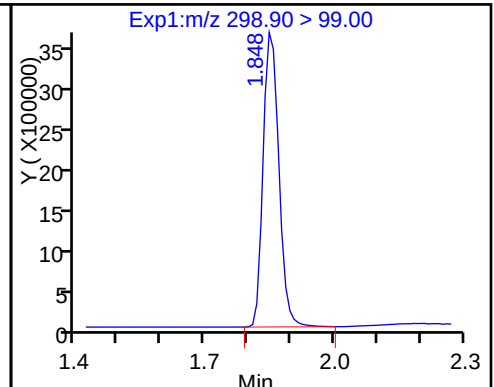
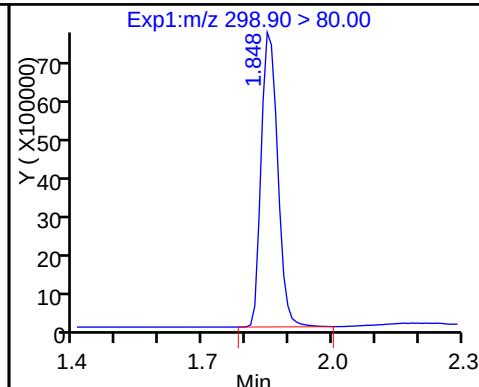
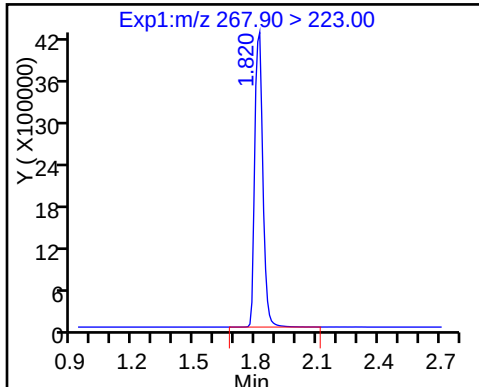
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

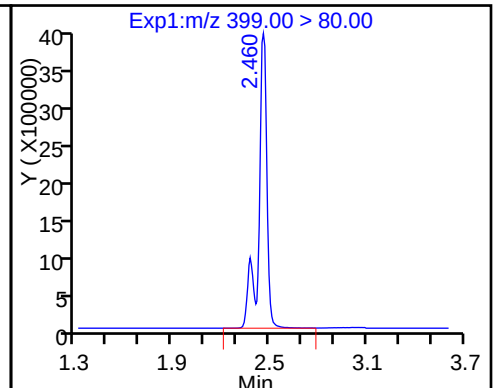
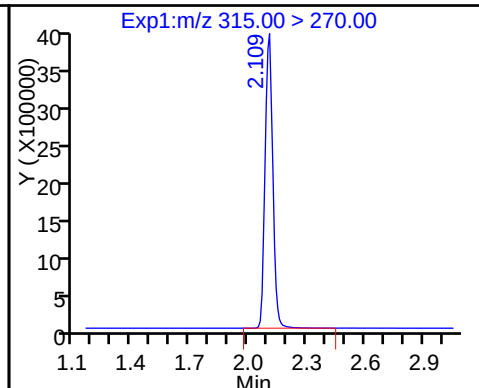
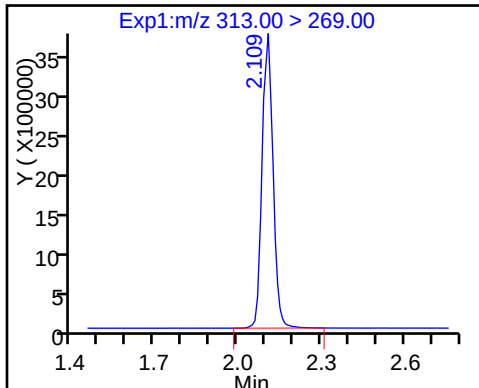
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

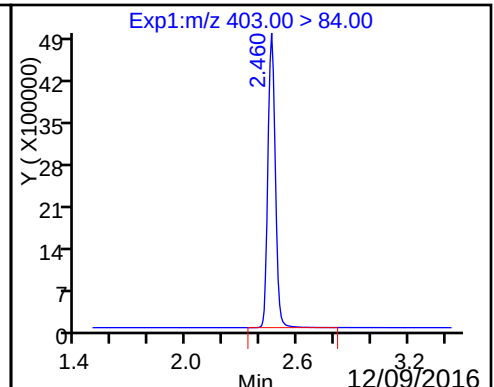
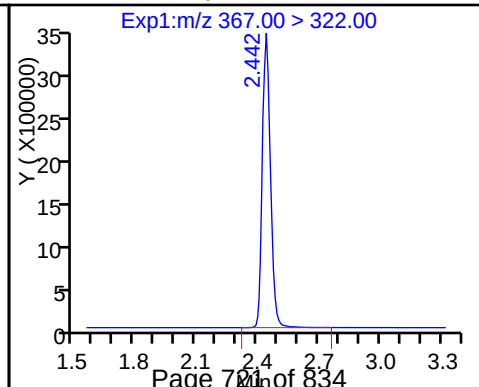
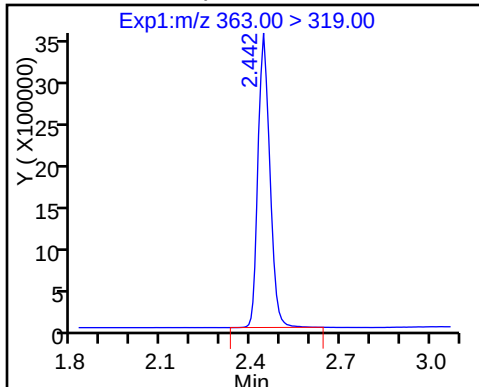
9 Perfluorohexanesulfonic acid

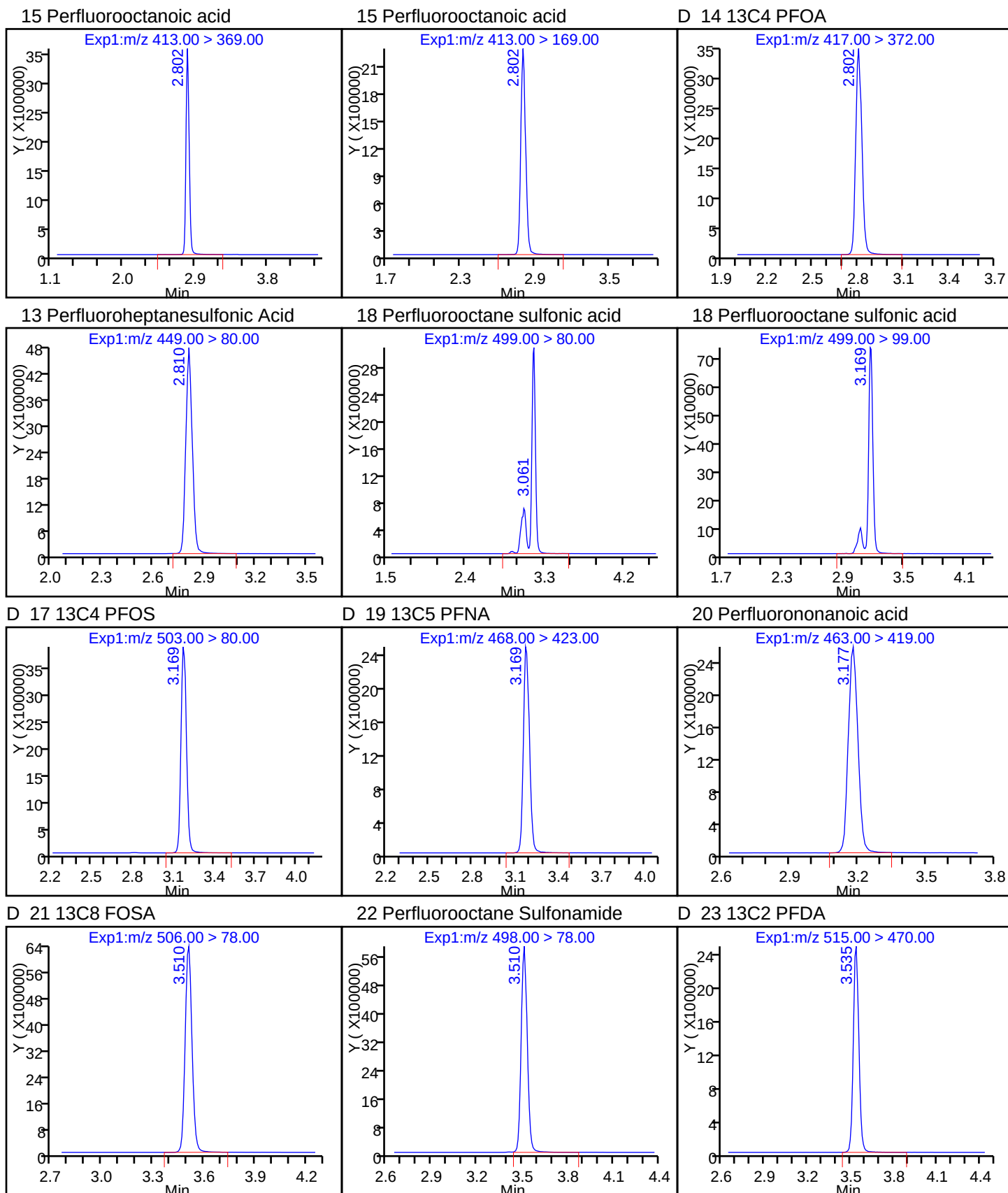


12 Perfluoroheptanoic acid

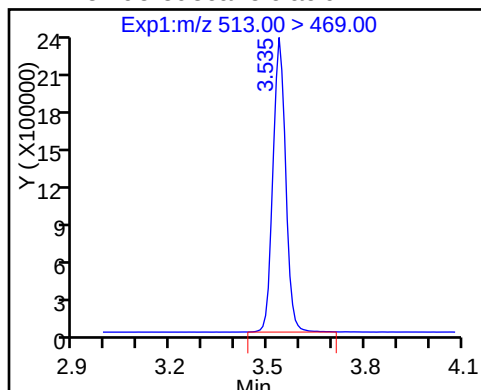
D 11 13C4-PFHpA

D 10 18O2 PFHxS

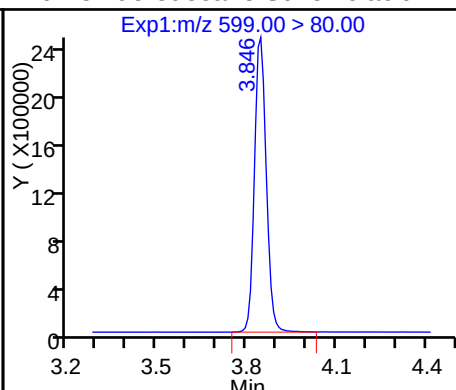




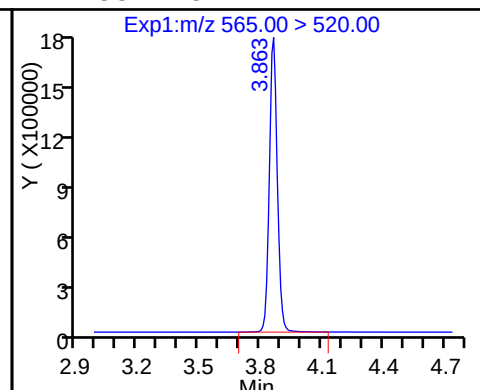
24 Perfluorodecanoic acid



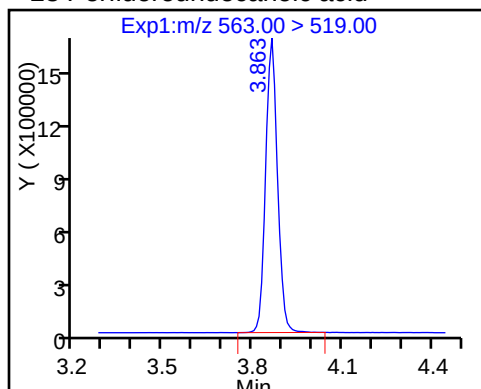
26 Perfluorodecane Sulfonic acid



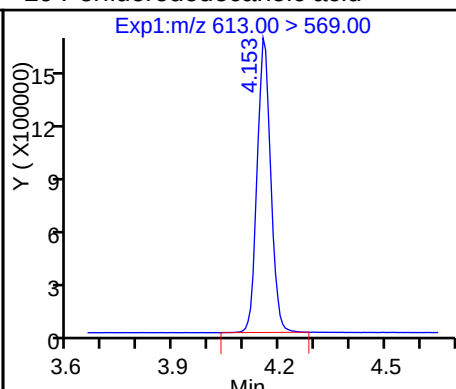
D 27 13C2 PFUnA



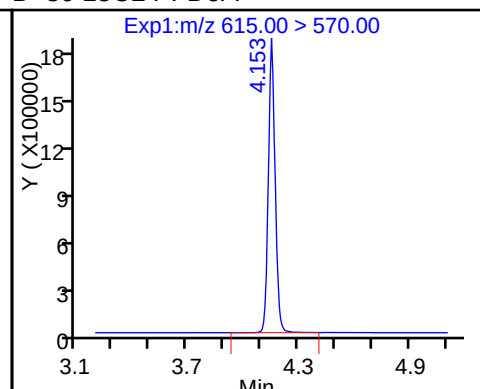
28 Perfluoroundecanoic acid



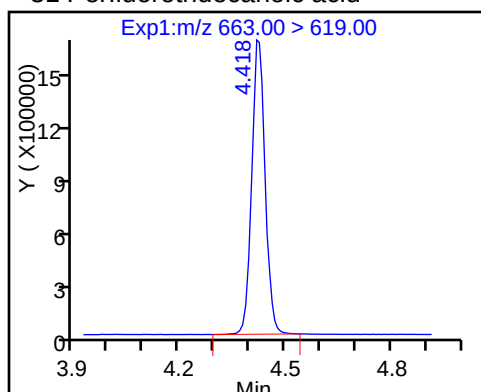
29 Perfluorododecanoic acid



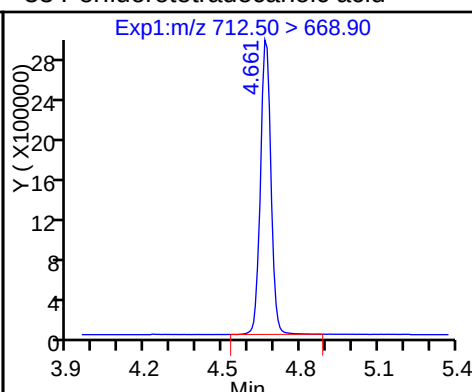
D 30 13C2 PFDaA



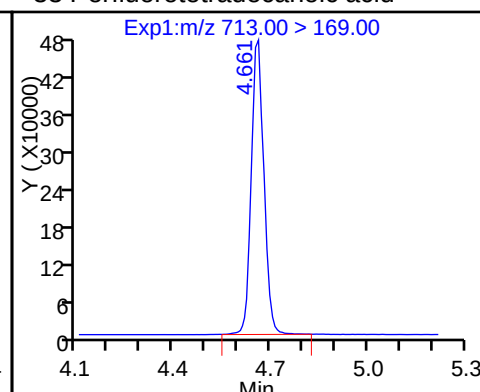
31 Perfluorotridecanoic acid



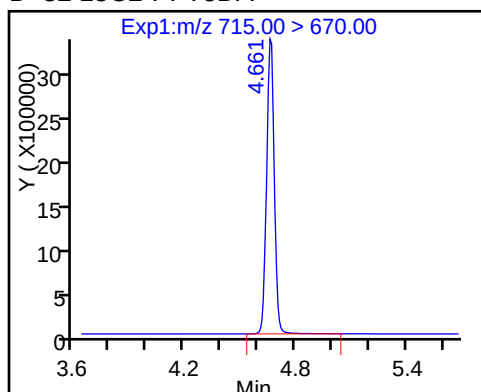
33 Perfluorotetradecanoic acid



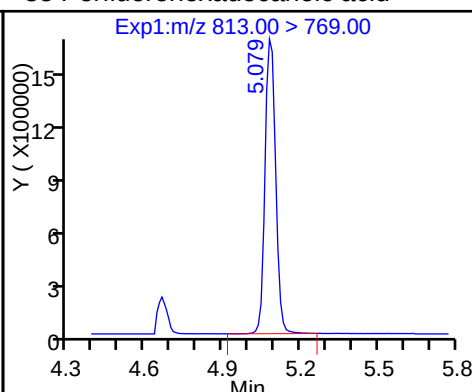
33 Perfluorotetradecanoic acid



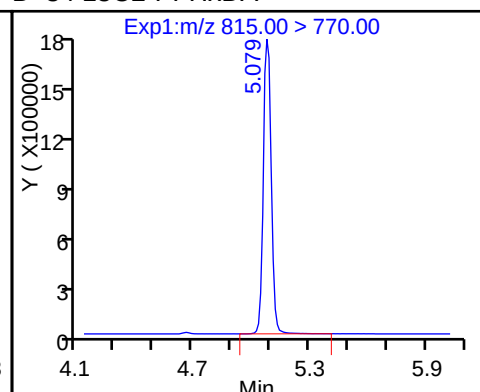
D 32 13C2-PFTeDA



35 Perfluorohexadecanoic acid

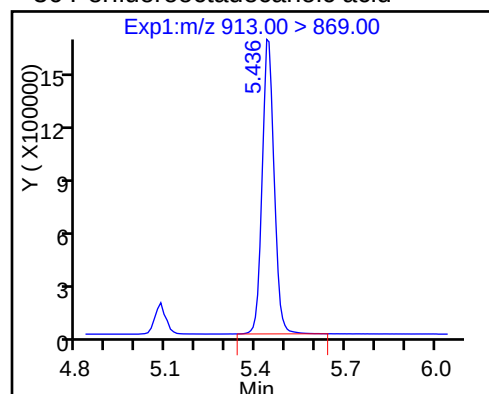


D 34 13C2-PFHxDA





## 36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-141062/12 Calibration Date: 12/07/2016 17:55  
 Instrument ID: A8\_N Calib Start Date: 12/03/2016 13:48  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/03/2016 15:33  
 Lab File ID: 07DEC2016B\_012.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) | AveID         | 1.596   | 1.698  |         | 18.8           | 17.7            | 6.4   | 25.0      |
| Perfluorooctanoic acid (PFOA)       | AveID         | 1.072   | 1.112  |         | 20.7           | 20.0            | 3.7   | 25.0      |
| Perfluorooctane Sulfonate (PFOS)    | AveID         | 1.085   | 1.115  |         | 19.1           | 18.6            | 2.7   | 25.0      |
| 13C4 PFBA                           | Ave           | 335829  | 345256 |         | 51.4           | 50.0            | 2.8   | 50.0      |
| 13C5-PFPeA                          | Ave           | 264545  | 263301 |         | 49.8           | 50.0            | -0.5  | 50.0      |
| 13C2 PFHxA                          | Ave           | 237486  | 242078 |         | 51.0           | 50.0            | 1.9   | 50.0      |
| 13C4-PFHpA                          | Ave           | 207413  | 217275 |         | 52.4           | 50.0            | 4.8   | 50.0      |
| 18O2 PFHxS                          | Ave           | 312342  | 327905 |         | 49.7           | 47.3            | 5.0   | 50.0      |
| 13C4 PFOA                           | Ave           | 219258  | 222317 |         | 50.7           | 50.0            | 1.4   | 50.0      |
| 13C4 PFOS                           | Ave           | 246009  | 251697 |         | 48.9           | 47.8            | 2.3   | 50.0      |
| 13C5 PFNA                           | Ave           | 166415  | 166606 |         | 50.1           | 50.0            | 0.1   | 50.0      |
| 13C8 FOSA                           | Ave           | 402279  | 394496 |         | 49.0           | 50.0            | -1.9  | 50.0      |
| 13C2 PFDA                           | Ave           | 157817  | 148417 |         | 47.0           | 50.0            | -6.0  | 50.0      |
| 13C2 PFUnA                          | Ave           | 118762  | 108618 |         | 45.7           | 50.0            | -8.5  | 50.0      |
| 13C2 PFDoA                          | Ave           | 112084  | 101693 |         | 45.4           | 50.0            | -9.3  | 50.0      |
| 13C2-PFTeDA                         | Ave           | 231173  | 205294 |         | 44.4           | 50.0            | -11.2 | 50.0      |
| 13C2-PFHxDA                         | Ave           | 129725  | 108113 |         | 41.7           | 50.0            | -16.7 | 50.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_012.d  
 Lims ID: CCV L4  
 Client ID:  
 Sample Type: CCV  
 Inject. Date: 07-Dec-2016 17:55:57 ALS Bottle#: 40 Worklist Smp#: 12  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L4  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Sublist: chrom-A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 08-Dec-2016 09:42:07 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d

Column 1 : Det: EXP1

Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 08-Dec-2016 08:56:09

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.541 | 1.534  | 0.007  |        | 17262793 | 51.4         |                 | 103  | 1403249 |       |
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.541 | 1.542  | -0.001 | 1.000  | 6671816  | 22.1         |                 | 111  | 55460   |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.819 | 1.820  | -0.001 | 1.000  | 5599281  | 21.0         |                 | 105  | 50089   |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.819 | 1.820  | -0.001 |        | 13165063 | 49.8         |                 | 99.5 | 1226213 |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.848 | 1.848  | 0.0    | 1.000  | 9846174  | 18.8         |                 | 106  |         |       |
| 298.90 > 99.00                 | 1.848 | 1.848  | 0.0    | 1.000  | 4245854  |              | 2.32(0.00-0.00) |      |         |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.103 | 2.109  | -0.006 | 1.000  | 4846653  | 21.0         |                 | 105  | 140191  |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.103 | 2.109  | -0.006 |        | 12103899 | 51.0         |                 | 102  | 880831  |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.443 | 2.442  | 0.001  | 1.000  | 4714738  | 21.1         |                 | 106  | 56032   |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.443 | 2.442  | 0.001  |        | 10863748 | 52.4         |                 | 105  | 1271131 |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.460 | 2.460  | 0.0    | 1.000  | 6438052  | 17.9         |                 | 98.3 |         |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.451 | 2.460  | -0.009 |        | 15509904 | 49.7         |                 | 105  | 892994  |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.800 | 2.802  | -0.002 | 1.000  | 4943937  | 20.7         |                 | 104  | 83959   |       |
| 413.00 > 169.00                | 2.800 | 2.802  | -0.002 | 1.000  | 2964769  |              | 1.67(0.90-1.10) |      | 130631  |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.800 | 2.802  | -0.002 |        | 11115843 | 50.7         |                 | 101  | 984380  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |        |       |
| 449.00 > 80.00                   | 2.808 | 2.810  | -0.002 | 1.000  | 6068100  | 20.5         |                 | 108  |        |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 499.00 > 80.00                   | 3.169 | 3.061  | 0.108  | 1.000  | 5207884  | 19.1         |                 | 103  | 3820   |       |
| 499.00 > 99.00                   | 3.177 | 3.061  | 0.116  | 1.003  | 1137641  |              | 4.58(0.90-1.10) |      | 89754  |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                   | 3.177 | 3.169  | 0.008  |        | 12031128 | 48.9         |                 | 102  | 323326 |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                  | 3.177 | 3.169  | 0.008  |        | 8330295  | 50.1         |                 | 100  | 572933 |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 463.00 > 419.00                  | 3.169 | 3.177  | -0.008 | 1.000  | 3514127  | 21.2         |                 | 106  | 56920  |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                   | 3.501 | 3.510  | -0.009 |        | 19724818 | 49.0         |                 | 98.1 | 836754 |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                   | 3.510 | 3.510  | 0.0    | 1.000  | 8004148  | 21.7         |                 | 109  | 372606 |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                  | 3.535 | 3.535  | 0.0    |        | 7420835  | 47.0         |                 | 94.0 | 239982 |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                  | 3.535 | 3.535  | 0.0    | 1.000  | 2986371  | 20.9         |                 | 105  | 106578 |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                   | 3.846 | 3.846  | 0.0    | 1.000  | 3209681  | 19.9         |                 | 103  |        |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                  | 3.863 | 3.863  | 0.0    |        | 5430907  | 45.7         |                 | 91.5 | 494854 |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                  | 3.863 | 3.863  | 0.0    | 1.000  | 2283019  | 19.7         |                 | 98.6 | 64746  |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |        |       |
| 613.00 > 569.00                  | 4.153 | 4.153  | 0.0    | 1.000  | 1982079  | 20.5         |                 | 103  | 54971  |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                  | 4.153 | 4.153  | 0.0    |        | 5084646  | 45.4         |                 | 90.7 | 159279 |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                  | 4.418 | 4.418  | 0.0    | 1.000  | 1943594  | 20.1         |                 | 101  | 37818  |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |        |       |
| 712.50 > 668.90                  | 4.661 | 4.661  | 0.0    | 1.000  | 3732526  | 19.8         |                 | 99.0 | 47957  |       |
| 713.00 > 169.00                  | 4.652 | 4.661  | -0.009 | 0.998  | 582313   |              | 6.41(0.00-0.00) |      | 72018  |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                  | 4.661 | 4.661  | 0.0    |        | 10264724 | 44.4         |                 | 88.8 | 553416 |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 813.00 > 769.00                  | 5.079 | 5.079  | 0.0    | 1.000  | 2098560  | 20.0         |                 | 100  | 2398   |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |        |       |
| 815.00 > 770.00                  | 5.079 | 5.079  | 0.0    |        | 5405634  | 41.7         |                 | 83.3 | 103268 |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |        |       |
| 913.00 > 869.00                  | 5.437 | 5.436  | 0.001  | 1.000  | 1660459  | 16.4         |                 | 82.2 | 2247   |       |

## Reagents:

LCPFC-L4\_00023

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161207-37602.b\07DEC2016B\_012.d

Injection Date: 07-Dec-2016 17:55:57

Instrument ID: A8\_N

Lims ID: CCV L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

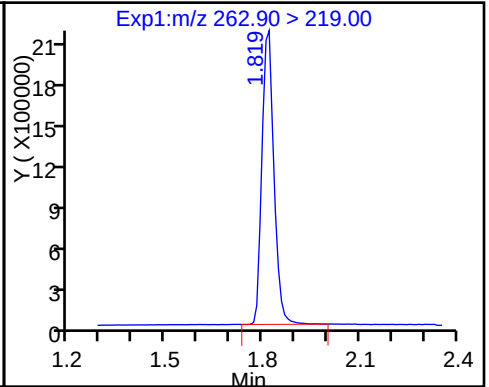
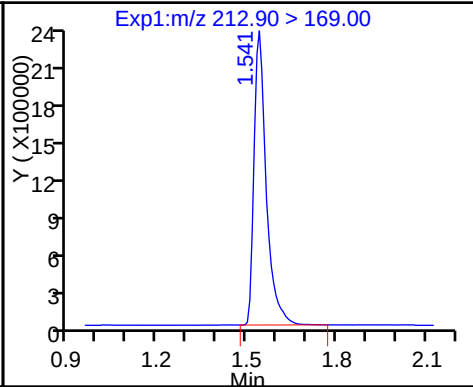
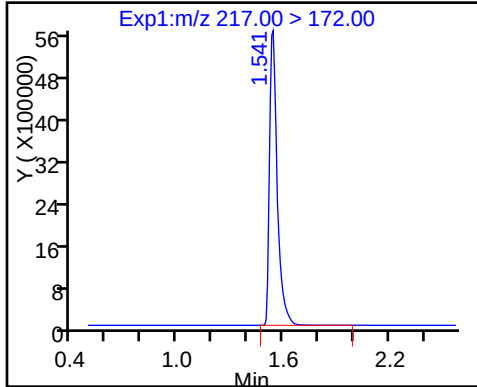
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

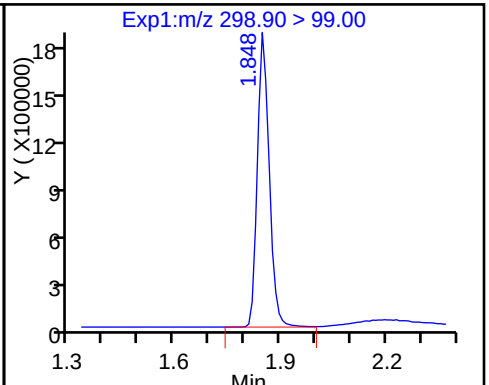
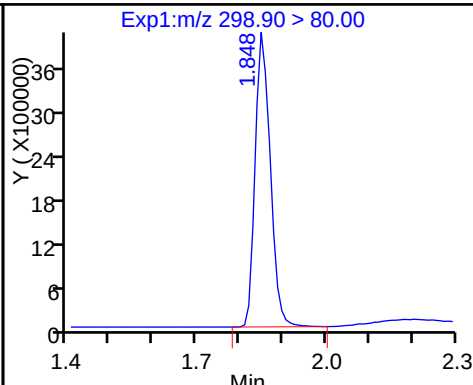
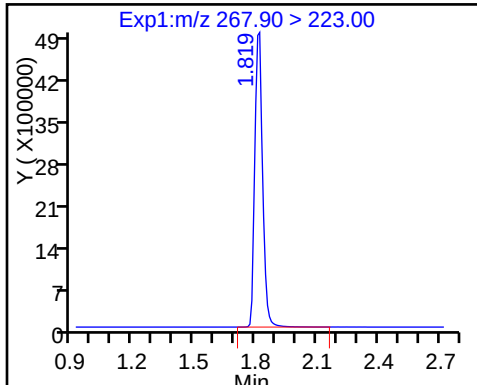
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

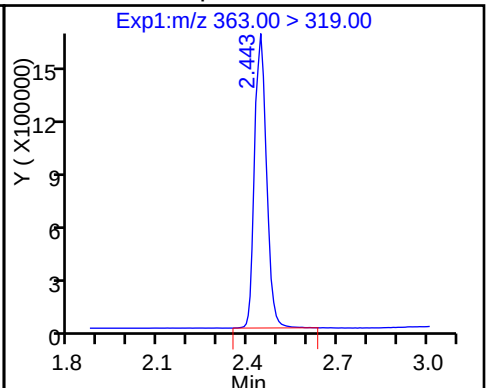
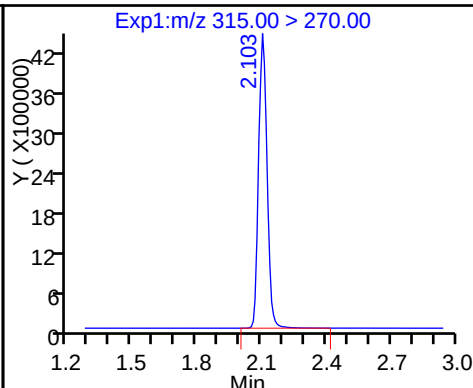
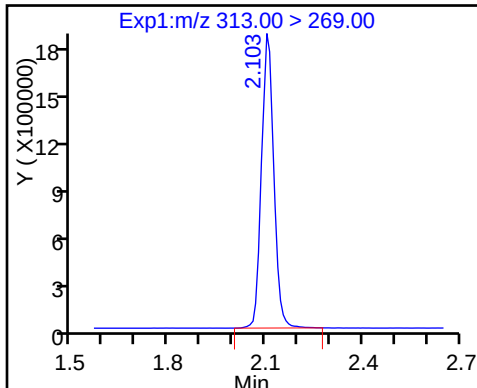
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

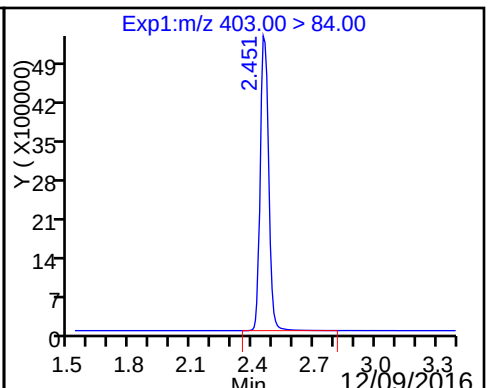
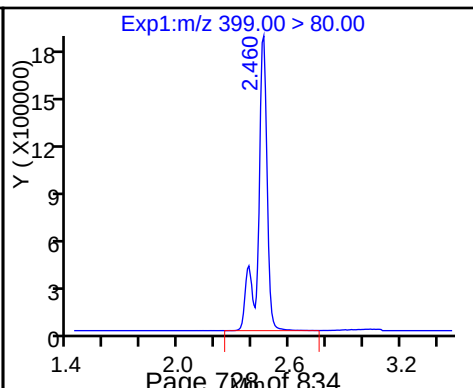
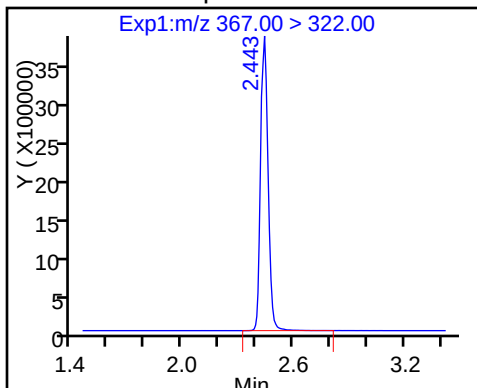
12 Perfluoroheptanoic acid

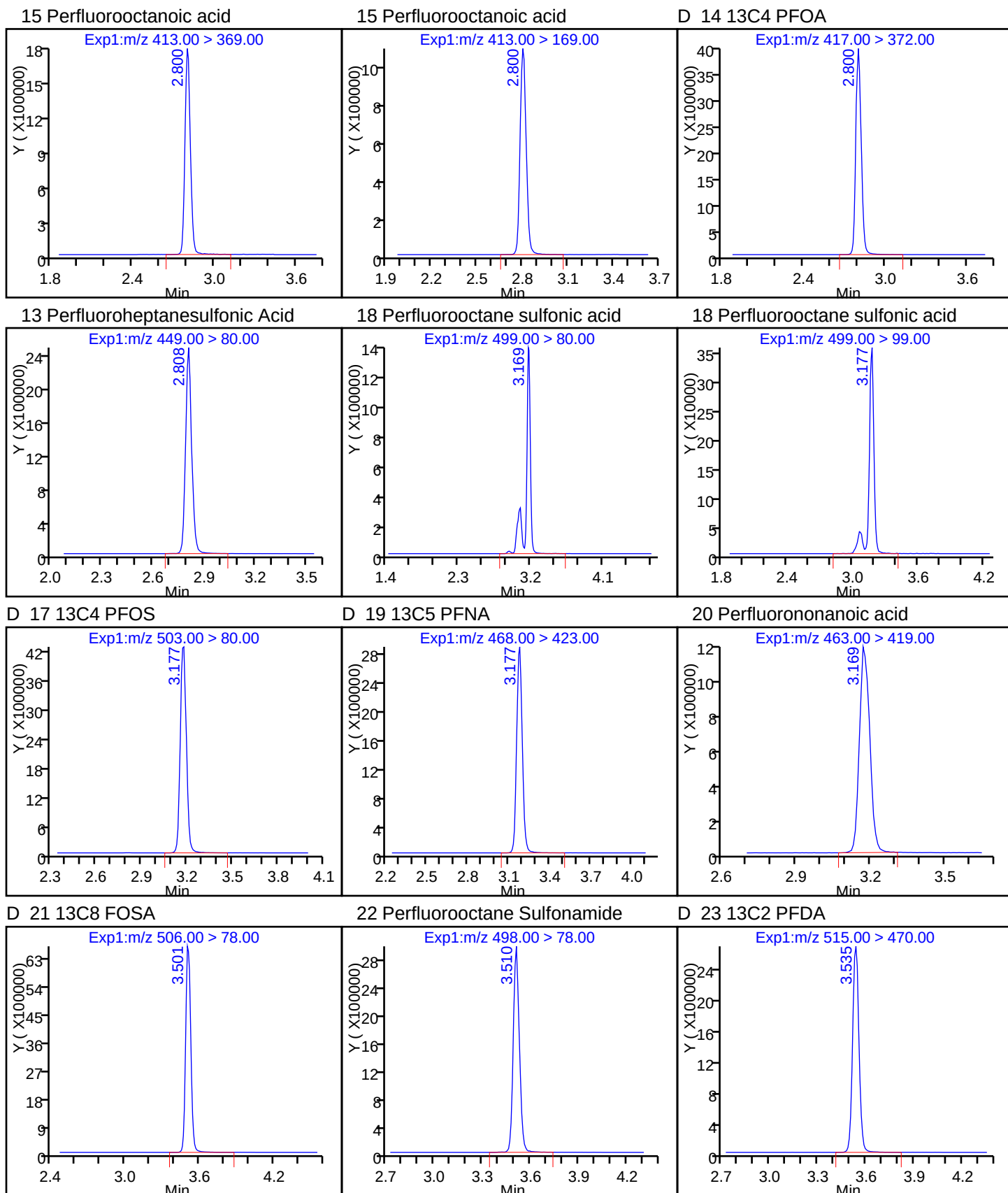


D 11 13C4-PFHpA

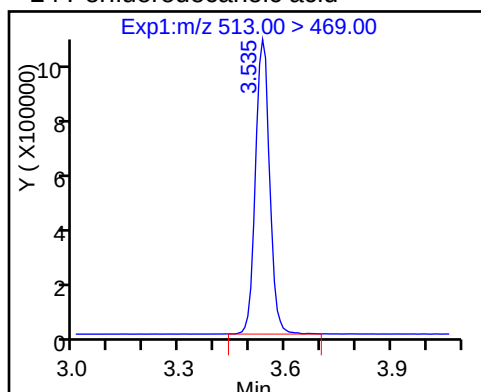
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS

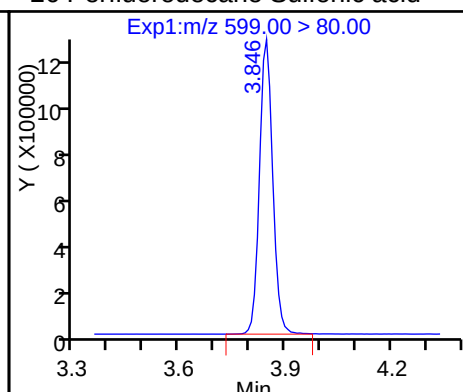




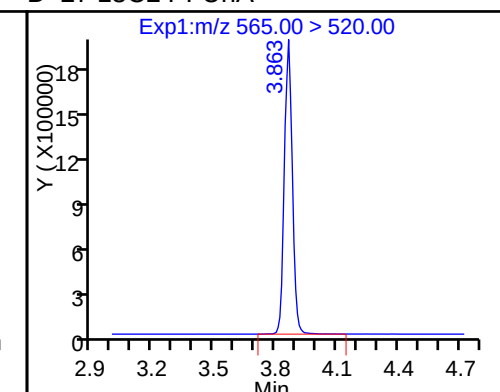
24 Perfluorodecanoic acid



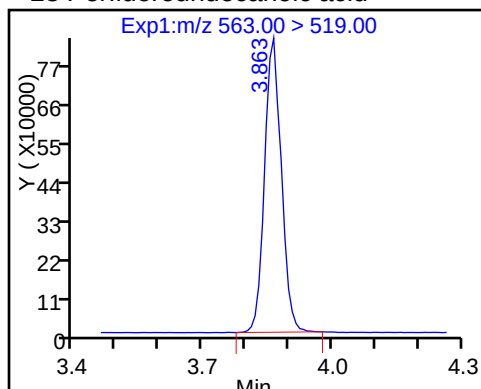
26 Perfluorodecane Sulfonic acid



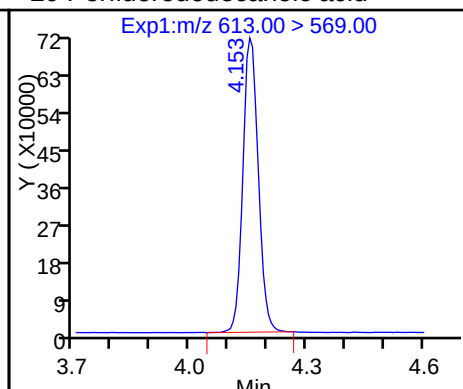
D 27 13C2 PFUnA



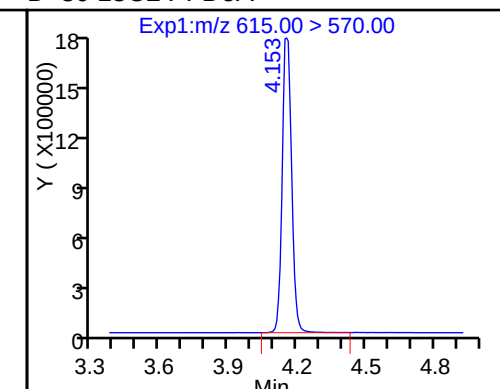
28 Perfluoroundecanoic acid



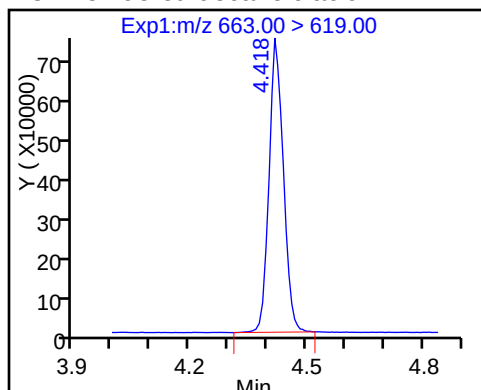
29 Perfluorododecanoic acid



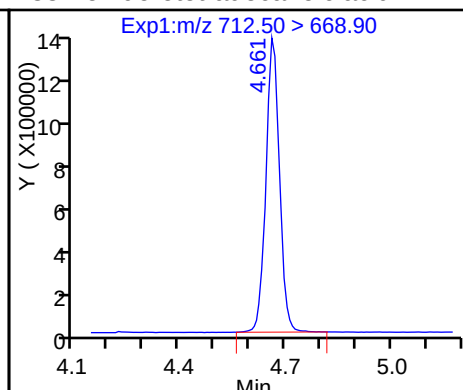
D 30 13C2 PFDa



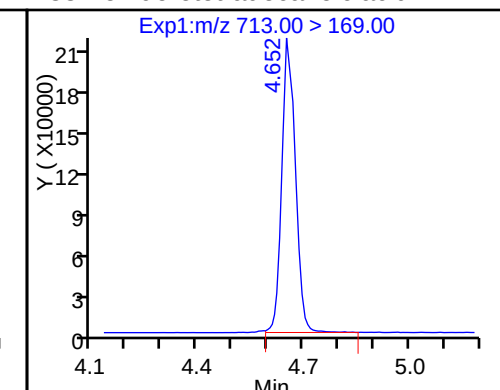
31 Perfluorotridecanoic acid



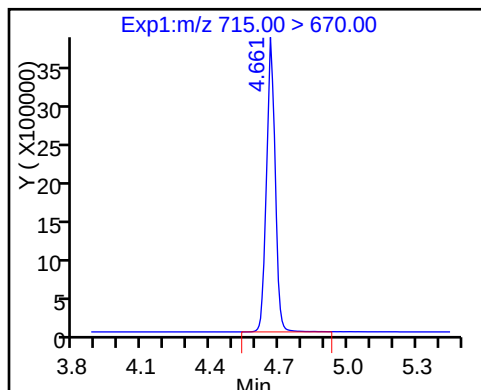
33 Perfluorotetradecanoic acid



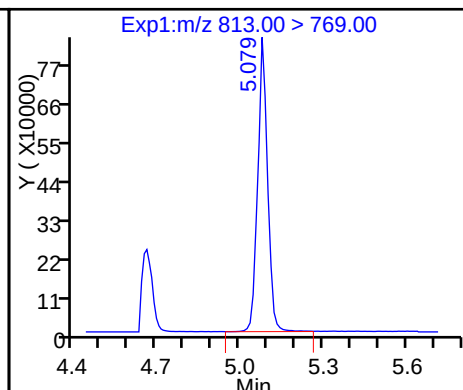
33 Perfluorotetradecanoic acid



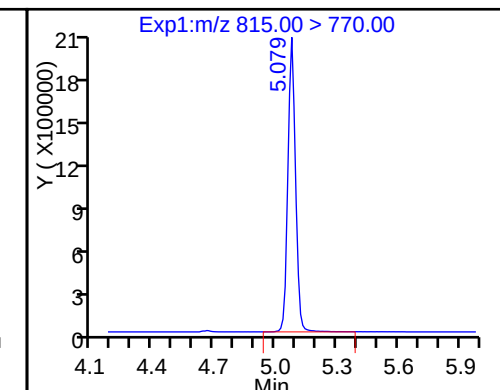
D 32 13C2-PFTeDA



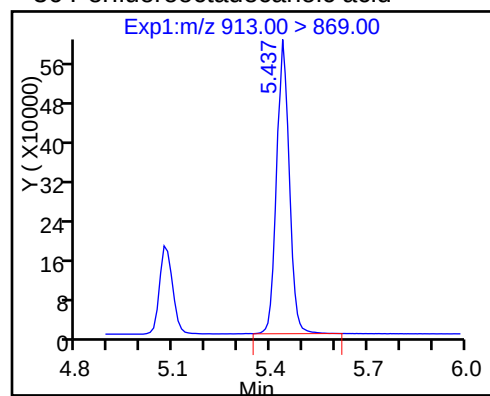
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



## 36 Perfluorooctadecanoic acid





FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-139627/1-A  
 Matrix: Solid Lab File ID: 02DEC2016C\_001.d  
 Analysis Method: 537 (Modified) Date Collected: \_\_\_\_\_  
 Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03  
 Sample wt/vol: 5.00(g) Date Analyzed: 12/02/2016 14:59  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 140429 Units: ug/Kg

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.30   | U | 0.50 | 0.10 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 0.30   | U | 0.50 | 0.13 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.30   | U | 0.40 | 0.10 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 108  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 94   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 104  |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_001.d  
 Lims ID: MB 320-139627/1-A  
 Client ID:  
 Sample Type: MB  
 Inject. Date: 02-Dec-2016 14:59:32 ALS Bottle#: 1 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: mb 320-139627/1-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:16:35 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:16:34

| Signal                                | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|---------------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| 1 Perfluorobutyric acid               |       |           |           |           |          |                 |                 |      |         |       |
| 212.90 > 169.00                       | 1.574 | 1.574     | 0.0       | 1.000     | 21795    | 0.0719          |                 |      | 154     |       |
| D 2 13C4 PFBA                         |       |           |           |           |          |                 |                 |      |         |       |
| 217.00 > 172.00                       | 1.574 | 1.574     | 0.0       |           | 17111077 | 50.3            |                 | 101  | 1388607 |       |
| 3 Perfluoropentanoic acid             |       |           |           |           |          |                 |                 |      |         |       |
| 262.90 > 219.00                       | 1.868 | 1.868     | 0.0       | 1.000     | 23535    | 0.0847          |                 |      | 149     |       |
| D 4 13C5-PFPeA                        |       |           |           |           |          |                 |                 |      |         |       |
| 267.90 > 223.00                       | 1.858 | 1.868     | -0.010    |           | 13340497 | 49.4            |                 | 98.7 | 1043506 |       |
| 5 Perfluorobutanesulfonic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                        | 1.897 | 1.907     | -0.010    | 1.000     | 5255     | 0.0103          |                 |      |         |       |
| 298.90 > 99.00                        | 1.887 | 1.907     | -0.020    | 0.995     | 2254     |                 | 2.33(0.00-0.00) |      |         |       |
| 7 Perfluorohexanoic acid              |       |           |           |           |          |                 |                 |      |         |       |
| 313.00 > 269.00                       | 2.179 | 2.173     | 0.006     | 1.000     | 13669    | 0.0634          |                 |      | 241     |       |
| D 6 13C2 PFHxA                        |       |           |           |           |          |                 |                 |      |         |       |
| 315.00 > 270.00                       | 2.162 | 2.173     | -0.011    |           | 11285724 | 45.8            |                 | 91.6 | 435771  |       |
| D 11 13C4-PFHpA                       |       |           |           |           |          |                 |                 |      |         |       |
| 367.00 > 322.00                       | 2.520 | 2.519     | 0.001     |           | 11132042 | 52.9            |                 | 106  | 1111017 |       |
| 9 Perfluorohexanesulfonic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 399.00 > 80.00                        | 2.527 | 2.534     | -0.007    | 1.000     | 54849    | 0.1642          |                 |      |         |       |
| D 10 18O2 PFHxS                       |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                        | 2.535 | 2.534     | 0.001     |           | 14913821 | 49.3            |                 | 104  | 737756  |       |
| 48 Sodium 1H,1H,2H,2H-perfluorooctane |       |           |           |           |          |                 |                 |      |         |       |
| 427.00 > 407.00                       | 2.862 | 2.870     | -0.008    | 1.000     | 3757     | NR              |                 |      |         |       |
| D 47 M2-6:2FTS                        |       |           |           |           |          |                 |                 |      |         |       |
| 429.00 > 409.00                       | 2.870 | 2.870     | 0.0       |           | 2973     | 0.0213          |                 | 0.0  |         |       |
| D 14 13C4 PFOA                        |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                       | 2.886 | 2.886     | 0.0       |           | 11840544 | 54.0            |                 | 108  | 891757  |       |

| Signal                                | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)    | %Rec | S/N    | Flags |
|---------------------------------------|-------|--------|--------|--------|----------|--------------|------------------|------|--------|-------|
| 15 Perfluorooctanoic acid             |       |        |        |        |          |              |                  |      |        |       |
| 413.00 > 369.00                       | 2.902 | 2.894  | 0.008  | 1.000  | 58370    | 0.2416       |                  |      | 382    |       |
| 413.00 > 169.00                       | 2.902 | 2.894  | 0.008  | 1.000  | 22471    |              | 2.60(0.90-1.10)  |      | 970    |       |
| D 17 13C4 PFOS                        |       |        |        |        |          |              |                  |      |        |       |
| 503.00 > 80.00                        | 3.268 | 3.267  | 0.001  |        | 11022180 | 45.1         |                  | 94.3 | 717052 |       |
| D 19 13C5 PFNA                        |       |        |        |        |          |              |                  |      |        |       |
| 468.00 > 423.00                       | 3.268 | 3.275  | -0.007 |        | 8809234  | 49.5         |                  | 98.9 | 641246 |       |
| D 21 13C8 FOSA                        |       |        |        |        |          |              |                  |      |        |       |
| 506.00 > 78.00                        | 3.582 | 3.589  | -0.007 |        | 12412970 | 30.0         |                  | 59.9 | 447762 |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane |       |        |        |        |          |              |                  |      |        |       |
| 527.00 > 507.00                       | 3.632 | 3.624  | 0.008  | 1.005  | 1156     | NR           |                  |      |        |       |
| D 42 M2-8:2FTS                        |       |        |        |        |          |              |                  |      |        |       |
| 529.00 > 509.00                       | 3.616 | 3.624  | -0.008 |        | 3435     | 0.0257       |                  | 0.0  |        |       |
| D 23 13C2 PFDA                        |       |        |        |        |          |              |                  |      |        |       |
| 515.00 > 470.00                       | 3.632 | 3.631  | 0.001  |        | 7837443  | 47.2         |                  | 94.4 | 389458 |       |
| 24 Perfluorodecanoic acid             |       |        |        |        |          |              |                  |      |        |       |
| 513.00 > 469.00                       | 3.632 | 3.631  | 0.001  | 1.000  | 4782     | 0.0315       |                  |      | 163    |       |
| D 45 d3-NMeFOSAA                      |       |        |        |        |          |              |                  |      |        |       |
| 573.00 > 419.00                       | 3.787 | 3.790  | -0.003 |        | 11498    | 0.1437       |                  | 0.0  |        |       |
| 44 N-methyl perfluorooctane sulfonami |       |        |        |        |          |              |                  |      |        |       |
| 570.00 > 419.00                       | 3.777 | 3.799  | -0.022 | 0.997  | 2321     | NR           |                  |      |        |       |
| 26 Perfluorodecane Sulfonic acid      |       |        |        |        |          |              |                  |      |        |       |
| 599.00 > 80.00                        | 3.936 | 3.941  | -0.005 | 1.000  | 808      | 0.005587     |                  |      |        |       |
| D 46 d5-NEtFOSAA                      |       |        |        |        |          |              |                  |      |        |       |
| 589.00 > 419.00                       | 3.953 | 3.955  | -0.002 |        | 16818    | 0.1888       |                  | 0.0  |        |       |
| 28 Perfluoroundecanoic acid           |       |        |        |        |          |              |                  |      |        |       |
| 563.00 > 519.00                       | 3.971 | 3.959  | 0.012  | 1.000  | 14456    | 0.1155       |                  |      | 354    |       |
| 49 N-ethyl perfluorooctane sulfonamid |       |        |        |        |          |              |                  |      |        |       |
| 584.00 > 419.00                       | 3.953 | 3.963  | -0.010 | 1.000  | 3184     | NR           |                  |      |        |       |
| D 27 13C2 PFUnA                       |       |        |        |        |          |              |                  |      |        |       |
| 565.00 > 520.00                       | 3.962 | 3.967  | -0.005 |        | 5905793  | 47.0         |                  | 93.9 | 315207 |       |
| D 52 d-N-MeFOSA-M                     |       |        |        |        |          |              |                  |      |        |       |
| 515.00 > 169.00                       | 4.052 | 4.079  | -0.027 |        | 5561     | 0.0523       |                  | 0.0  |        |       |
| 54 MeFOSA                             |       |        |        |        |          |              |                  |      |        |       |
| 512.00 > 169.00                       | 4.085 | 4.087  | -0.002 | 1.000  | 998      | NR           |                  |      |        |       |
| D 30 13C2 PFDaA                       |       |        |        |        |          |              |                  |      |        |       |
| 615.00 > 570.00                       | 4.251 | 4.259  | -0.008 |        | 4628188  | 39.6         |                  | 79.2 | 143761 |       |
| D 51 d-N-EtFOSA-M                     |       |        |        |        |          |              |                  |      |        |       |
| 531.00 > 169.00                       | 4.251 | 4.261  | -0.010 |        | 6878     | 0.0675       |                  | 0.0  |        |       |
| 53 N-ethylperfluoro-1-octanesulfonami |       |        |        |        |          |              |                  |      |        |       |
| 526.00 > 169.00                       | 4.285 | 4.271  | 0.014  | 1.000  | 842      | NR           |                  |      |        |       |
| 33 Perfluorotetradecanoic acid        |       |        |        |        |          |              |                  |      |        |       |
| 712.50 > 668.90                       | 4.743 | 4.772  | -0.030 | 1.000  | 30983    | 0.1732       |                  |      | 15.8   |       |
| 713.00 > 169.00                       | 4.759 | 4.772  | -0.013 | 1.003  | 2876     |              | 10.77(0.00-0.00) |      | 1371   |       |
| D 32 13C2-PFTeDA                      |       |        |        |        |          |              |                  |      |        |       |
| 715.00 > 670.00                       | 4.759 | 4.772  | -0.013 |        | 7246692  | 30.0         |                  | 59.9 | 383039 |       |
| D 34 13C2-PFHxDA                      |       |        |        |        |          |              |                  |      |        |       |
| 815.00 > 770.00                       | 5.178 | 5.184  | -0.006 |        | 2329899  | 17.9         |                  | 35.7 | 106732 |       |

| Signal                        | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N  | Flags |
|-------------------------------|-------|-----------|-----------|-----------|----------|-----------------|---------------|------|------|-------|
| 35 Perfluorohexadecanoic acid |       |           |           |           |          |                 |               |      |      |       |
| 813.00 > 769.00               | 5.178 | 5.194     | -0.016    | 1.000     | 34261    | -0.4475         |               |      | 71.7 |       |
| 36 Perfluorooctadecanoic acid |       |           |           |           |          |                 |               |      |      |       |
| 913.00 > 869.00               | 5.566 | 5.562     | 0.004     | 1.000     | 2419     | 0.0332          |               |      | 11.2 |       |

### QC Flag Legend

Processing Flags

NR - Missing Quant Standard

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_001.d

Injection Date: 02-Dec-2016 14:59:32

Instrument ID: A8\_N

Lims ID: MB 320-139627/1-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 1

Worklist Smp#: 5

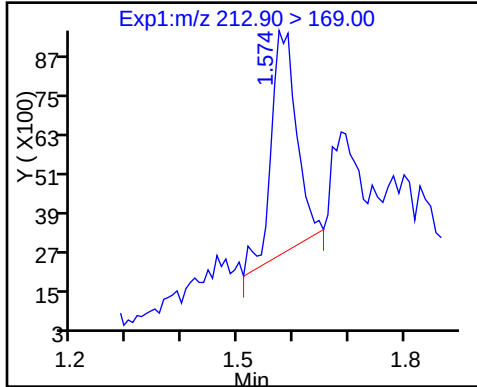
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

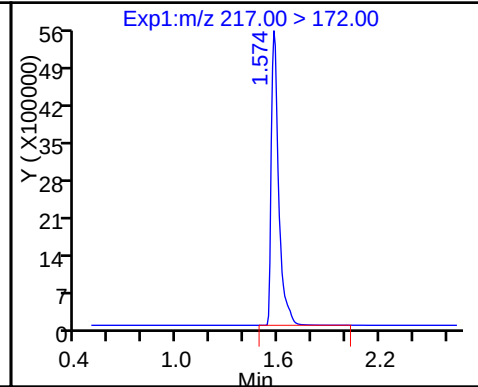
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

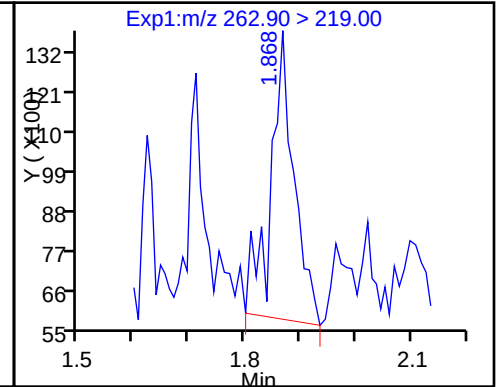
1 Perfluorobutyric acid



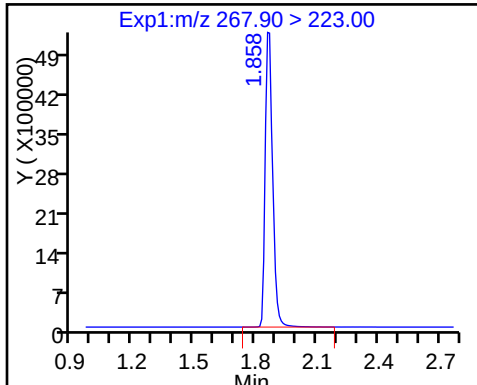
D 2 13C4 PFBA



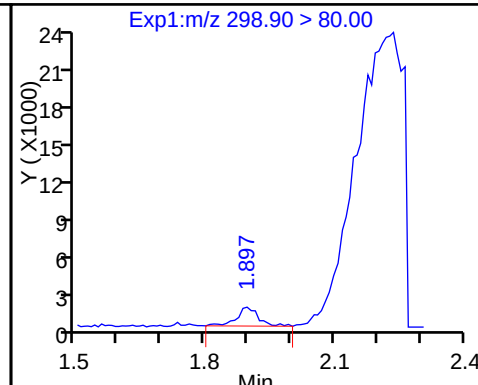
3 Perfluoropentanoic acid



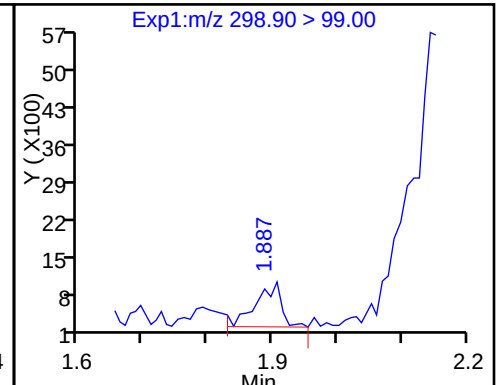
D 4 13C5-PFPeA



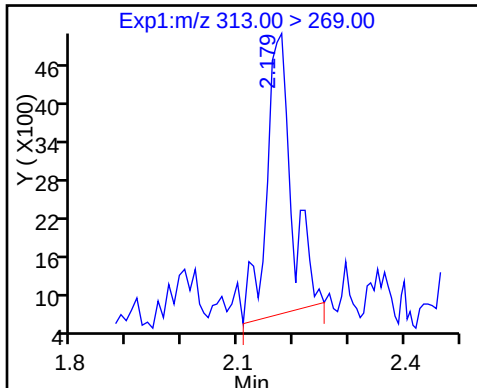
5 Perfluorobutanesulfonic acid



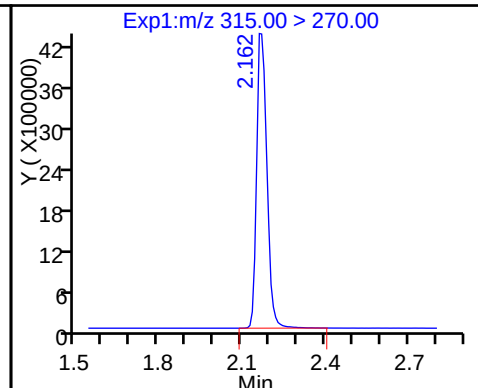
5 Perfluorobutanesulfonic acid



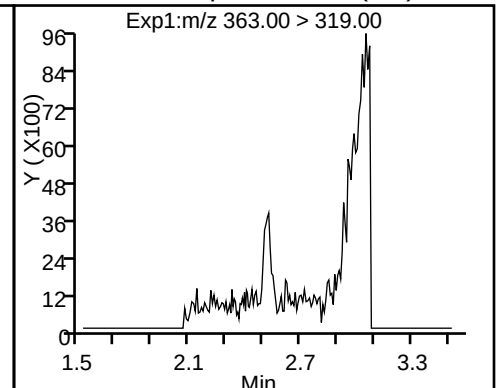
7 Perfluorohexanoic acid



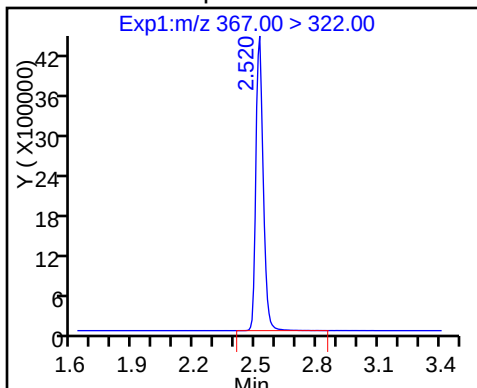
D 6 13C2 PFHxA



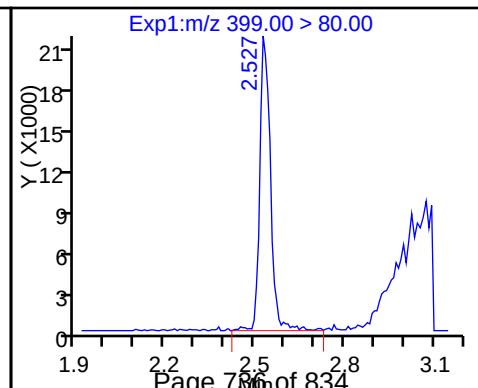
12 Perfluoroheptanoic acid (ND)



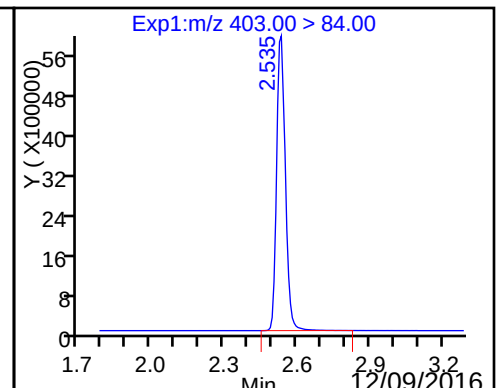
D 11 13C4-PFHpA



9 Perfluorohexanesulfonic acid



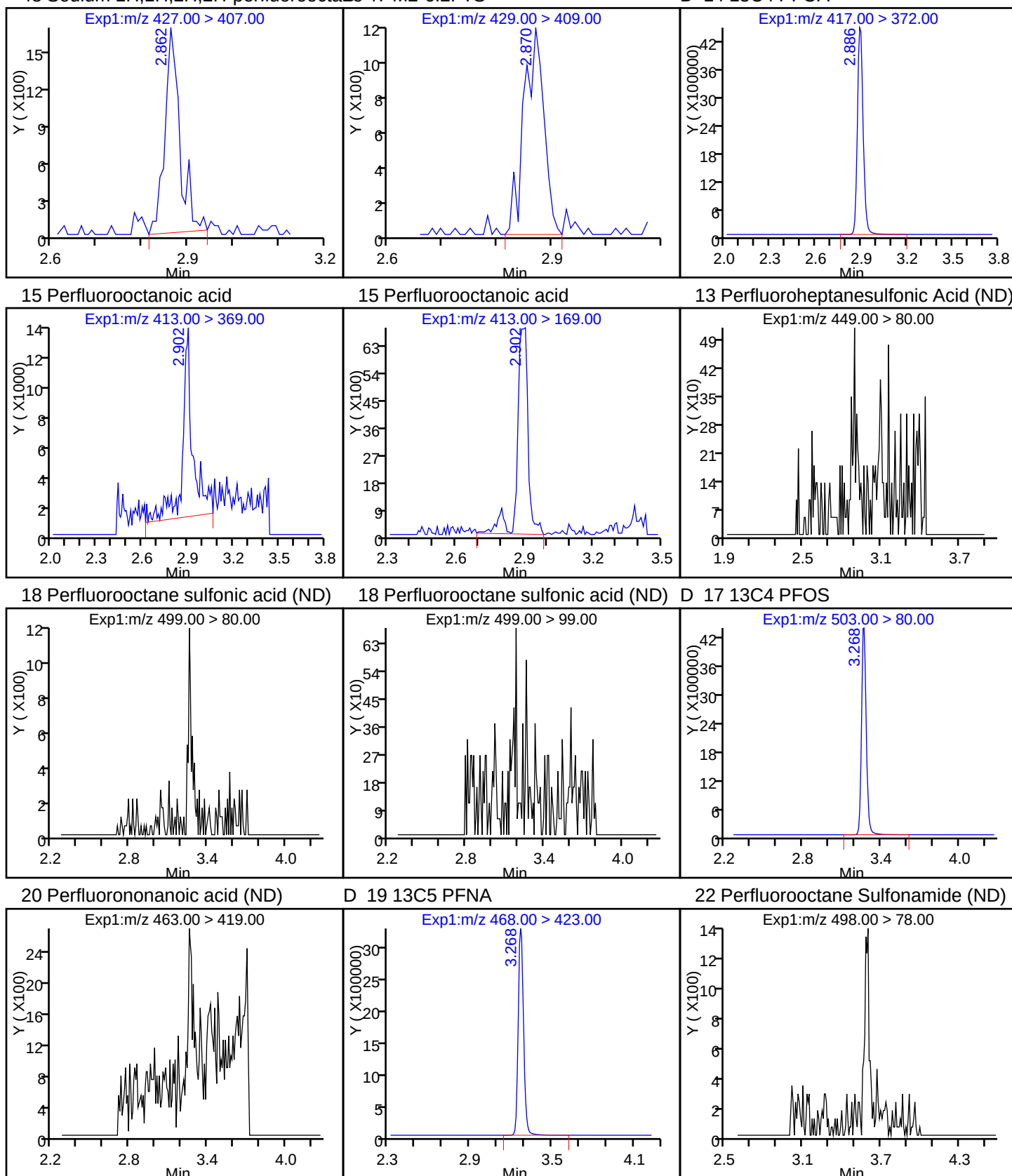
D 10 18O2 PFHxS



48 Sodium 1H,1H,2H,2H-perfluorooctadec-4

De 47 M2-6:2FTS

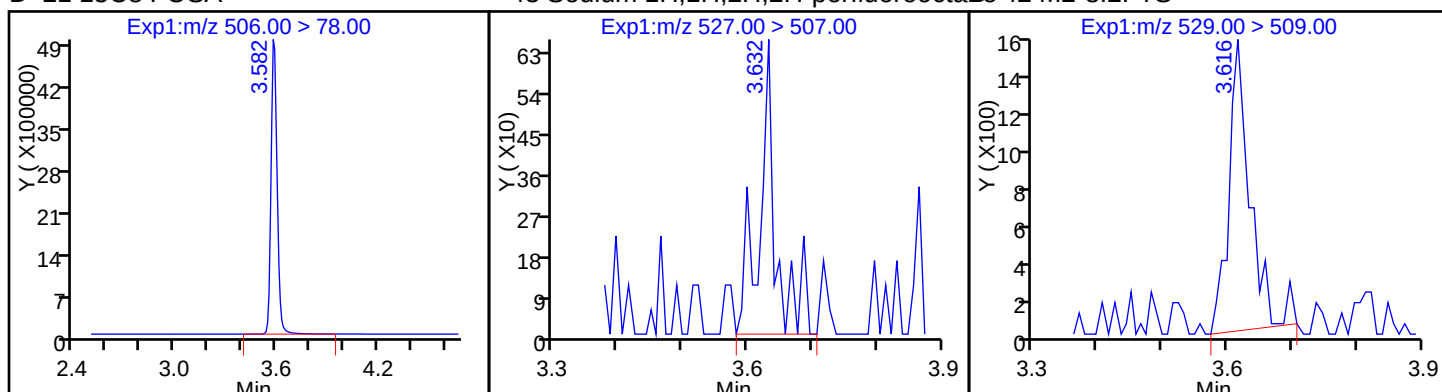
D 14 13C4 PFOA



D 21 13C8 FOSA

43 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

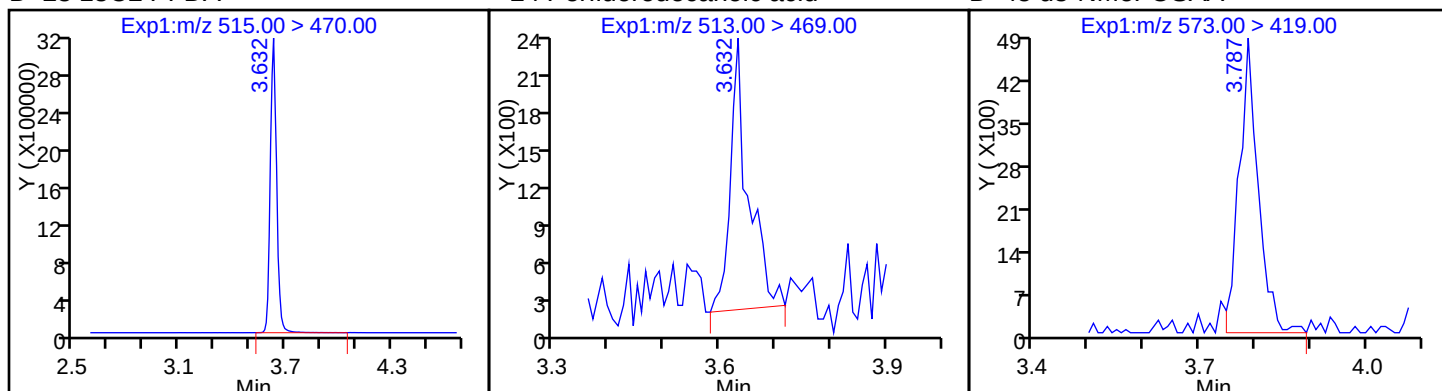
D 42 M2-8:2FTS



D 23 13C2 PFDA

24 Perfluorodecanoic acid

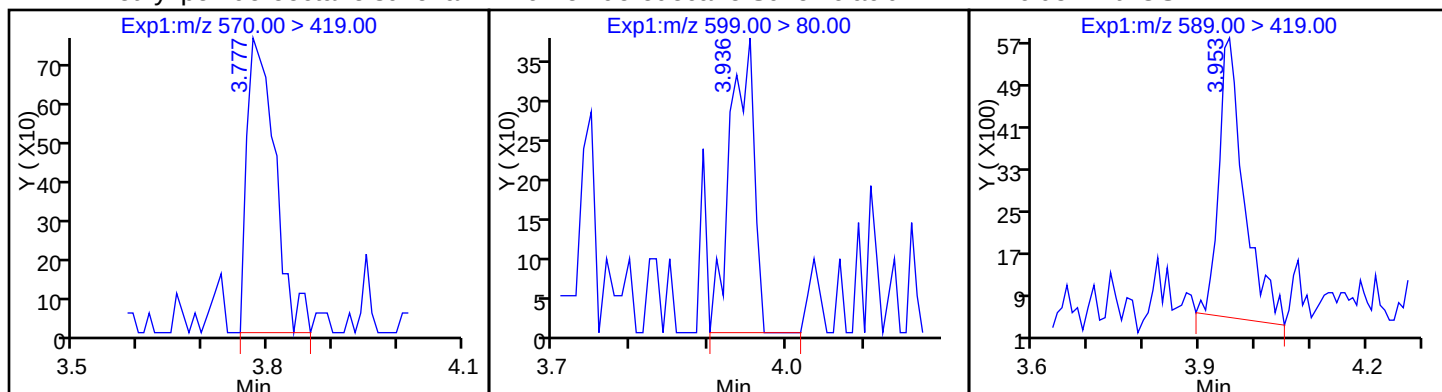
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonami

26 Perfluorodecane Sulfonic acid

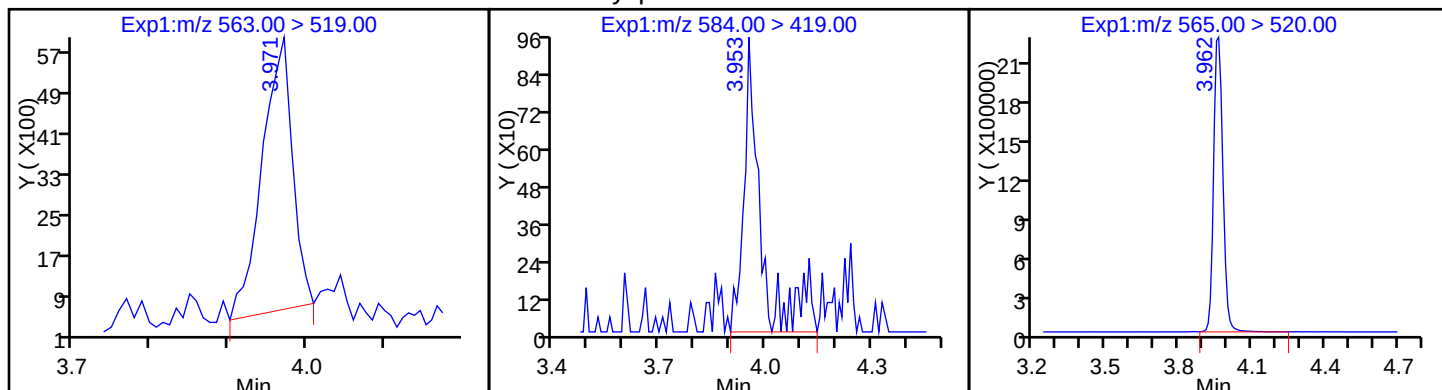
D 46 d5-NEtFOSAA



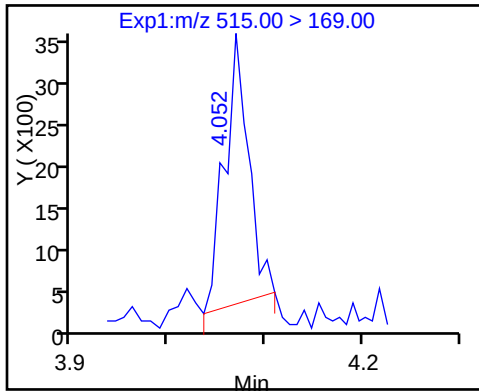
28 Perfluoroundecanoic acid

49 N-ethyl perfluorooctane sulfonamid

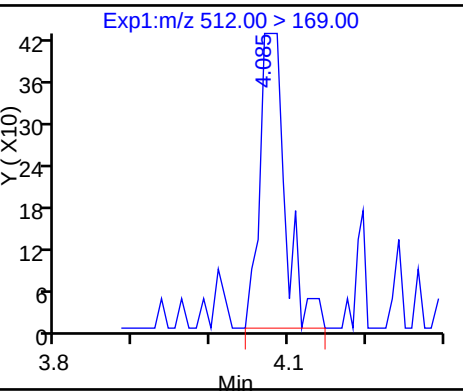
D 27 13C2 PFUnA



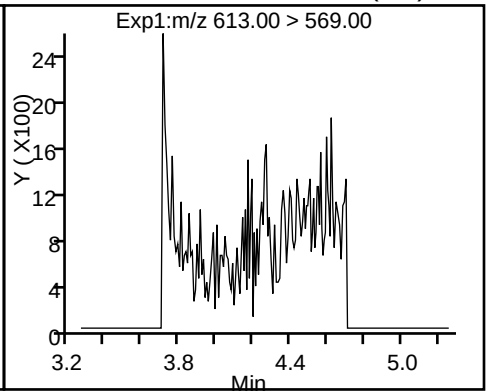
D 52 d-N-MeFOSA-M



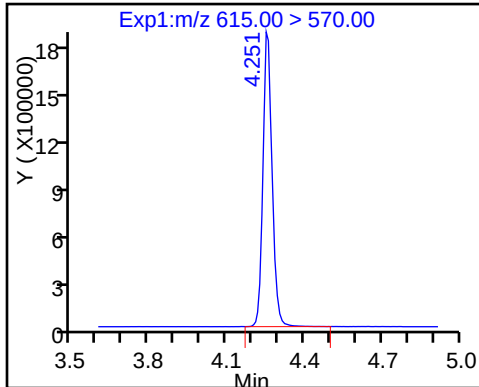
54 MeFOSA



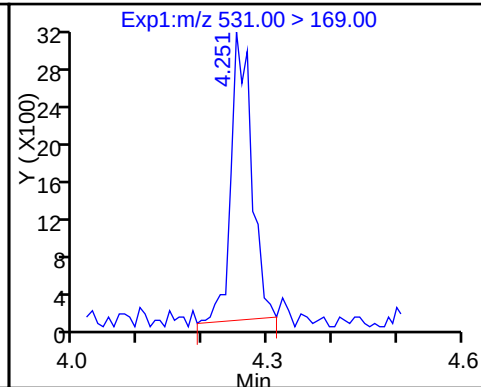
29 Perfluorododecanoic acid (ND)



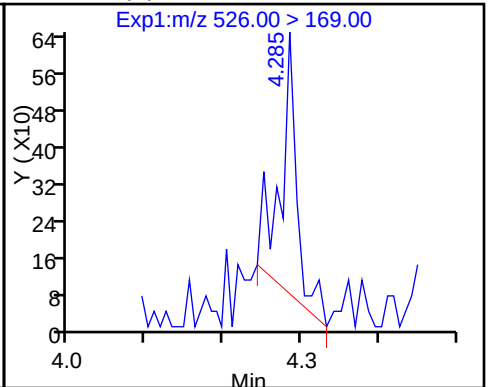
D 30 13C2 PFDa



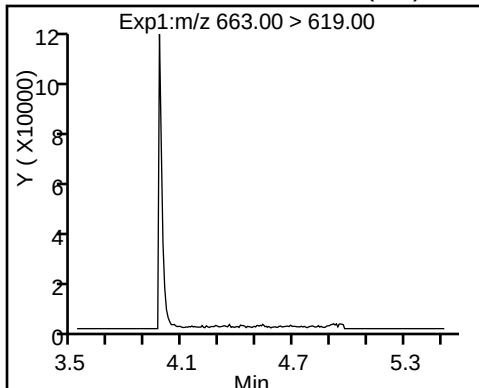
D 51 d-N-EtFOSA-M



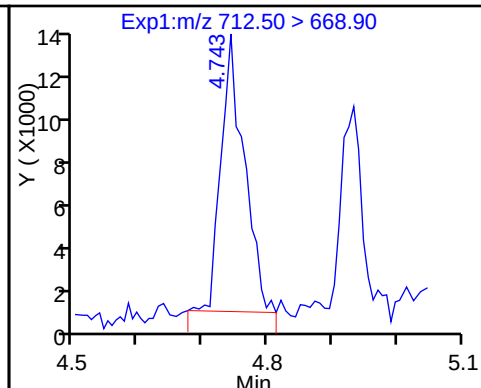
53 N-ethylperfluoro-1-octanesulfonami



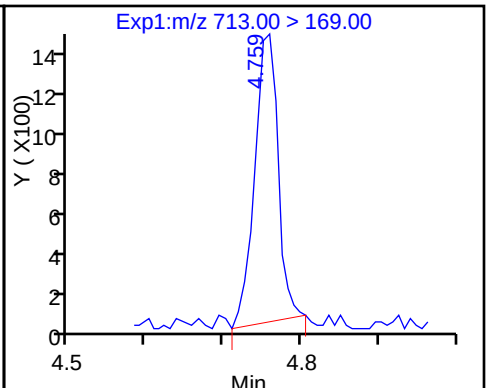
31 Perfluorotridecanoic acid (ND)



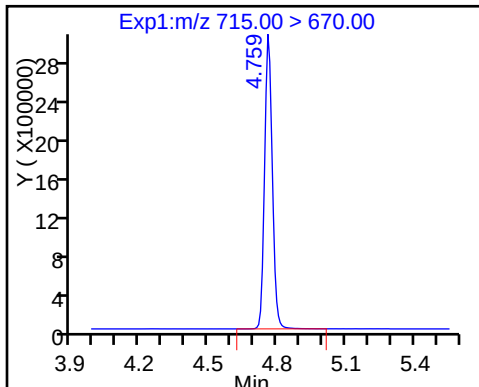
33 Perfluorotetradecanoic acid



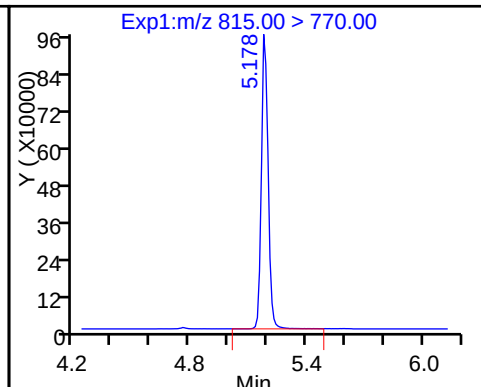
33 Perfluorotetradecanoic acid



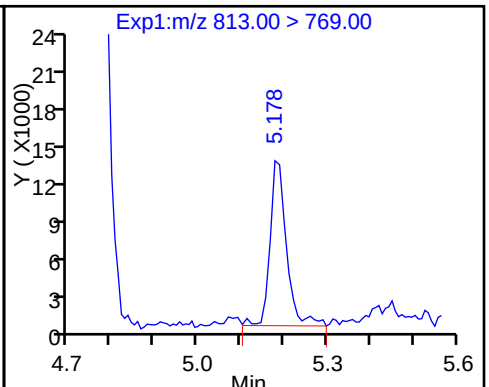
D 32 13C2-PFTeDA



D 34 13C2-PFHxDA

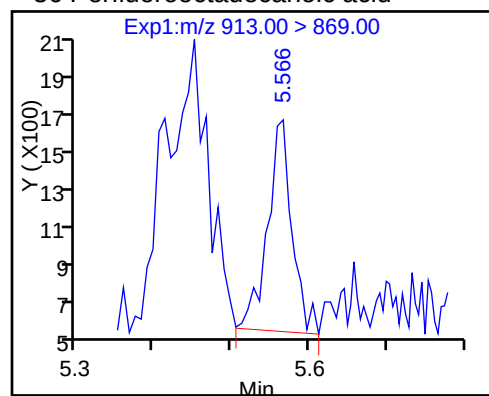


35 Perfluorohexadecanoic acid





## 36 Perfluorooctadecanoic acid



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-139749/1-A  
 Matrix: Water Lab File ID: 03DEC2016B\_001.d  
 Analysis Method: 537 (Modified) Date Collected: \_\_\_\_\_  
 Extraction Method: 3535 Date Extracted: 11/28/2016 16:55  
 Sample wt/vol: 250 (mL) Date Analyzed: 12/03/2016 16:03  
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 140564 Units: ug/L

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL     | MDL     |
|-----------|-------------------------------------|--------|---|--------|---------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.0020 | U | 0.0025 | 0.00075 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 0.0030 | U | 0.0040 | 0.0013  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.0020 | U | 0.0025 | 0.00092 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 93   |   | 25-150 |
| STL00991 | 13C4 PFOS        | 85   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 86   |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_001.d  
 Lims ID: MB 320-139749/1-A  
 Client ID:  
 Sample Type: MB  
 Inject. Date: 03-Dec-2016 16:03:39 ALS Bottle#: 32 Worklist Smp#: 22  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: mb 320-139749/1-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:30:02 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 10:24:04

| Signal                                | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|---------------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|---------|-------|
| D 2 13C4 PFBA                         |       |           |           |           |          |                 |                 |      |         |       |
| 217.00 > 172.00                       | 1.566 | 1.574     | -0.008    |           | 15226200 | 45.3            |                 | 90.7 | 1569873 |       |
| 1 Perfluorobutyric acid               |       |           |           |           |          |                 |                 |      |         |       |
| 212.90 > 169.00                       | 1.598 | 1.577     | 0.021     | 1.000     | 26008    | 0.0977          |                 |      | 100     |       |
| 3 Perfluoropentanoic acid             |       |           |           |           |          |                 |                 |      |         |       |
| 262.90 > 219.00                       | 1.848 | 1.861     | -0.013    | 1.000     | 21886    | 0.0881          |                 |      | 156     |       |
| D 4 13C5-PFPeA                        |       |           |           |           |          |                 |                 |      |         |       |
| 267.90 > 223.00                       | 1.848 | 1.861     | -0.013    |           | 12242552 | 46.3            |                 | 92.6 | 1166805 |       |
| 5 Perfluorobutanesulfonic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 298.90 > 80.00                        | 1.887 | 1.900     | -0.013    | 1.000     | 5587     | 0.0130          |                 |      |         |       |
| 298.90 > 99.00                        | 1.868 | 1.900     | -0.032    | 0.990     | 2503     |                 | 2.23(0.00-0.00) |      |         |       |
| 7 Perfluorohexanoic acid              |       |           |           |           |          |                 |                 |      |         |       |
| 313.00 > 269.00                       | 2.158 | 2.164     | -0.006    | 1.000     | 10301    | 0.0520          |                 |      | 268     |       |
| D 6 13C2 PFHxA                        |       |           |           |           |          |                 |                 |      |         |       |
| 315.00 > 270.00                       | 2.150 | 2.164     | -0.014    |           | 10398103 | 43.8            |                 | 87.6 | 651663  |       |
| D 11 13C4-PFHpA                       |       |           |           |           |          |                 |                 |      |         |       |
| 367.00 > 322.00                       | 2.484 | 2.511     | -0.027    |           | 9778883  | 47.1            |                 | 94.3 | 1122402 |       |
| 12 Perfluoroheptanoic acid            |       |           |           |           |          |                 |                 |      |         |       |
| 363.00 > 319.00                       | 2.492 | 2.512     | -0.020    | 1.000     | 5152     | 0.0256          |                 |      | 98.2    |       |
| 9 Perfluorohexanesulfonic acid        |       |           |           |           |          |                 |                 |      |         |       |
| 399.00 > 80.00                        | 2.507 | 2.531     | -0.024    | 1.000     | 43831    | 0.1481          |                 |      |         |       |
| D 10 18O2 PFHxS                       |       |           |           |           |          |                 |                 |      |         |       |
| 403.00 > 84.00                        | 2.507 | 2.531     | -0.024    |           | 12757089 | 40.8            |                 | 86.3 | 681764  |       |
| 48 Sodium 1H,1H,2H,2H-perfluorooctane |       |           |           |           |          |                 |                 |      |         |       |
| 427.00 > 407.00                       | 2.830 | 2.836     | -0.006    | 1.000     | 5869     | NR              |                 |      |         |       |
| D 47 M2-6:2FTS                        |       |           |           |           |          |                 |                 |      |         |       |
| 429.00 > 409.00                       | 2.839 | 2.836     | 0.003     |           | 2424     | 0.0230          |                 | 0.0  |         |       |
| D 14 13C4 PFOA                        |       |           |           |           |          |                 |                 |      |         |       |
| 417.00 > 372.00                       | 2.855 | 2.880     | -0.025    |           | 10158200 | 46.3            |                 | 92.7 | 723151  |       |

| Signal                                | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|---------------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 15 Perfluorooctanoic acid             |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                       | 2.855 | 2.887  | -0.032 | 1.000  | 62196    | 0.2856       |                 |      | 609     |       |
| 413.00 > 169.00                       | 2.871 | 2.887  | -0.016 | 1.006  | 23771    |              | 2.62(0.90-1.10) |      | 840     |       |
| D 17 13C4 PFOS                        |       |        |        |        |          |              |                 |      |         |       |
| 503.00 > 80.00                        | 3.235 | 3.259  | -0.024 |        | 10026681 | 40.8         |                 | 85.3 | 575603  |       |
| D 19 13C5 PFNA                        |       |        |        |        |          |              |                 |      |         |       |
| 468.00 > 423.00                       | 3.235 | 3.263  | -0.028 |        | 7793773  | 46.8         |                 | 93.7 | 2639754 |       |
| D 21 13C8 FOSA                        |       |        |        |        |          |              |                 |      |         |       |
| 506.00 > 78.00                        | 3.549 | 3.571  | -0.022 |        | 2561806  | 6.37         |                 | 12.7 | 217630  |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane |       |        |        |        |          |              |                 |      |         |       |
| 527.00 > 507.00                       | 3.583 | 3.588  | -0.005 | 0.995  | 686      | NR           |                 |      |         |       |
| D 42 M2-8:2FTS                        |       |        |        |        |          |              |                 |      |         |       |
| 529.00 > 509.00                       | 3.599 | 3.591  | 0.008  |        | 1294     | 0.0133       |                 | 0.0  |         |       |
| 24 Perfluorodecanoic acid             |       |        |        |        |          |              |                 |      |         |       |
| 513.00 > 469.00                       | 3.650 | 3.623  | 0.027  | 1.000  | 472      | 0.003505     |                 |      | 31.5    |       |
| D 23 13C2 PFDA                        |       |        |        |        |          |              |                 |      |         |       |
| 515.00 > 470.00                       | 3.591 | 3.626  | -0.035 |        | 7009564  | 44.4         |                 | 88.8 | 202735  |       |
| D 45 d3-NMeFOSAA                      |       |        |        |        |          |              |                 |      |         |       |
| 573.00 > 419.00                       | 3.738 | 3.756  | -0.018 |        | 8153     | 0.1124       |                 | 0.0  |         |       |
| 44 N-methyl perfluorooctane sulfonami |       |        |        |        |          |              |                 |      |         |       |
| 570.00 > 419.00                       | 3.748 | 3.759  | -0.011 | 1.003  | 2600     | NR           |                 |      |         |       |
| D 46 d5-NEtFOSAA                      |       |        |        |        |          |              |                 |      |         |       |
| 589.00 > 419.00                       | 3.917 | 3.922  | -0.005 |        | 12565    | 0.1577       |                 | 0.0  |         |       |
| 49 N-ethyl perfluorooctane sulfonamid |       |        |        |        |          |              |                 |      |         |       |
| 584.00 > 419.00                       | 3.917 | 3.929  | -0.012 | 1.000  | 5719     | NR           |                 |      |         |       |
| 26 Perfluorodecane Sulfonic acid      |       |        |        |        |          |              |                 |      |         |       |
| 599.00 > 80.00                        | 3.908 | 3.936  | -0.028 | 1.000  | 828      | 0.006170     |                 |      |         |       |
| 28 Perfluoroundecanoic acid           |       |        |        |        |          |              |                 |      |         |       |
| 563.00 > 519.00                       | 3.926 | 3.955  | -0.029 | 1.000  | 16456    | 0.1458       |                 |      | 370     |       |
| D 27 13C2 PFUnA                       |       |        |        |        |          |              |                 |      |         |       |
| 565.00 > 520.00                       | 3.926 | 3.958  | -0.032 |        | 5294647  | 44.6         |                 | 89.2 | 392201  |       |
| D 52 d-N-MeFOSA-M                     |       |        |        |        |          |              |                 |      |         |       |
| 515.00 > 169.00                       | 4.040 | 4.051  | -0.011 |        | 3240     | 0.0308       |                 | 0.0  |         |       |
| 54 MeFOSA                             |       |        |        |        |          |              |                 |      |         |       |
| 512.00 > 169.00                       | 4.064 | 4.057  | 0.007  | 1.000  | 467      | NR           |                 |      |         |       |
| D 51 d-N-EtFOSA-M                     |       |        |        |        |          |              |                 |      |         |       |
| 531.00 > 169.00                       | 4.225 | 4.239  | -0.014 |        | 3131     | 0.0316       |                 | 0.0  |         |       |
| 53 N-ethylperfluoro-1-octanesulfonami |       |        |        |        |          |              |                 |      |         |       |
| 526.00 > 169.00                       | 4.450 | 4.245  | 0.205  | 1.000  | 408      | NR           |                 |      |         |       |
| D 30 13C2 PFDoA                       |       |        |        |        |          |              |                 |      |         |       |
| 615.00 > 570.00                       | 4.216 | 4.251  | -0.035 |        | 4946893  | 44.1         |                 | 88.3 | 145179  |       |
| D 32 13C2-PFTeDA                      |       |        |        |        |          |              |                 |      |         |       |
| 715.00 > 670.00                       | 4.723 | 4.759  | -0.036 |        | 11899994 | 51.5         |                 | 103  | 1138196 |       |
| 33 Perfluorotetradecanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 712.50 > 668.90                       | 4.723 | 4.761  | -0.038 | 1.000  | 38242    | 0.2085       |                 |      | 25.3    |       |
| 713.00 > 169.00                       | 4.715 | 4.761  | -0.046 | 0.998  | 5325     |              | 7.18(0.00-0.00) |      | 2143    |       |
| D 34 13C2-PFHxDA                      |       |        |        |        |          |              |                 |      |         |       |
| 815.00 > 770.00                       | 5.148 | 5.186  | -0.038 |        | 5517123  | 42.5         |                 | 85.1 | 232893  |       |

| Signal                        | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|-------------------------------|-------|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
| 35 Perfluorohexadecanoic acid |       |           |           |           |          |                 |               |      |     |       |
| 813.00 > 769.00               | 5.148 | 5.186     | -0.038    | 1.000     | 72544    | -0.0159         |               |      | 188 |       |
| 36 Perfluorooctadecanoic acid |       |           |           |           |          |                 |               |      |     |       |
| 913.00 > 869.00               | 5.694 | 5.559     | 0.135     | 1.000     | 273      | 0.002779        |               |      | 1.6 |       |

### QC Flag Legend

Processing Flags

NR - Missing Quant Standard

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_001.d

Injection Date: 03-Dec-2016 16:03:39

Instrument ID: A8\_N

Lims ID: MB 320-139749/1-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 32

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

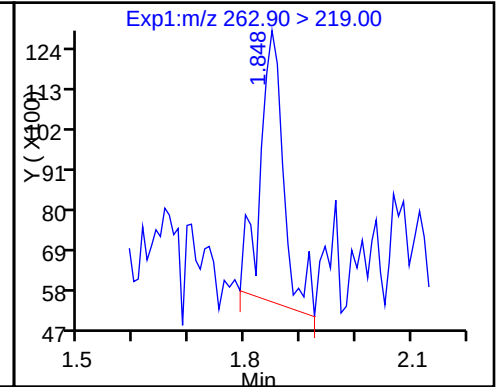
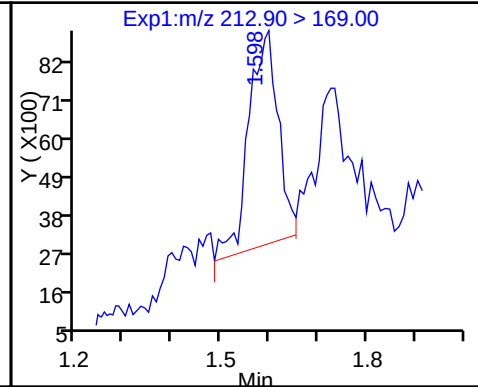
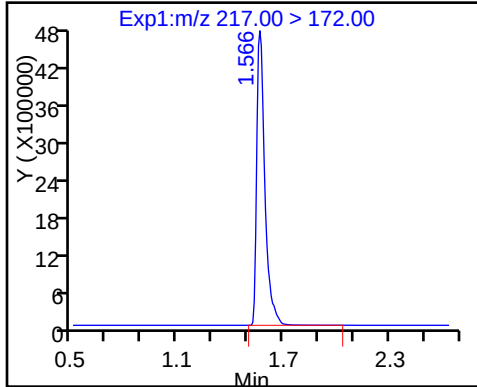
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

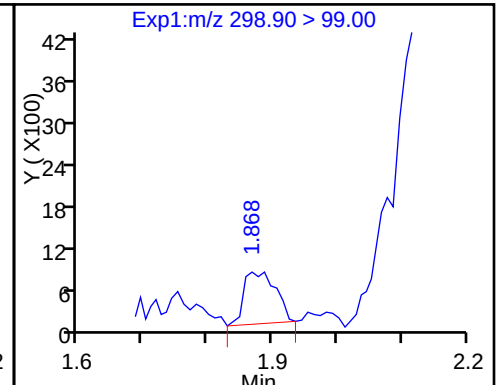
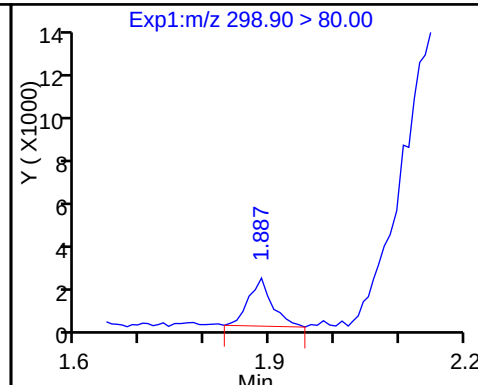
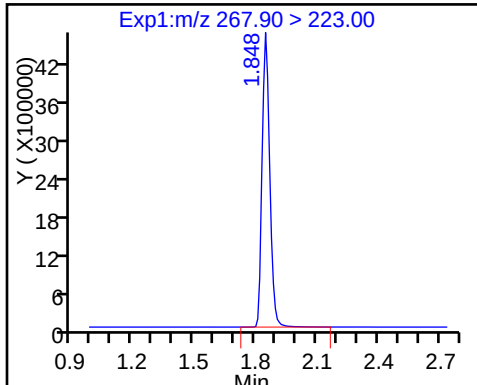
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

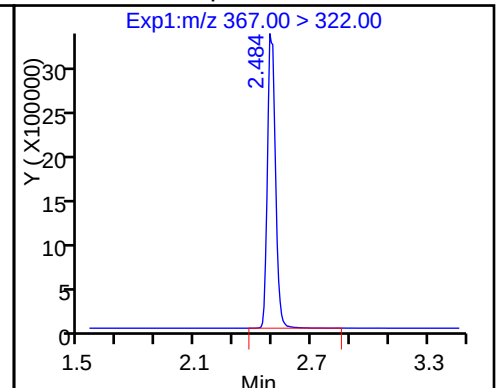
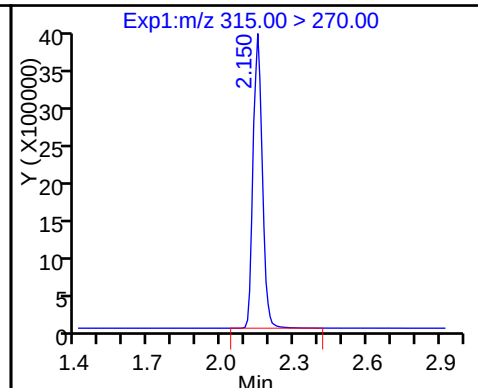
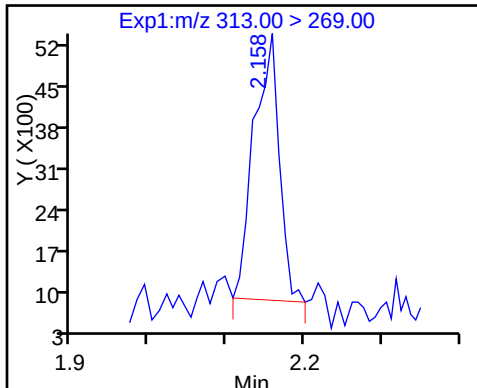
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

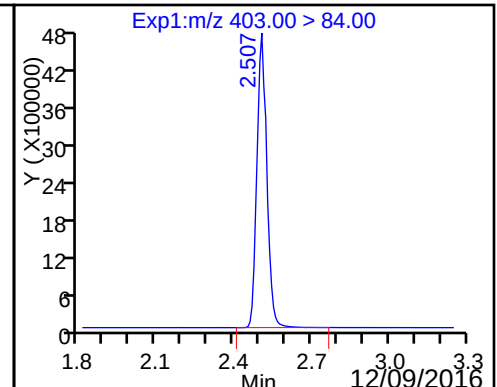
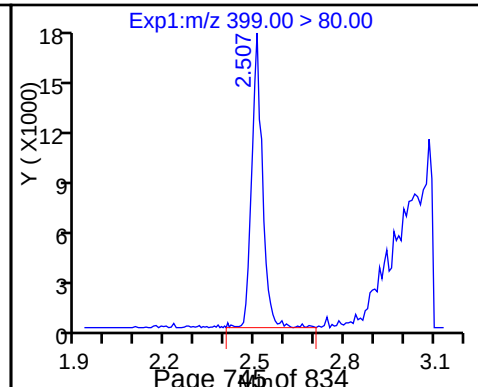
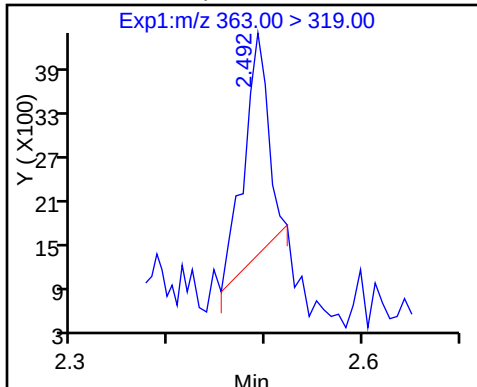
D 11 13C4-PFHpA



12 Perfluoroheptanoic acid

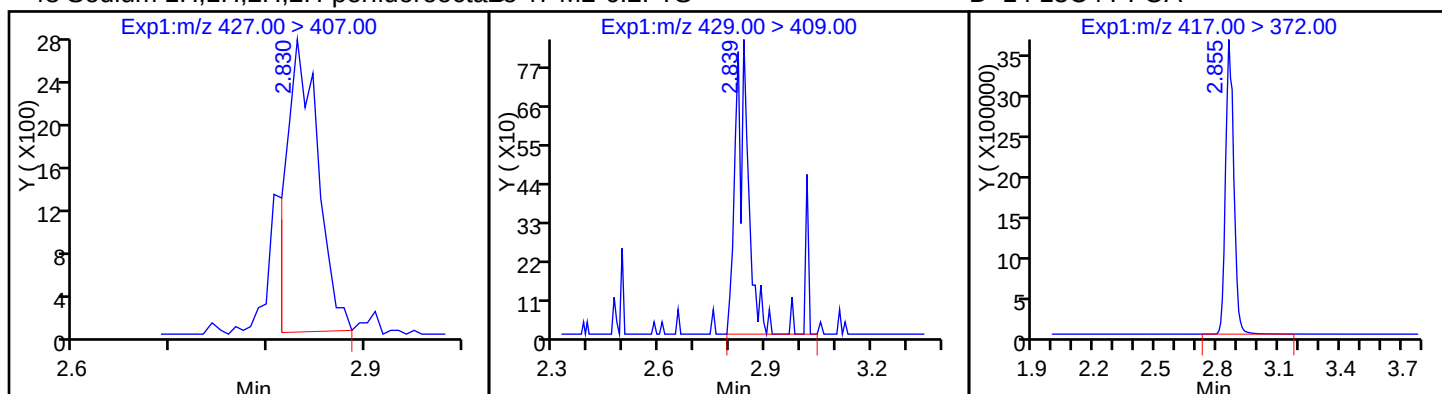
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS



48 Sodium 1H,1H,2H,2H-perfluorooctadec-4

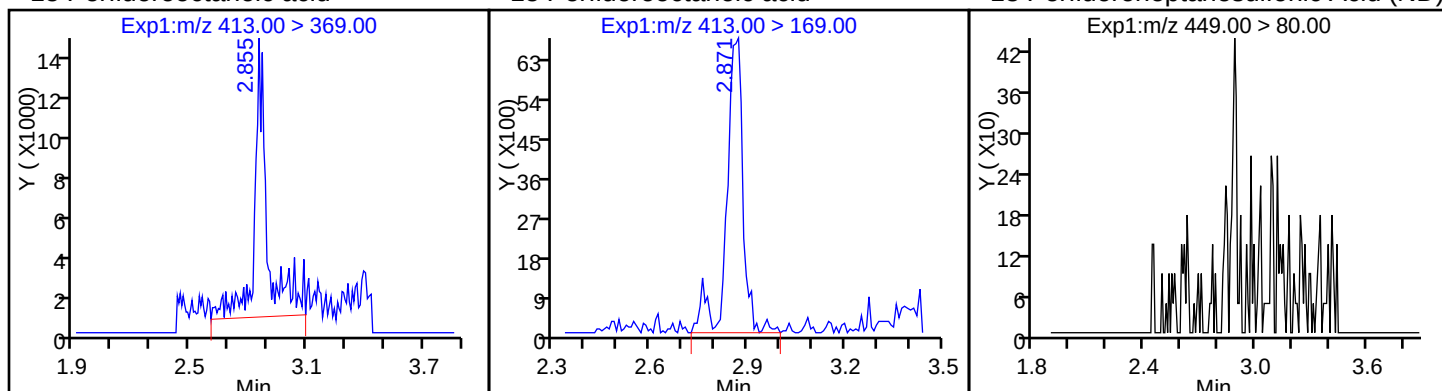
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

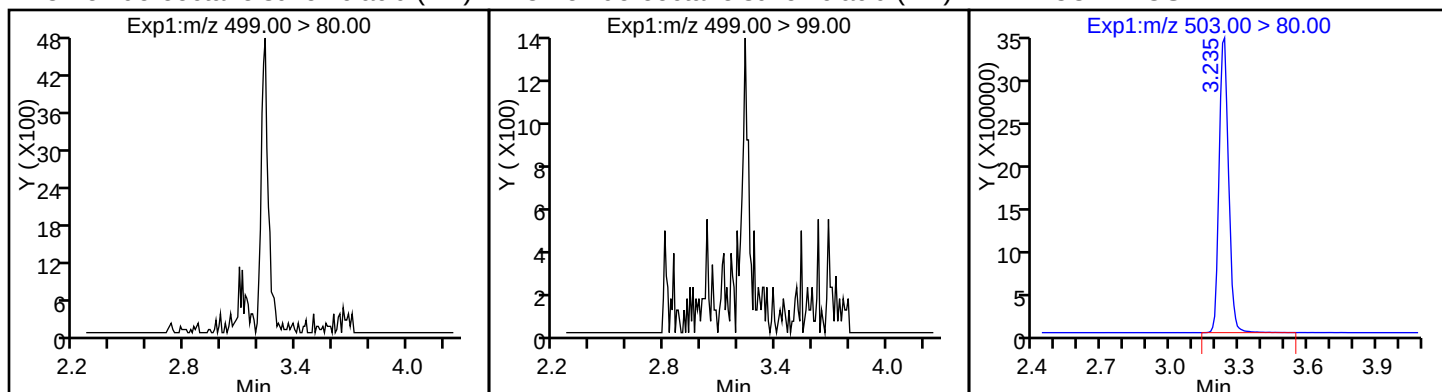
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

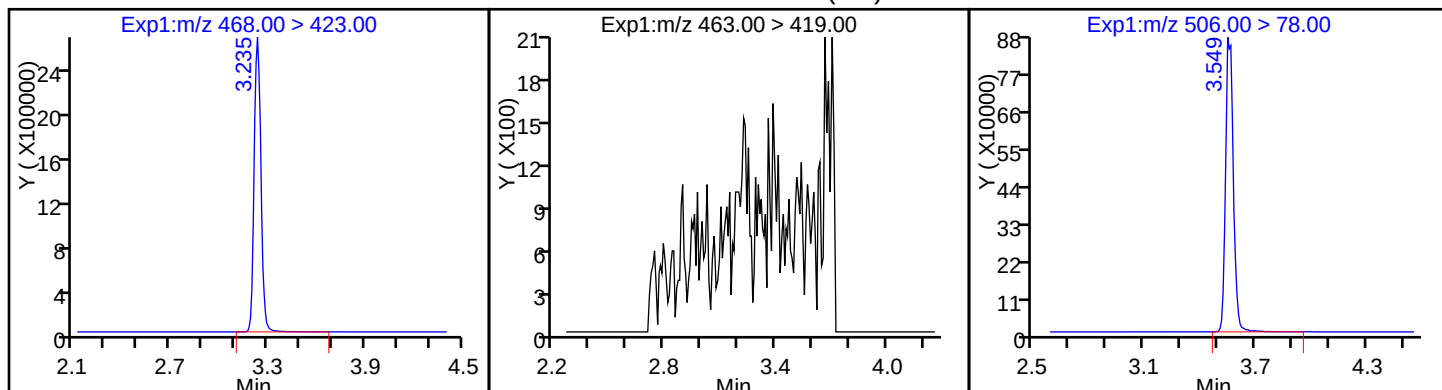
D 17 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid (ND)

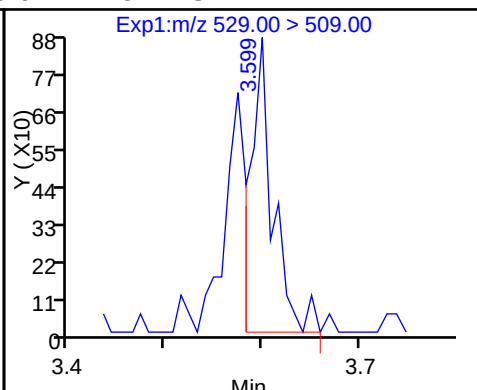
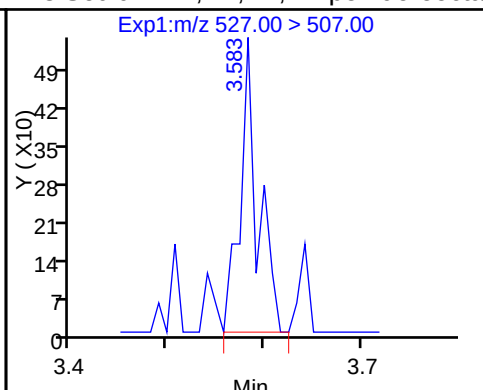
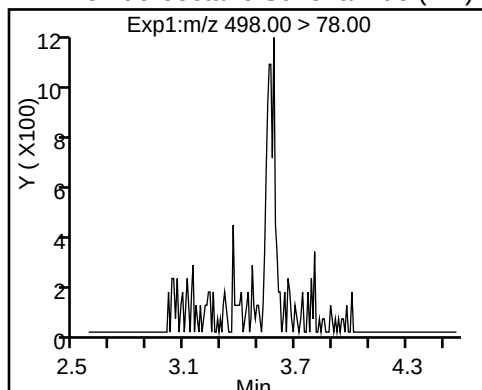
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide (ND)

43 Sodium 1H,1H,2H,2H-perfluorooctane

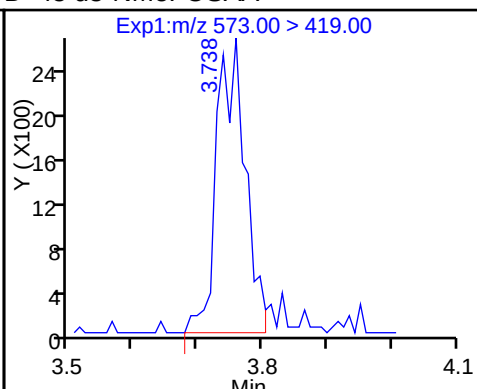
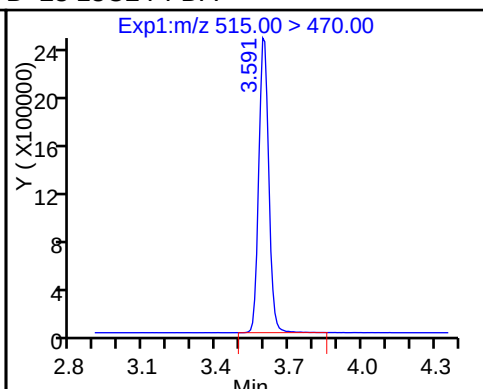
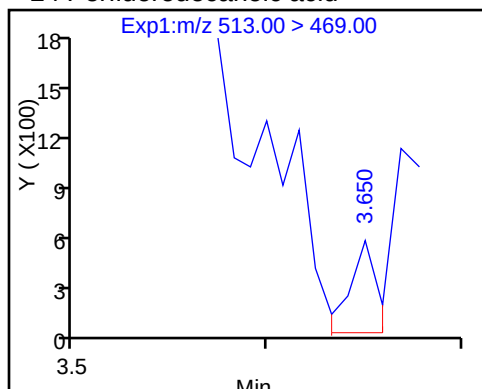
De 42 M2-8:2FTS



24 Perfluorodecanoic acid

D 23 13C2 PFDA

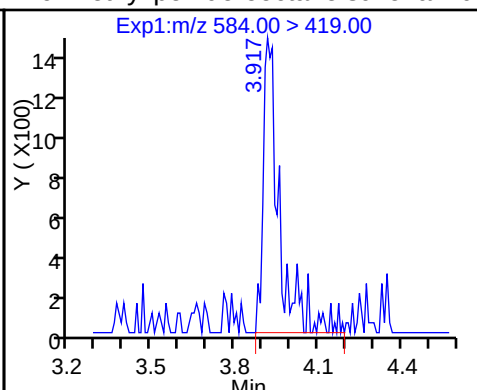
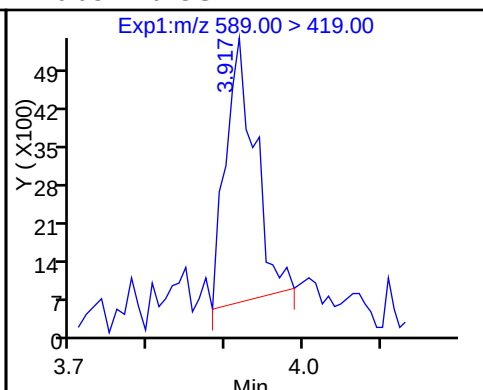
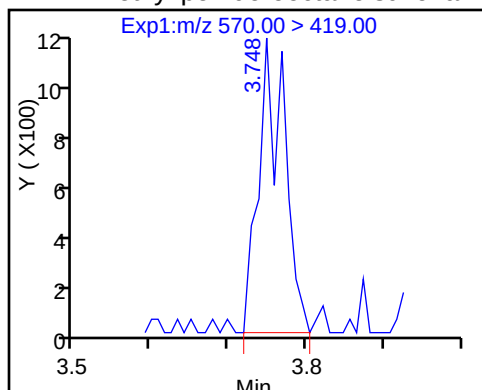
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamid

D 46 d5-NEtFOSAA

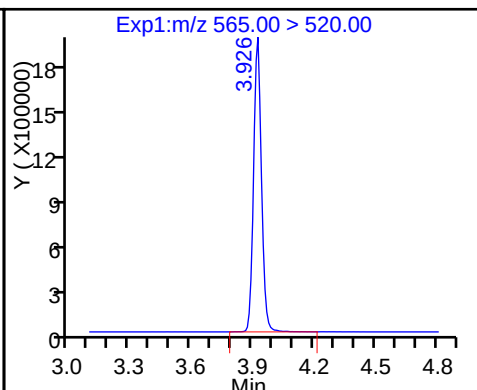
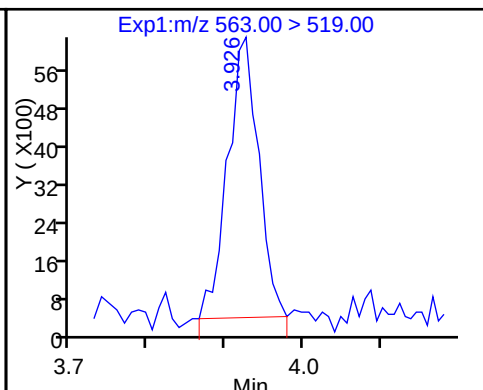
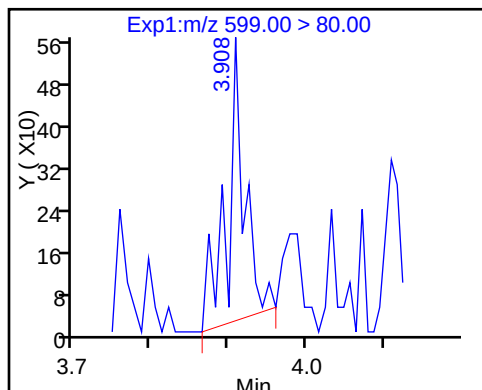
49 N-ethyl perfluorooctane sulfonamid



26 Perfluorodecane Sulfonic acid

28 Perfluoroundecanoic acid

D 27 13C2 PFUnA

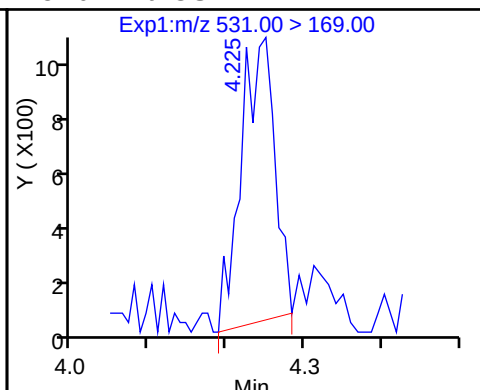
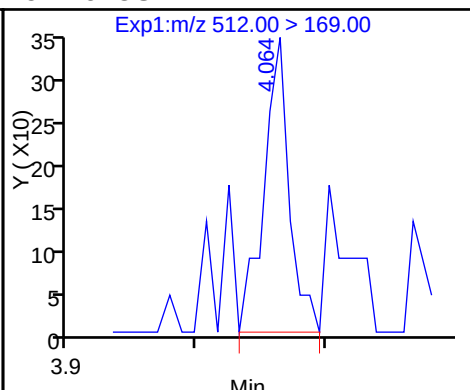
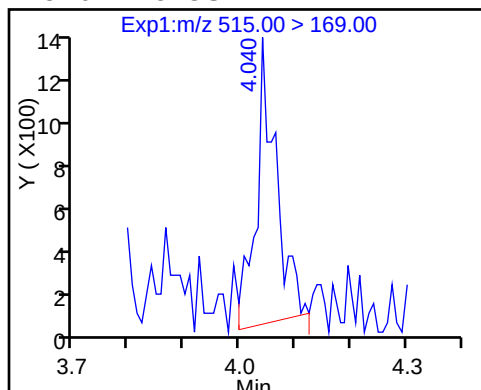




## D 52 d-N-MeFOSA-M

## 54 MeFOSA

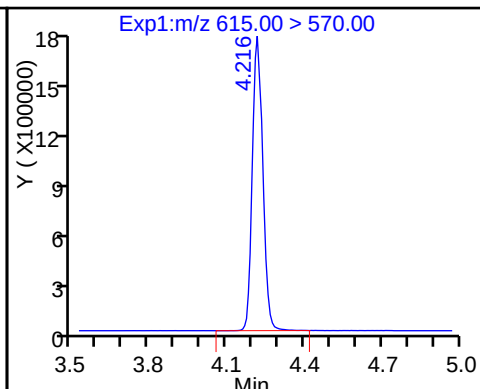
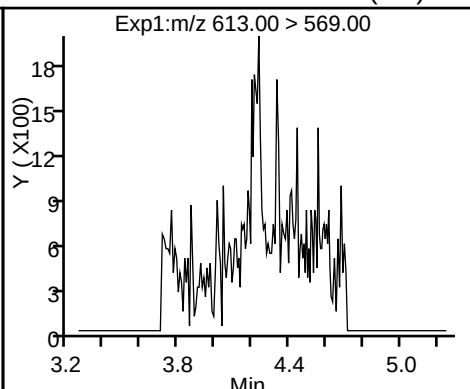
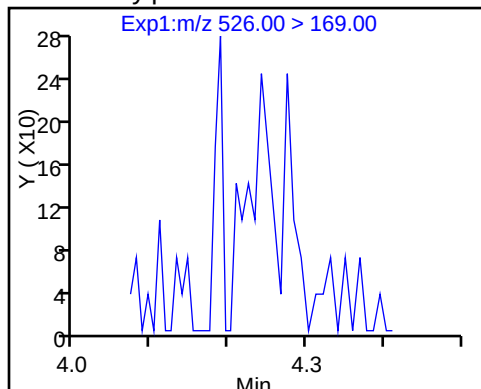
## D 51 d-N-EtFOSA-M



## 53 N-ethylperfluoro-1-octanesulfonami

## 29 Perfluorododecanoic acid (ND)

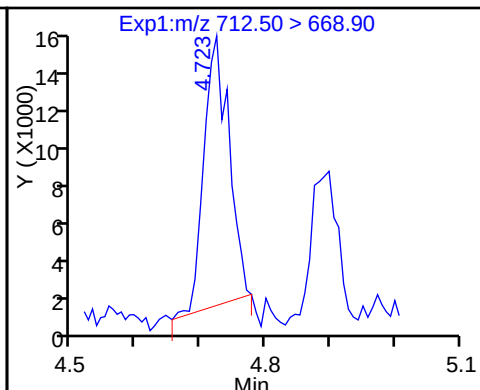
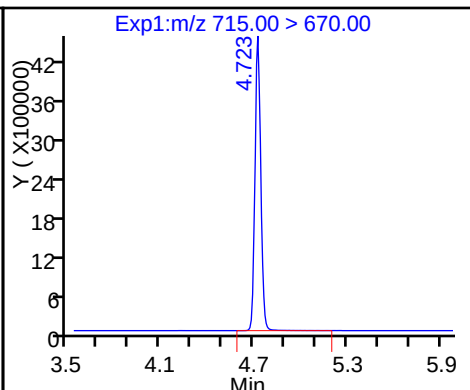
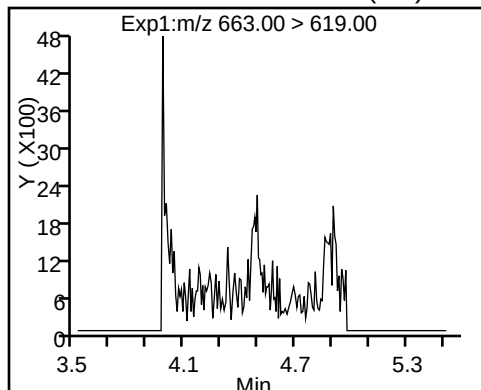
## D 30 13C2 PFDa



## 31 Perfluorotridecanoic acid (ND)

## D 32 13C2-PFTeDa

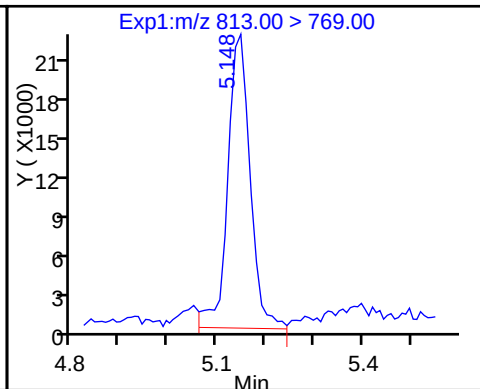
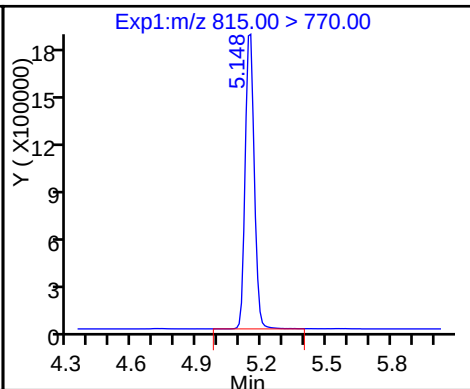
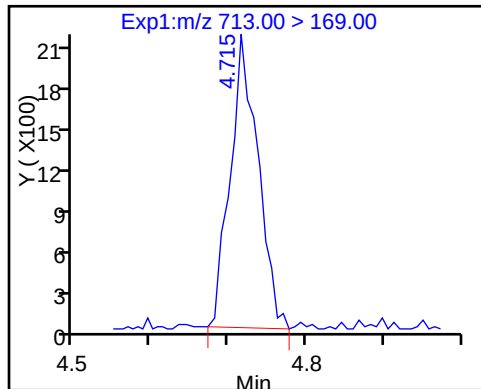
## 33 Perfluorotetradecanoic acid



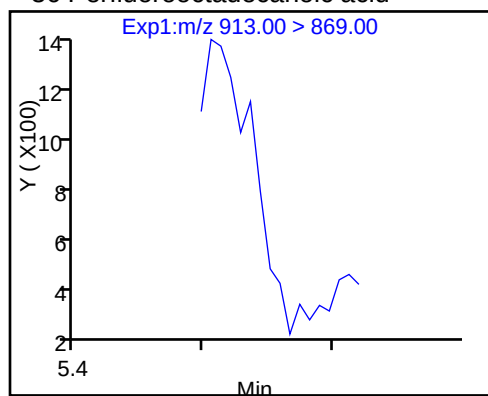
## 33 Perfluorotetradecanoic acid

## D 34 13C2-PFHxDa

## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: ICB 320-140564/10  
 Matrix: Water Lab File ID: 03DEC2016A\_010.d  
 Analysis Method: 537 (Modified) Date Collected: \_\_\_\_\_  
 Extraction Method: \_\_\_\_\_ Date Extracted: \_\_\_\_\_  
 Sample wt/vol: 1(mL) Date Analyzed: 12/03/2016 14:33  
 Con. Extract Vol.: \_\_\_\_\_ Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 140564 Units: ng/mL

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.204  | J | 0.50 | 0.10 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 0.30   | U | 0.50 | 0.13 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.30   | U | 0.40 | 0.10 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 102  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 97   |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 102  |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_010.d  
 Lims ID: ICB  
 Client ID:  
 Sample Type: ICB  
 Inject. Date: 03-Dec-2016 14:33:43 ALS Bottle#: 54 Worklist Smp#: 10  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: ICB\_b  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:26:19 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 09:46:44

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|

## D 2 13C4 PFBA

|                 |       |       |     |  |          |      |  |      |         |  |
|-----------------|-------|-------|-----|--|----------|------|--|------|---------|--|
| 217.00 > 172.00 | 1.574 | 1.574 | 0.0 |  | 16096656 | 47.9 |  | 95.9 | 1325245 |  |
|-----------------|-------|-------|-----|--|----------|------|--|------|---------|--|

## 3 Perfluoropentanoic acid

|                 |       |       |        |       |       |        |  |  |     |  |
|-----------------|-------|-------|--------|-------|-------|--------|--|--|-----|--|
| 262.90 > 219.00 | 1.849 | 1.861 | -0.013 | 1.000 | 26187 | 0.1009 |  |  | 206 |  |
|-----------------|-------|-------|--------|-------|-------|--------|--|--|-----|--|

## D 4 13C5-PFPeA

|                 |       |       |        |  |          |      |  |      |        |  |
|-----------------|-------|-------|--------|--|----------|------|--|------|--------|--|
| 267.90 > 223.00 | 1.858 | 1.861 | -0.003 |  | 12785749 | 48.3 |  | 96.7 | 900580 |  |
|-----------------|-------|-------|--------|--|----------|------|--|------|--------|--|

## 5 Perfluorobutanesulfonic acid

|                |       |       |        |       |       |        |                 |  |  |  |
|----------------|-------|-------|--------|-------|-------|--------|-----------------|--|--|--|
| 298.90 > 80.00 | 1.897 | 1.900 | -0.003 | 1.000 | 11990 | 0.0236 |                 |  |  |  |
| 298.90 > 99.00 | 1.887 | 1.900 | -0.013 | 0.995 | 5171  |        | 2.32(0.00-0.00) |  |  |  |

## 7 Perfluorohexanoic acid

|                 |       |       |        |       |       |        |  |  |     |  |
|-----------------|-------|-------|--------|-------|-------|--------|--|--|-----|--|
| 313.00 > 269.00 | 2.161 | 2.164 | -0.003 | 1.000 | 14358 | 0.0642 |  |  | 402 |  |
|-----------------|-------|-------|--------|-------|-------|--------|--|--|-----|--|

## D 6 13C2 PFHxA

|                 |       |       |        |  |          |      |  |      |        |  |
|-----------------|-------|-------|--------|--|----------|------|--|------|--------|--|
| 315.00 > 270.00 | 2.161 | 2.164 | -0.003 |  | 11724024 | 49.4 |  | 98.7 | 702569 |  |
|-----------------|-------|-------|--------|--|----------|------|--|------|--------|--|

## D 11 13C4-PFHpA

|                 |       |       |        |  |          |      |  |     |        |  |
|-----------------|-------|-------|--------|--|----------|------|--|-----|--------|--|
| 367.00 > 322.00 | 2.504 | 2.511 | -0.007 |  | 10534496 | 50.8 |  | 102 | 767171 |  |
|-----------------|-------|-------|--------|--|----------|------|--|-----|--------|--|

## 12 Perfluoroheptanoic acid

|                 |       |       |        |       |       |        |  |  |     |  |
|-----------------|-------|-------|--------|-------|-------|--------|--|--|-----|--|
| 363.00 > 319.00 | 2.504 | 2.512 | -0.008 | 1.000 | 46404 | 0.2144 |  |  | 599 |  |
|-----------------|-------|-------|--------|-------|-------|--------|--|--|-----|--|

## 9 Perfluorohexanesulfonic acid

|                |       |       |        |       |       |        |  |  |  |  |
|----------------|-------|-------|--------|-------|-------|--------|--|--|--|--|
| 399.00 > 80.00 | 2.520 | 2.531 | -0.011 | 1.000 | 57809 | 0.1658 |  |  |  |  |
|----------------|-------|-------|--------|-------|-------|--------|--|--|--|--|

## D 10 18O2 PFHxS

|                |       |       |        |  |          |      |  |     |         |  |
|----------------|-------|-------|--------|--|----------|------|--|-----|---------|--|
| 403.00 > 84.00 | 2.520 | 2.531 | -0.011 |  | 15029673 | 48.1 |  | 102 | 1415639 |  |
|----------------|-------|-------|--------|--|----------|------|--|-----|---------|--|

## 48 Sodium 1H,1H,2H,2H-perfluorooctane

|                 |       |       |       |       |       |        |  |  |  |  |
|-----------------|-------|-------|-------|-------|-------|--------|--|--|--|--|
| 427.00 > 407.00 | 2.837 | 2.836 | 0.001 | 1.000 | 14959 | 0.1994 |  |  |  |  |
|-----------------|-------|-------|-------|-------|-------|--------|--|--|--|--|

## D 47 M2-6:2FTS

|                 |       |       |       |  |         |      |  |      |  |  |
|-----------------|-------|-------|-------|--|---------|------|--|------|--|--|
| 429.00 > 409.00 | 2.846 | 2.836 | 0.010 |  | 4240985 | 40.2 |  | 84.6 |  |  |
|-----------------|-------|-------|-------|--|---------|------|--|------|--|--|

## D 14 13C4 PFOA

|                 |       |       |        |  |          |      |  |     |        |  |
|-----------------|-------|-------|--------|--|----------|------|--|-----|--------|--|
| 417.00 > 372.00 | 2.870 | 2.880 | -0.010 |  | 11233082 | 51.2 |  | 102 | 944277 |  |
|-----------------|-------|-------|--------|--|----------|------|--|-----|--------|--|

| Signal                                | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|---------------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 15 Perfluorooctanoic acid             |       |        |        |        |          |              |                 |      |        |       |
| 413.00 > 369.00                       | 2.886 | 2.887  | -0.001 | 1.000  | 49093    | 0.2039       |                 |      | 305    |       |
| 413.00 > 169.00                       | 2.878 | 2.887  | -0.009 | 0.997  | 17821    |              | 2.75(0.90-1.10) |      | 1369   |       |
| D 17 13C4 PFOS                        |       |        |        |        |          |              |                 |      |        |       |
| 503.00 > 80.00                        | 3.251 | 3.259  | -0.008 |        | 11404796 | 46.4         |                 | 97.0 | 680924 |       |
| D 19 13C5 PFNA                        |       |        |        |        |          |              |                 |      |        |       |
| 468.00 > 423.00                       | 3.251 | 3.263  | -0.012 |        | 8205328  | 49.3         |                 | 98.6 | 665084 |       |
| D 21 13C8 FOSA                        |       |        |        |        |          |              |                 |      |        |       |
| 506.00 > 78.00                        | 3.563 | 3.571  | -0.008 |        | 19326715 | 48.0         |                 | 96.1 | 590557 |       |
| 22 Perfluorooctane Sulfonamide        |       |        |        |        |          |              |                 |      |        |       |
| 498.00 > 78.00                        | 3.563 | 3.574  | -0.011 | 1.000  | 33109    | 0.0917       |                 |      | 856    |       |
| 43 Sodium 1H,1H,2H,2H-perfluorooctane |       |        |        |        |          |              |                 |      |        |       |
| 527.00 > 507.00                       | 3.588 | 3.588  | 0.0    | 0.998  | 1181     | 0.0176       |                 |      |        |       |
| D 42 M2-8:2FTS                        |       |        |        |        |          |              |                 |      |        |       |
| 529.00 > 509.00                       | 3.596 | 3.591  | 0.005  |        | 3746326  | 38.6         |                 | 80.5 |        |       |
| 24 Perfluorodecanoic acid             |       |        |        |        |          |              |                 |      |        |       |
| 513.00 > 469.00                       | 3.621 | 3.623  | -0.002 | 1.000  | 7365     | 0.0500       |                 |      | 262    |       |
| D 23 13C2 PFDA                        |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 470.00                       | 3.613 | 3.626  | -0.013 |        | 7674974  | 48.6         |                 | 97.3 | 318943 |       |
| D 45 d3-NMeFOSAA                      |       |        |        |        |          |              |                 |      |        |       |
| 573.00 > 419.00                       | 3.764 | 3.756  | 0.008  |        | 3213300  | 44.3         |                 | 88.6 |        |       |
| 44 N-methyl perfluorooctane sulfonami |       |        |        |        |          |              |                 |      |        |       |
| 570.00 > 419.00                       | 3.802 | 3.759  | 0.043  | 1.010  | 251      | 0.004550     |                 |      |        |       |
| D 46 d5-NEtFOSAA                      |       |        |        |        |          |              |                 |      |        |       |
| 589.00 > 419.00                       | 3.932 | 3.922  | 0.010  |        | 3437758  | 43.2         |                 | 86.3 |        |       |
| 49 N-ethyl perfluorooctane sulfonamid |       |        |        |        |          |              |                 |      |        |       |
| 584.00 > 419.00                       | 3.950 | 3.929  | 0.021  | 1.004  | 1568     | 0.0298       |                 |      |        |       |
| 26 Perfluorodecane Sulfonic acid      |       |        |        |        |          |              |                 |      |        |       |
| 599.00 > 80.00                        | 3.906 | 3.936  | -0.030 | 1.000  | 4850     | 0.0318       |                 |      |        |       |
| 28 Perfluoroundecanoic acid           |       |        |        |        |          |              |                 |      |        |       |
| 563.00 > 519.00                       | 3.941 | 3.955  | -0.014 | 1.000  | 19419    | 0.1546       |                 |      | 520    |       |
| D 27 13C2 PFUnA                       |       |        |        |        |          |              |                 |      |        |       |
| 565.00 > 520.00                       | 3.941 | 3.958  | -0.017 |        | 5892898  | 49.6         |                 | 99.2 | 340109 |       |
| D 52 d-N-MeFOSA-M                     |       |        |        |        |          |              |                 |      |        |       |
| 515.00 > 169.00                       | 4.058 | 4.051  | 0.007  |        | 4941569  | 47.0         |                 | 94.0 |        |       |
| 54 MeFOSA                             |       |        |        |        |          |              |                 |      |        |       |
| 512.00 > 169.00                       | 4.058 | 4.057  | 0.001  | 1.000  | 247      | 0.003093     |                 |      |        |       |
| D 51 d-N-EtFOSA-M                     |       |        |        |        |          |              |                 |      |        |       |
| 531.00 > 169.00                       | 4.237 | 4.239  | -0.002 |        | 4774609  | 48.1         |                 | 96.3 |        |       |
| 53 N-ethylperfluoro-1-octanesulfonami |       |        |        |        |          |              |                 |      |        |       |
| 526.00 > 169.00                       | 4.246 | 4.245  | 0.001  | 1.000  | 660      | 0.008032     |                 |      |        |       |
| D 30 13C2 PFDaA                       |       |        |        |        |          |              |                 |      |        |       |
| 615.00 > 570.00                       | 4.237 | 4.251  | -0.014 |        | 5399581  | 48.2         |                 | 96.3 | 213278 |       |
| 31 Perfluorotridecanoic acid          |       |        |        |        |          |              |                 |      |        |       |
| 663.00 > 619.00                       | 4.502 | 4.518  | -0.016 | 1.000  | 14415    | 0.1405       |                 |      | 97.0   |       |
| D 32 13C2-PFTeDA                      |       |        |        |        |          |              |                 |      |        |       |
| 715.00 > 670.00                       | 4.740 | 4.759  | -0.019 |        | 11538350 | 49.9         |                 | 99.8 | 814530 |       |

| Signal                         | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|--------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 33 Perfluorotetradecanoic acid |       |           |           |           |          |                 |                 |      |        |       |
| 712.50 > 668.90                | 4.749 | 4.761     | -0.012    | 1.000     | 45349    | 0.2265          |                 |      | 25.0   |       |
| 713.00 > 169.00                | 4.740 | 4.761     | -0.021    | 0.998     | 10278    |                 | 4.41(0.00-0.00) |      | 1682   |       |
| D 34 13C2-PFHxDA               |       |           |           |           |          |                 |                 |      |        |       |
| 815.00 > 770.00                | 5.165 | 5.186     | -0.021    |           | 6026380  | 46.5            |                 | 92.9 | 130593 |       |
| 35 Perfluorohexadecanoic acid  |       |           |           |           |          |                 |                 |      |        |       |
| 813.00 > 769.00                | 5.165 | 5.186     | -0.021    | 1.000     | 112545   | 0.2952          |                 |      | 116    |       |
| 36 Perfluorooctadecanoic acid  |       |           |           |           |          |                 |                 |      |        |       |
| 913.00 > 869.00                | 5.534 | 5.559     | -0.025    | 1.000     | 65863    | 0.6143          |                 |      | 98.5   |       |

**Reagents:**

LCPFC-L0\_00002

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_010.d

Injection Date: 03-Dec-2016 14:33:43

Instrument ID: A8\_N

Lims ID: ICB

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 54

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

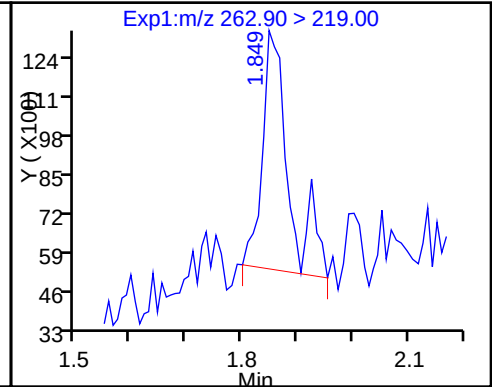
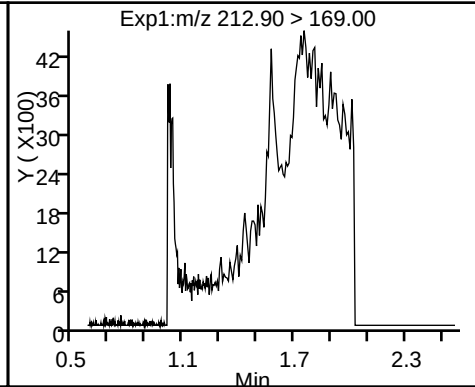
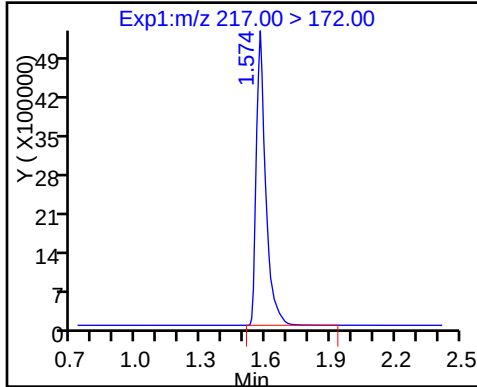
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid (ND)

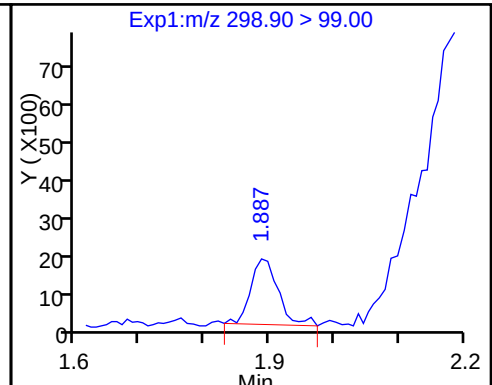
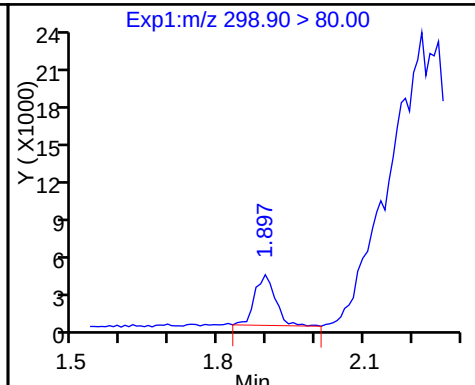
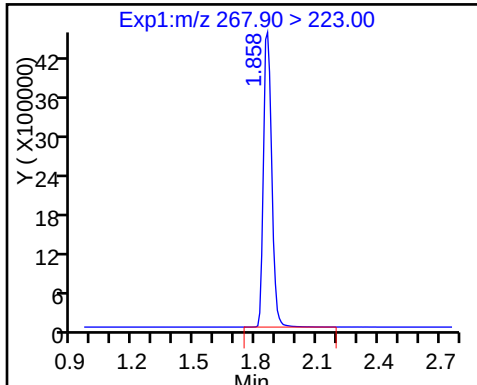
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

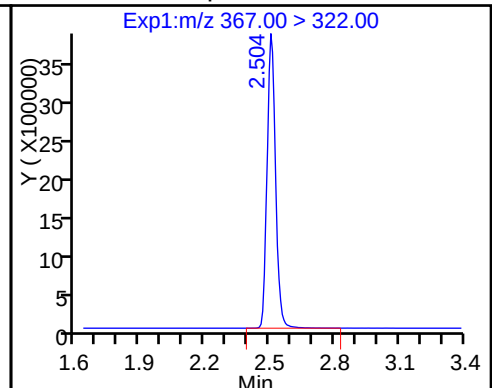
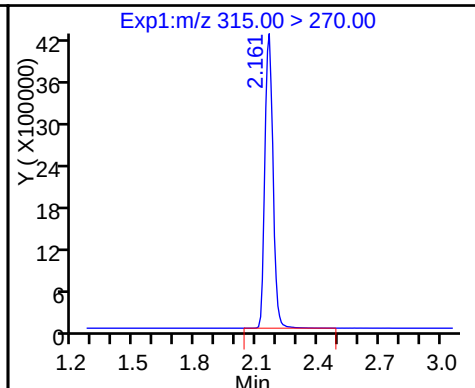
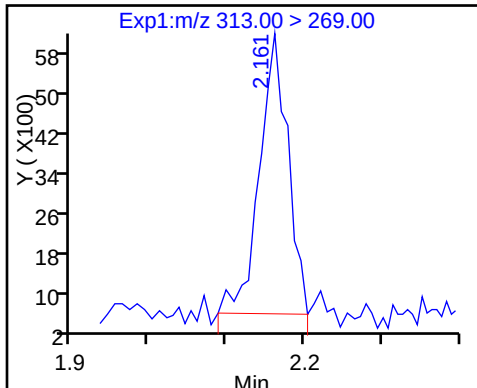
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

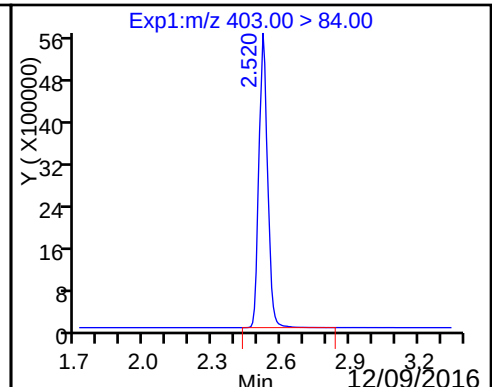
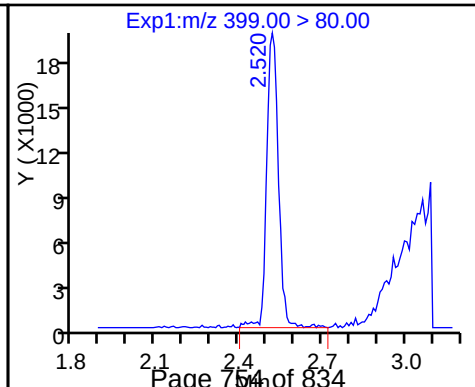
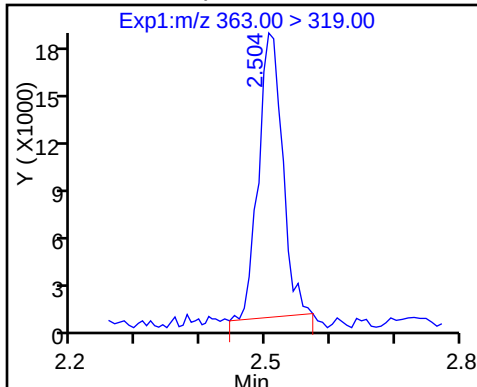
D 11 13C4-PFHpA



12 Perfluoroheptanoic acid

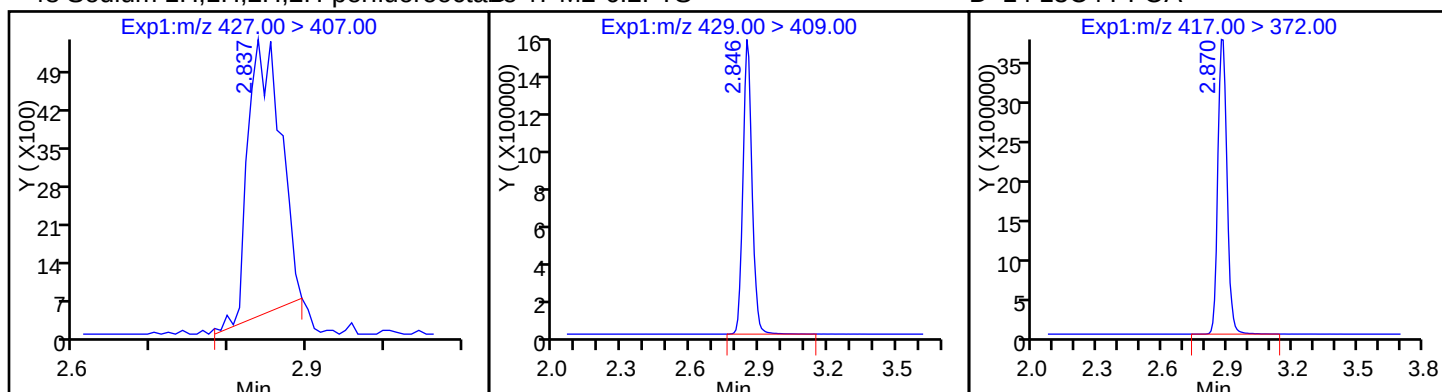
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS



48 Sodium 1H,1H,2H,2H-perfluorooctadec-4

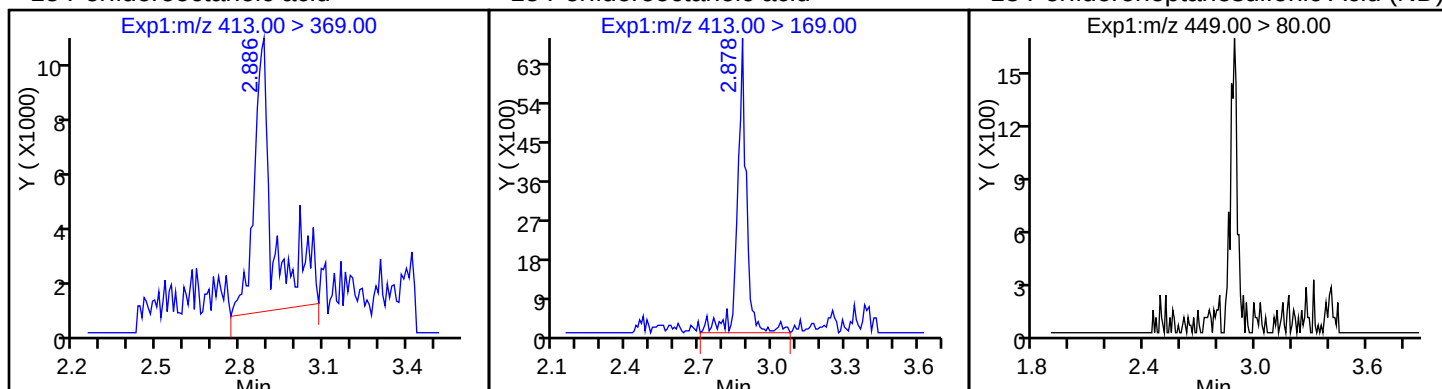
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

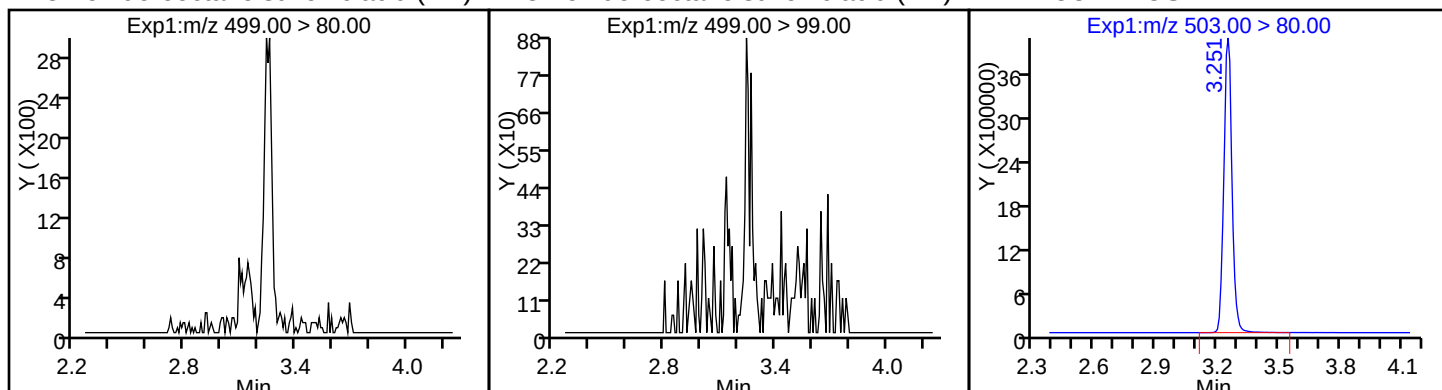
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

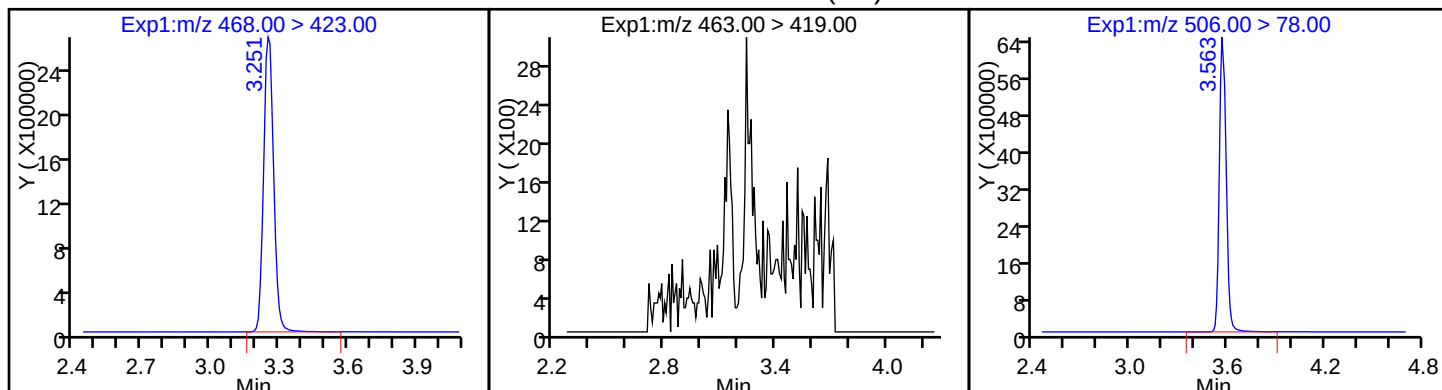
D 17 13C4 PFOS



D 19 13C5 PFNA

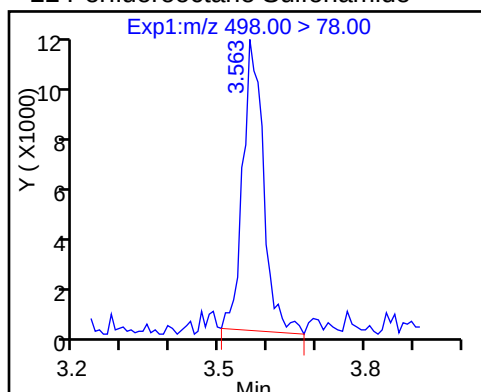
20 Perfluorononanoic acid (ND)

D 21 13C8 FOSA

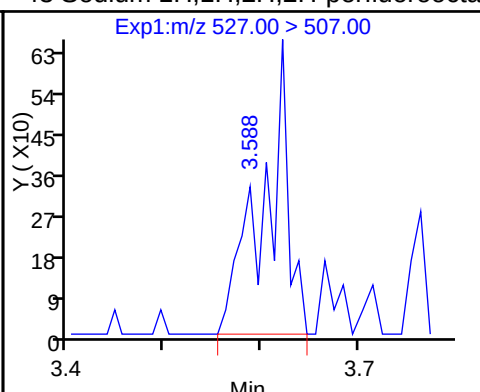




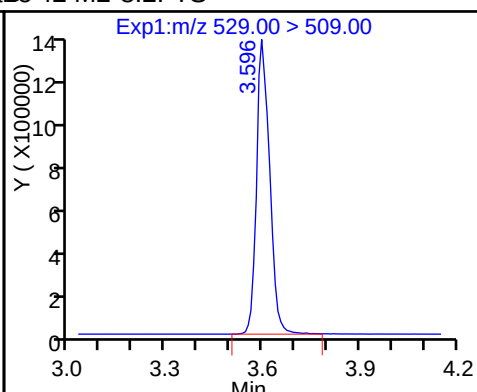
22 Perfluorooctane Sulfonamide



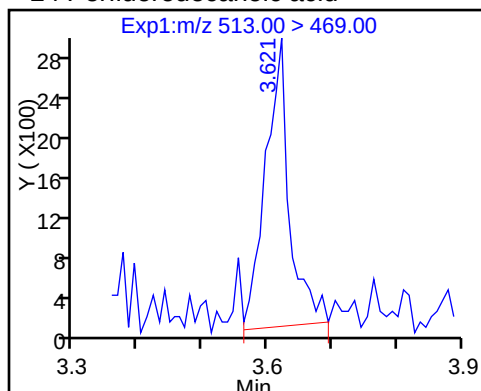
43 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate



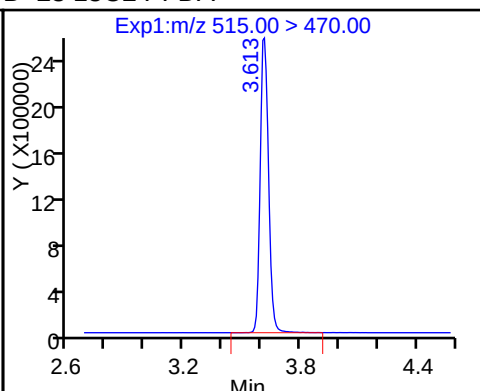
De 42 M2-8:2FTS



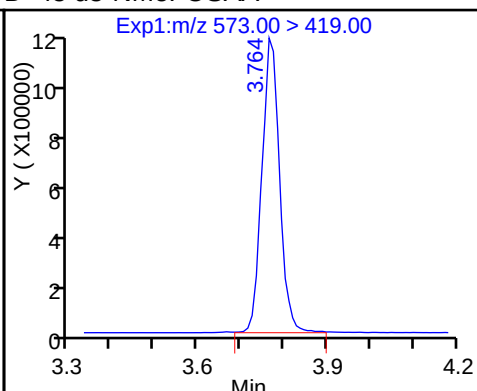
24 Perfluorodecanoic acid



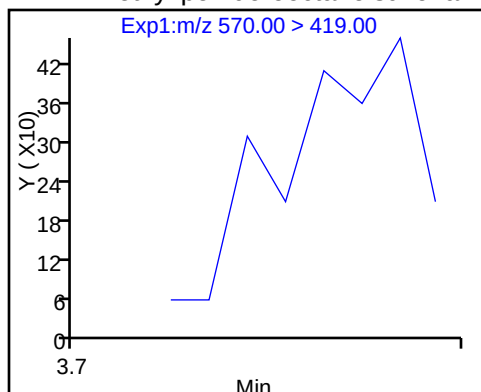
D 23 13C2 PFDA



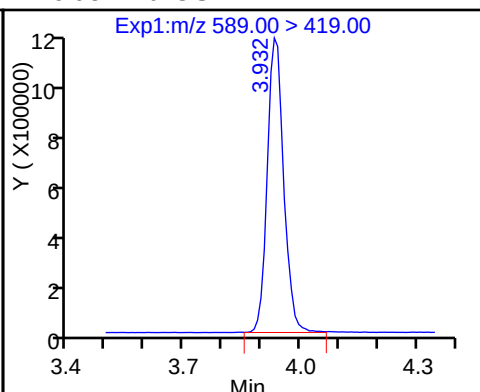
D 45 d3-NMeFOSAA



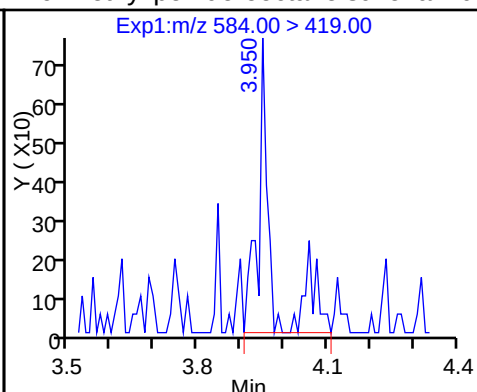
44 N-methyl perfluorooctane sulfonamide



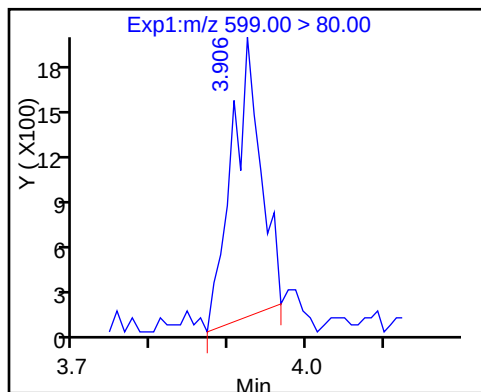
46 d5-NEtFOSAA



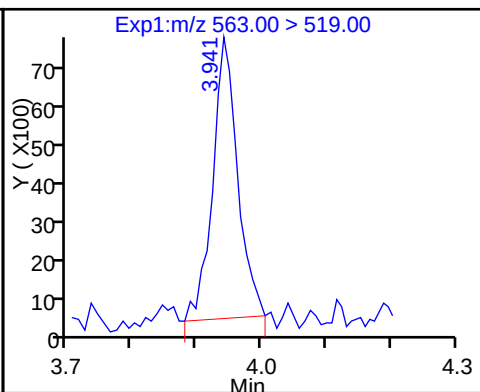
49 N-ethyl perfluorooctane sulfonamide



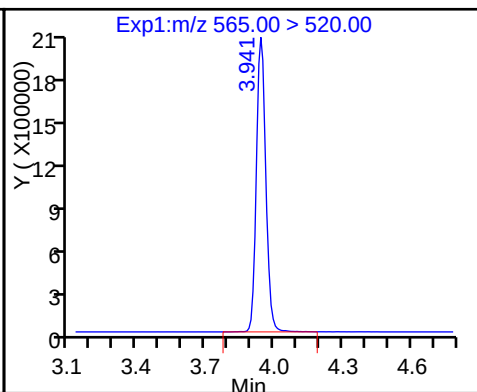
26 Perfluorodecane Sulfonic acid



28 Perfluoroundecanoic acid



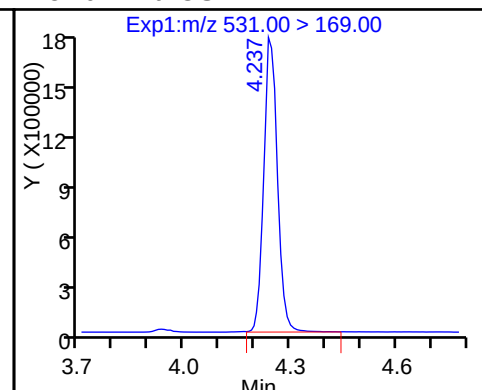
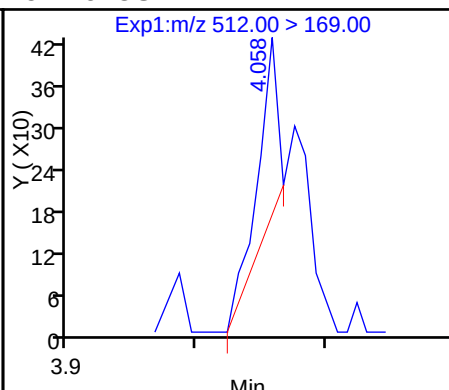
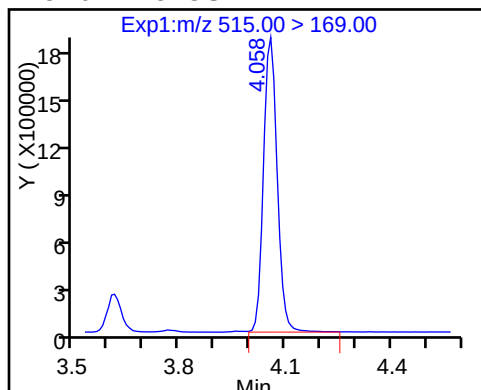
D 27 13C2 PFUnA



## D 52 d-N-MeFOSA-M

## 54 MeFOSA

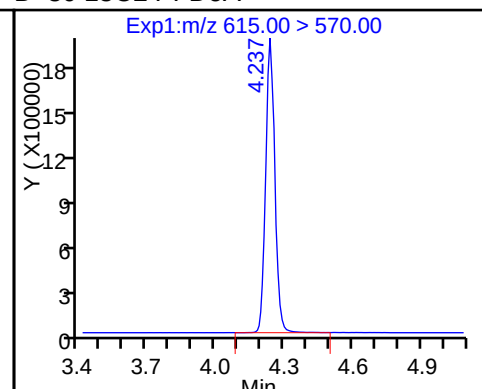
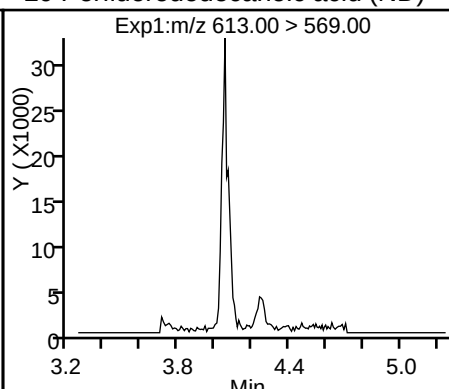
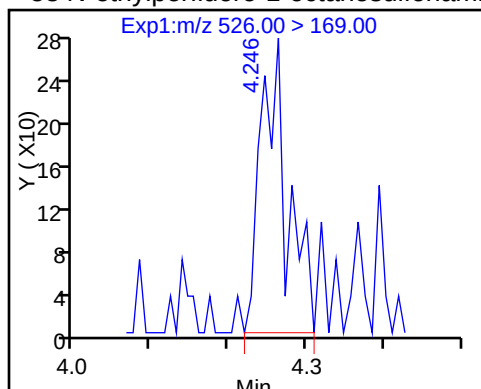
## D 51 d-N-EtFOSA-M



## 53 N-ethylperfluoro-1-octanesulfonami

## 29 Perfluorododecanoic acid (ND)

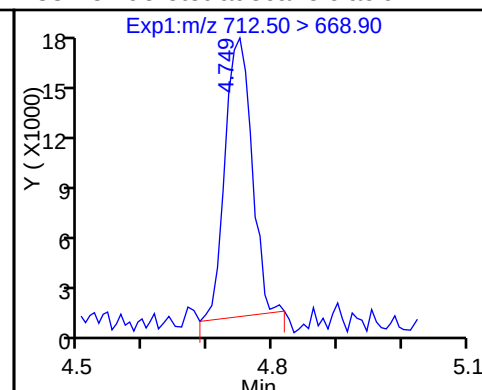
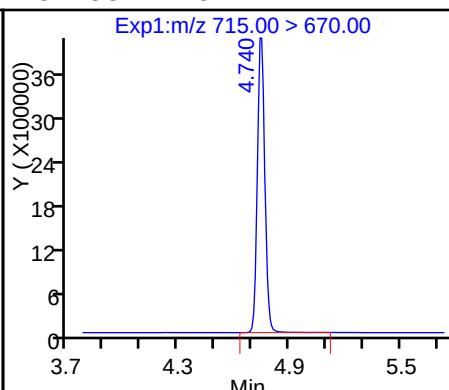
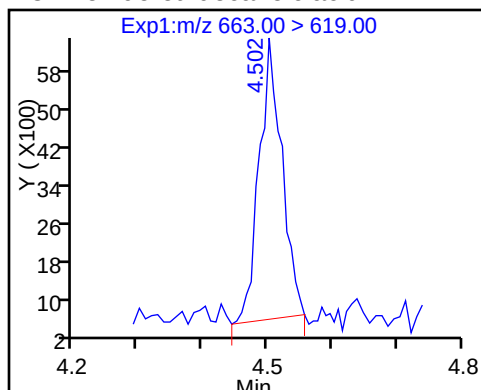
## D 30 13C2 PFDa



## 31 Perfluorotridecanoic acid

## D 32 13C2-PFTeDA

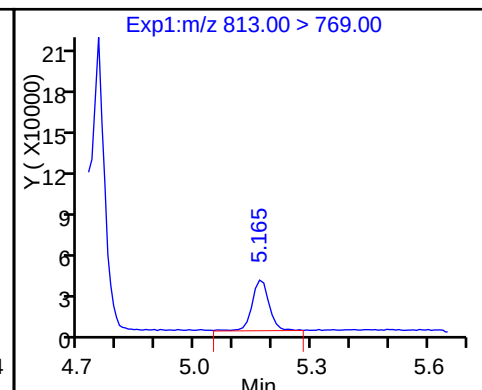
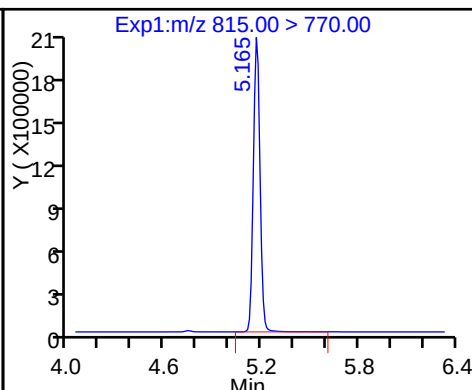
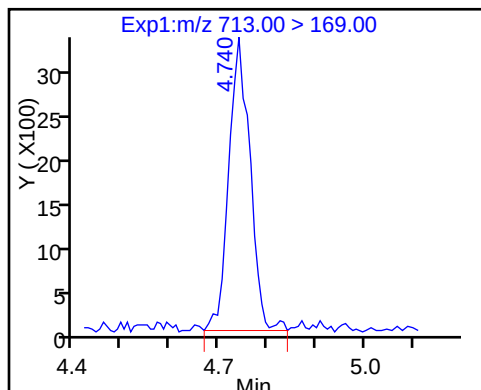
## 33 Perfluorotetradecanoic acid



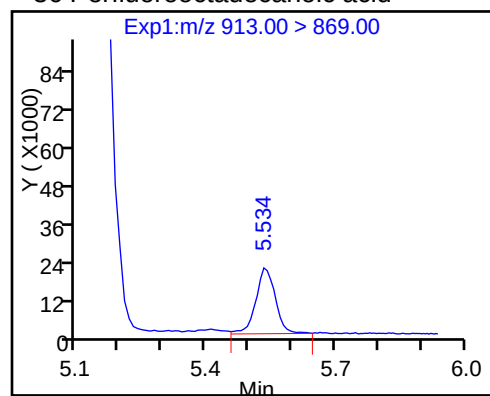
## 33 Perfluorotetradecanoic acid

## D 34 13C2-PFHxDA

## 35 Perfluorohexadecanoic acid



## 36 Perfluorooctadecanoic acid



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCS 320-139627/2-A  
 Matrix: Solid Lab File ID: 02DEC2016C\_002.d  
 Analysis Method: 537 (Modified) Date Collected: \_\_\_\_\_  
 Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03  
 Sample wt/vol: 5.00 (g) Date Analyzed: 12/02/2016 15:07  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 140429 Units: ug/Kg

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL   | MDL  |
|-----------|-------------------------------------|--------|---|------|------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 4.25   |   | 0.50 | 0.10 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 3.66   |   | 0.50 | 0.13 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 4.03   |   | 0.40 | 0.10 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 119  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 112  |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 120  |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_002.d  
 Lims ID: LCS 320-139627/2-A  
 Client ID:  
 Sample Type: LCS  
 Inject. Date: 02-Dec-2016 15:07:03 ALS Bottle#: 2 Worklist Smp#: 6  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: lcs 320-139627/2-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 04-Dec-2016 18:17:14 Calib Date: 02-Dec-2016 12:29:29  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161202-37450.b\02DEC2016A\_020.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK025

First Level Reviewer: chandrasenas

Date: 04-Dec-2016 18:17:14

| Signal                         | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 1 Perfluorobutyric acid        |       |        |        |        |          |              |                 |      |         |       |
| 212.90 > 169.00                | 1.582 | 1.574  | 0.008  | 1.000  | 7714134  | 21.3         |                 | 106  | 70812   |       |
| D 2 13C4 PFBA                  |       |        |        |        |          |              |                 |      |         |       |
| 217.00 > 172.00                | 1.574 | 1.574  | 0.0    |        | 20481402 | 60.2         |                 | 120  | 1265290 |       |
| 3 Perfluoropentanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 262.90 > 219.00                | 1.868 | 1.868  | 0.0    | 1.000  | 6535777  | 19.3         |                 | 96.7 | 62609   |       |
| D 4 13C5-PFPeA                 |       |        |        |        |          |              |                 |      |         |       |
| 267.90 > 223.00                | 1.868 | 1.868  | 0.0    |        | 16242034 | 60.1         |                 | 120  | 1094905 |       |
| 5 Perfluorobutanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 298.90 > 80.00                 | 1.906 | 1.907  | -0.001 | 1.000  | 11783909 | 20.1         |                 | 114  |         |       |
| 298.90 > 99.00                 | 1.906 | 1.907  | -0.001 | 1.000  | 5085170  |              | 2.32(0.00-0.00) |      |         |       |
| 7 Perfluorohexanoic acid       |       |        |        |        |          |              |                 |      |         |       |
| 313.00 > 269.00                | 2.179 | 2.173  | 0.006  | 1.000  | 5304421  | 20.8         |                 | 104  | 102430  |       |
| D 6 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |         |       |
| 315.00 > 270.00                | 2.179 | 2.173  | 0.006  |        | 13349831 | 54.2         |                 | 108  | 1044992 |       |
| 12 Perfluoroheptanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 363.00 > 319.00                | 2.520 | 2.519  | 0.001  | 1.000  | 5325594  | 20.3         |                 | 101  | 84952   |       |
| D 11 13C4-PFHpA                |       |        |        |        |          |              |                 |      |         |       |
| 367.00 > 322.00                | 2.520 | 2.519  | 0.001  |        | 12690645 | 60.3         |                 | 121  | 811314  |       |
| 9 Perfluorohexanesulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 399.00 > 80.00                 | 2.536 | 2.534  | 0.002  | 1.000  | 6956903  | 18.1         |                 | 99.4 |         |       |
| D 10 18O2 PFHxS                |       |        |        |        |          |              |                 |      |         |       |
| 403.00 > 84.00                 | 2.536 | 2.534  | 0.002  |        | 17161737 | 56.7         |                 | 120  | 2215913 |       |
| D 14 13C4 PFOA                 |       |        |        |        |          |              |                 |      |         |       |
| 417.00 > 372.00                | 2.895 | 2.886  | 0.009  |        | 13102595 | 59.7         |                 | 119  | 818355  |       |
| 15 Perfluorooctanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 413.00 > 369.00                | 2.895 | 2.894  | 0.001  | 1.000  | 5685652  | 21.3         |                 | 106  | 81058   |       |
| 413.00 > 169.00                | 2.895 | 2.894  | 0.001  | 1.000  | 3320781  |              | 1.71(0.90-1.10) |      | 187412  |       |

| Signal                           | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | %Rec | S/N     | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|---------|-------|
| 13 Perfluoroheptanesulfonic Acid |       |        |        |        |          |              |                 |      |         |       |
| 449.00 > 80.00                   | 2.903 | 2.902  | 0.001  | 1.000  | 6325837  | 19.8         |                 | 104  |         |       |
| 18 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 499.00 > 80.00                   | 3.269 | 3.267  | 0.002  | 1.000  | 5437362  | 18.3         |                 | 98.5 | 1603544 |       |
| 499.00 > 99.00                   | 3.276 | 3.267  | 0.009  | 1.002  | 1198769  |              | 4.54(0.90-1.10) |      | 67382   |       |
| D 17 13C4 PFOS                   |       |        |        |        |          |              |                 |      |         |       |
| 503.00 > 80.00                   | 3.269 | 3.267  | 0.002  |        | 13071743 | 53.4         |                 | 112  | 495633  |       |
| 20 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 463.00 > 419.00                  | 3.276 | 3.275  | 0.001  | 1.000  | 4107662  | 19.9         |                 | 99.3 | 64639   |       |
| D 19 13C5 PFNA                   |       |        |        |        |          |              |                 |      |         |       |
| 468.00 > 423.00                  | 3.276 | 3.275  | 0.001  |        | 10430504 | 58.6         |                 | 117  | 602616  |       |
| 22 Perfluorooctane Sulfonamide   |       |        |        |        |          |              |                 |      |         |       |
| 498.00 > 78.00                   | 3.591 | 3.589  | 0.002  | 1.000  | 6225860  | 20.9         |                 | 104  | 196040  |       |
| D 21 13C8 FOSA                   |       |        |        |        |          |              |                 |      |         |       |
| 506.00 > 78.00                   | 3.591 | 3.589  | 0.002  |        | 15929131 | 38.5         |                 | 76.9 | 599228  |       |
| D 23 13C2 PFDA                   |       |        |        |        |          |              |                 |      |         |       |
| 515.00 > 470.00                  | 3.633 | 3.631  | 0.002  |        | 9554899  | 57.5         |                 | 115  | 328216  |       |
| 24 Perfluorodecanoic acid        |       |        |        |        |          |              |                 |      |         |       |
| 513.00 > 469.00                  | 3.633 | 3.631  | 0.002  | 1.000  | 3686742  | 19.9         |                 | 99.5 | 78094   |       |
| 26 Perfluorodecane Sulfonic acid |       |        |        |        |          |              |                 |      |         |       |
| 599.00 > 80.00                   | 3.943 | 3.941  | 0.002  | 1.000  | 2787512  | 16.3         |                 | 84.3 |         |       |
| 28 Perfluoroundecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 563.00 > 519.00                  | 3.969 | 3.959  | 0.010  | 1.000  | 2452827  | 17.5         |                 | 87.3 | 60912   |       |
| D 27 13C2 PFUnA                  |       |        |        |        |          |              |                 |      |         |       |
| 565.00 > 520.00                  | 3.969 | 3.967  | 0.002  |        | 6630265  | 52.7         |                 | 105  | 285640  |       |
| 29 Perfluorododecanoic acid      |       |        |        |        |          |              |                 |      |         |       |
| 613.00 > 569.00                  | 4.260 | 4.259  | 0.001  | 1.000  | 1878687  | 19.1         |                 | 95.7 | 31690   |       |
| D 30 13C2 PFDaA                  |       |        |        |        |          |              |                 |      |         |       |
| 615.00 > 570.00                  | 4.260 | 4.259  | 0.001  |        | 5187445  | 44.4         |                 | 88.7 | 159341  |       |
| 31 Perfluorotridecanoic acid     |       |        |        |        |          |              |                 |      |         |       |
| 663.00 > 619.00                  | 4.530 | 4.520  | 0.010  | 1.000  | 1368885  | 12.7         |                 | 63.4 | 2551    |       |
| 33 Perfluorotetradecanoic acid   |       |        |        |        |          |              |                 |      |         |       |
| 712.50 > 668.90                  | 4.763 | 4.772  | -0.009 | 1.000  | 2525010  | 12.6         |                 | 63.0 | 1335    |       |
| 713.00 > 169.00                  | 4.763 | 4.772  | -0.009 | 1.000  | 405389   |              | 6.23(0.00-0.00) |      | 85374   |       |
| D 32 13C2-PFTeDA                 |       |        |        |        |          |              |                 |      |         |       |
| 715.00 > 670.00                  | 4.763 | 4.772  | -0.009 |        | 7044061  | 29.1         |                 | 58.2 | 372548  |       |
| D 34 13C2-PFHxDA                 |       |        |        |        |          |              |                 |      |         |       |
| 815.00 > 770.00                  | 5.186 | 5.184  | 0.002  |        | 2287334  | 17.5         |                 | 35.1 | 108956  |       |
| 35 Perfluorohexadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 813.00 > 769.00                  | 5.186 | 5.194  | -0.008 | 1.000  | 788728   | 6.89         |                 | 34.5 | 2778    |       |
| 36 Perfluorooctadecanoic acid    |       |        |        |        |          |              |                 |      |         |       |
| 913.00 > 869.00                  | 5.569 | 5.562  | 0.007  | 1.000  | 812724   | 9.96         |                 | 49.8 | 3215    |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b\02DEC2016C\_002.d

Injection Date: 02-Dec-2016 15:07:03

Instrument ID: A8\_N

Lims ID: LCS 320-139627/2-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 2

Worklist Smp#: 6

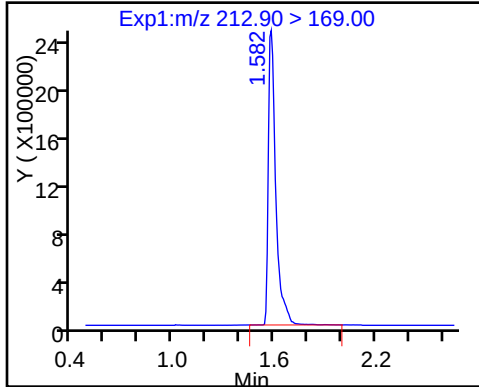
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

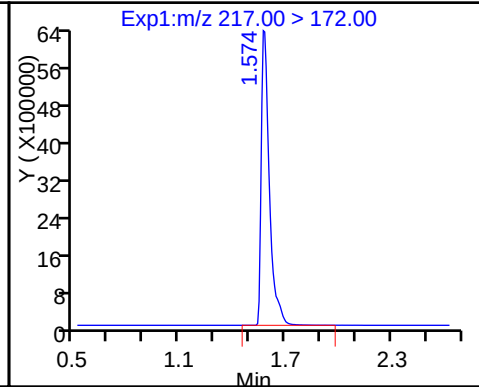
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

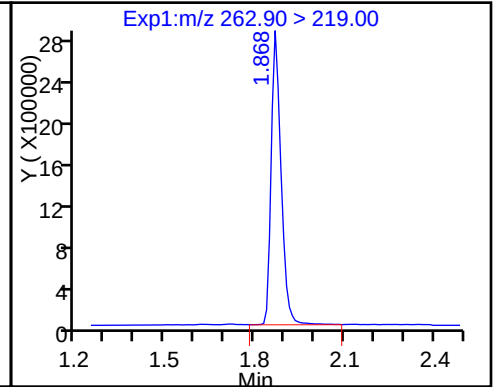
1 Perfluorobutyric acid



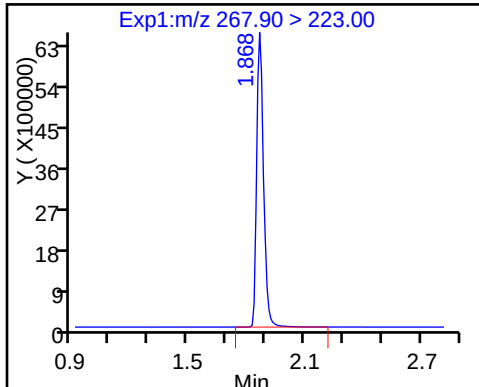
D 2 13C4 PFBA



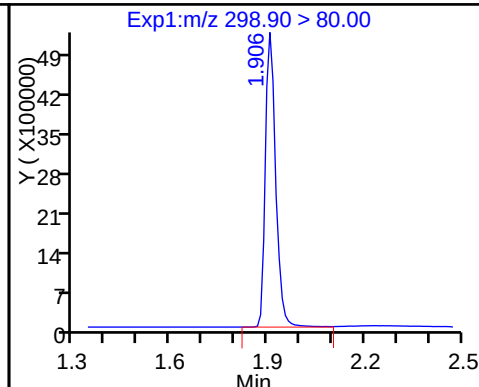
3 Perfluoropentanoic acid



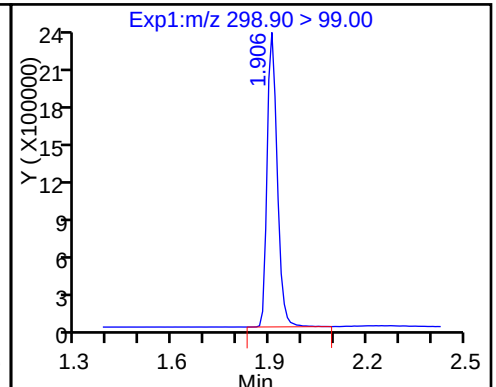
D 4 13C5-PFPeA



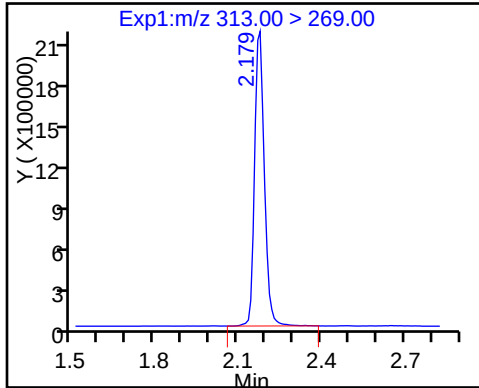
5 Perfluorobutanesulfonic acid



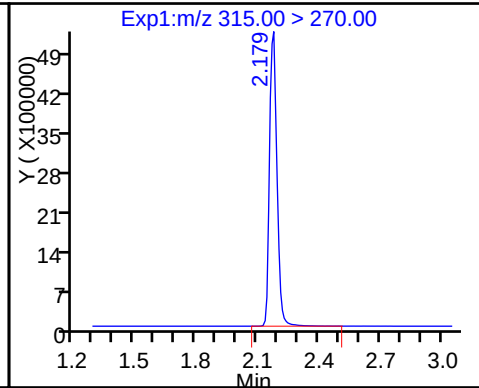
5 Perfluorobutanesulfonic acid



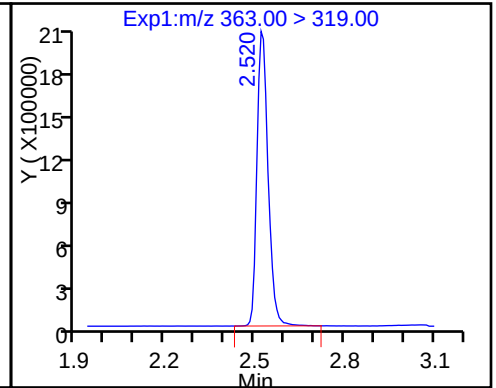
7 Perfluorohexanoic acid



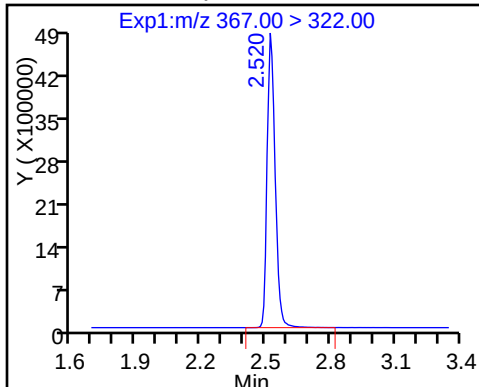
D 6 13C2 PFHxA



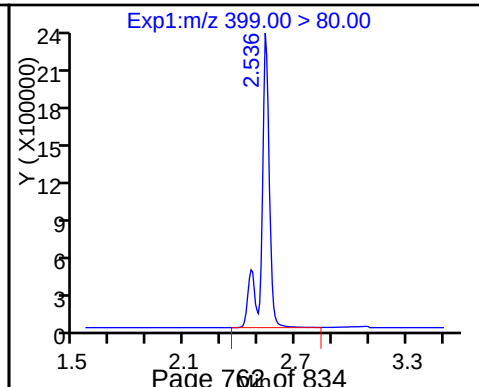
12 Perfluoroheptanoic acid



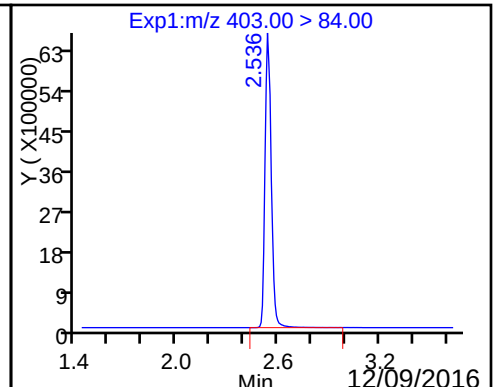
D 11 13C4-PFHpA



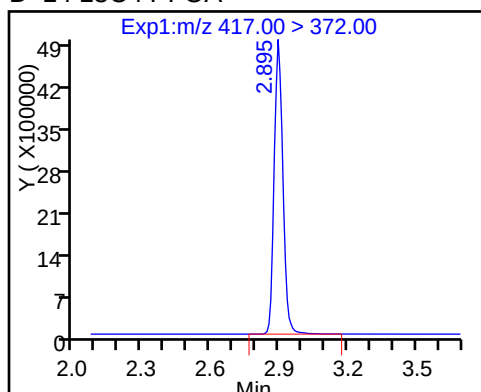
9 Perfluorohexanesulfonic acid



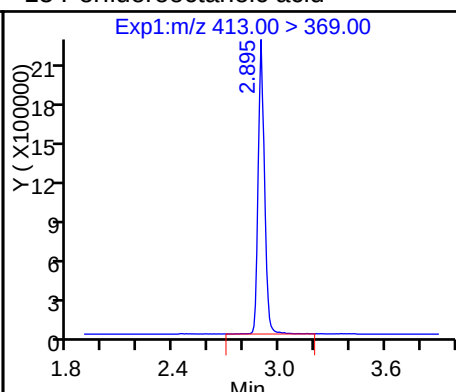
D 10 18O2 PFHxS



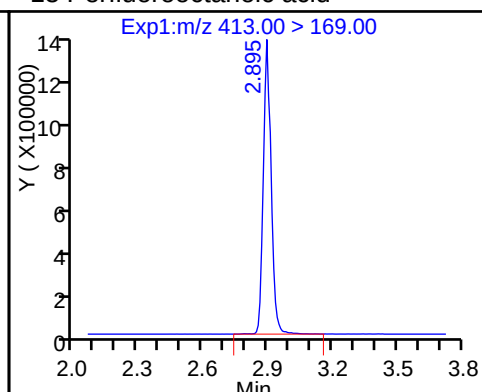
## D 14 13C4 PFOA



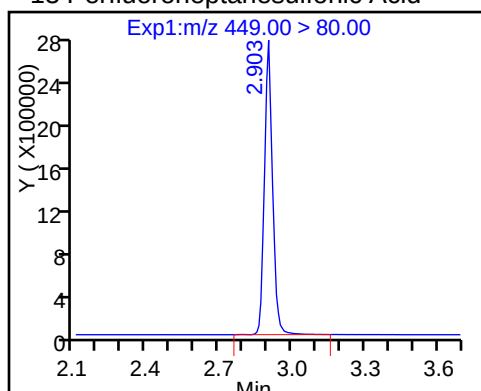
## 15 Perfluorooctanoic acid



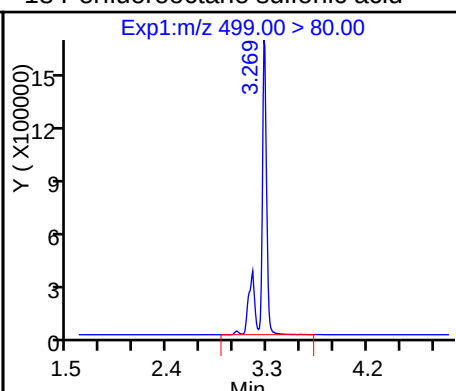
## 15 Perfluorooctanoic acid



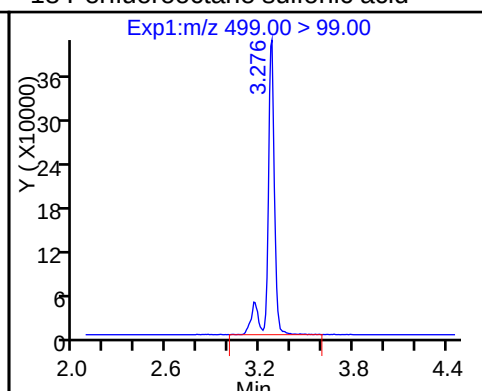
## 13 Perfluoroheptanesulfonic Acid



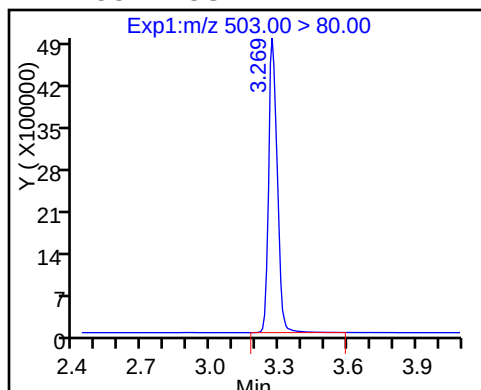
## 18 Perfluorooctane sulfonic acid



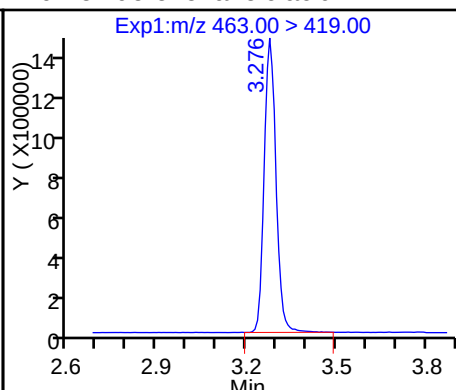
## 18 Perfluorooctane sulfonic acid



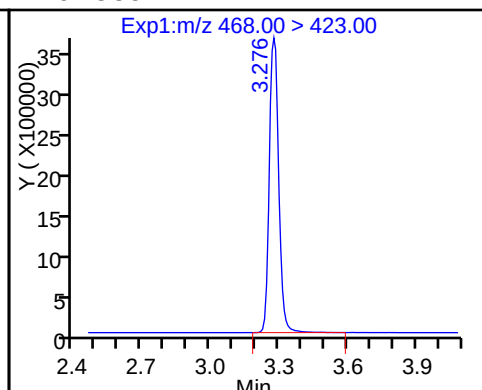
## D 17 13C4 PFOS



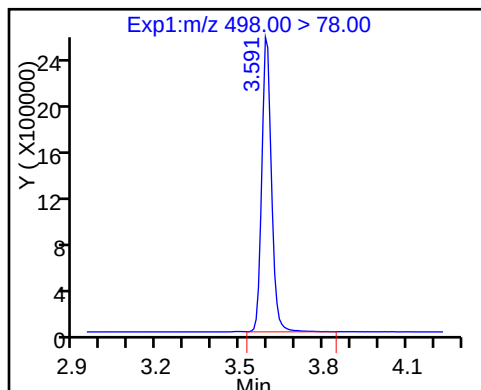
## 20 Perfluorononanoic acid



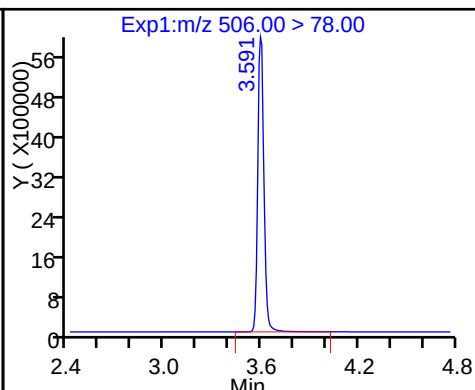
## D 19 13C5 PFNA



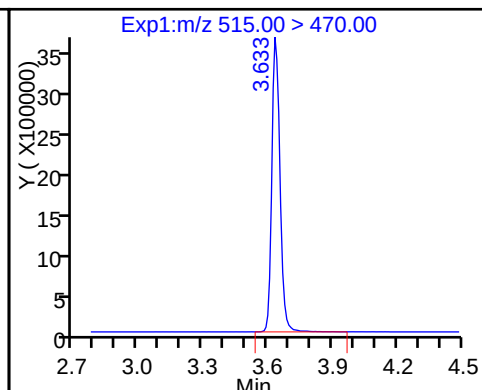
## 22 Perfluorooctane Sulfonamide



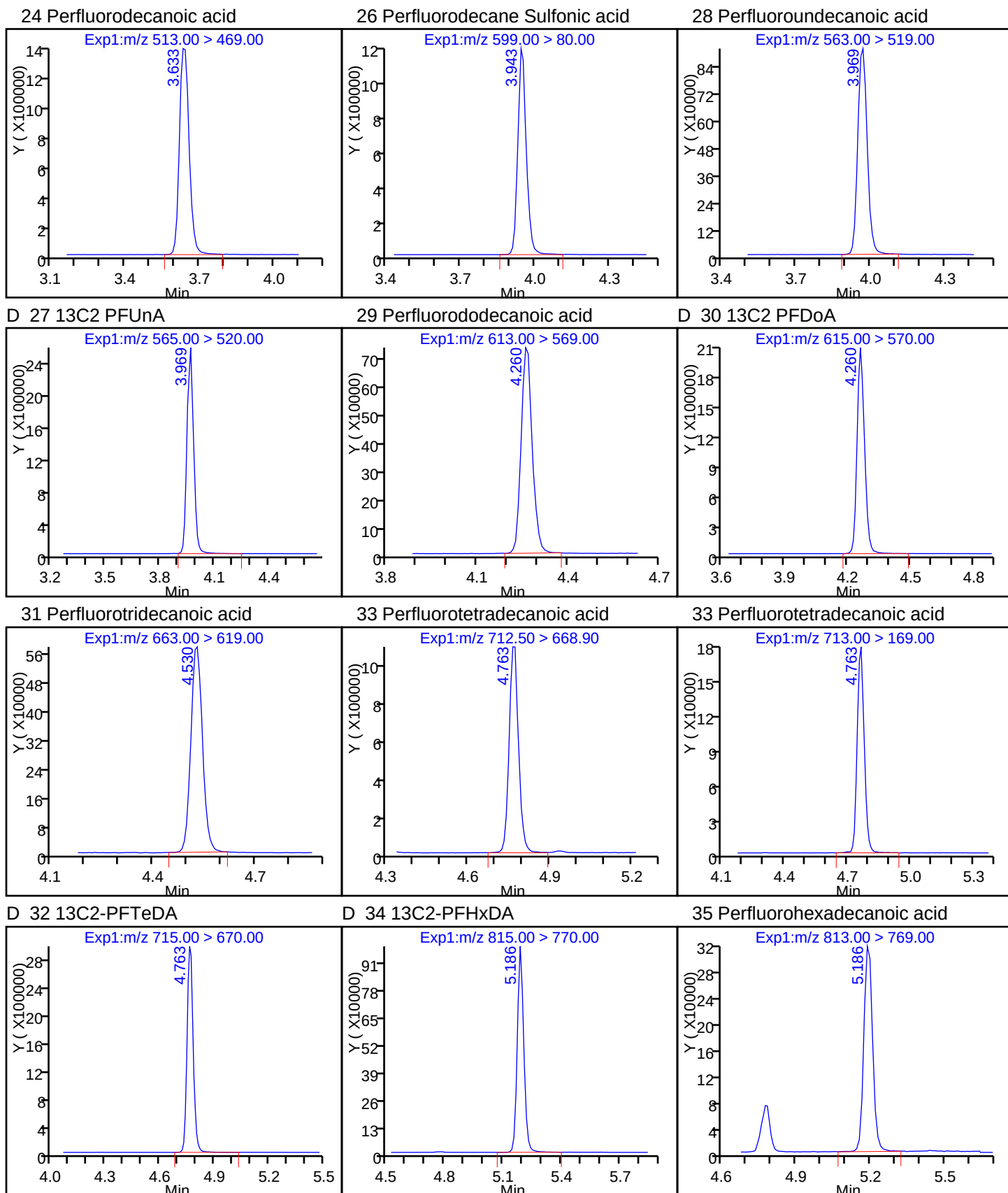
## D 21 13C8 FOSA



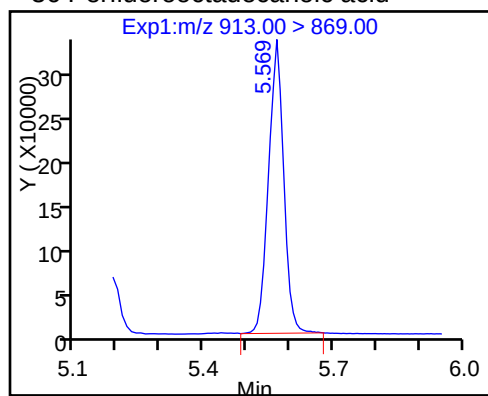
## D 23 13C2 PFDA







36 Perfluorooctadecanoic acid



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCS 320-139749/2-A  
 Matrix: Water Lab File ID: 03DEC2016B\_002.d  
 Analysis Method: 537 (Modified) Date Collected: \_\_\_\_\_  
 Extraction Method: 3535 Date Extracted: 11/28/2016 16:55  
 Sample wt/vol: 250 (mL) Date Analyzed: 12/03/2016 16:11  
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 140564 Units: ug/L

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL     | MDL     |
|-----------|-------------------------------------|--------|---|--------|---------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.0296 |   | 0.0025 | 0.00075 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 0.0261 |   | 0.0040 | 0.0013  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.0289 |   | 0.0025 | 0.00092 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 108  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 104  |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 105  |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_002.d  
 Lims ID: LCS 320-139749/2-A  
 Client ID:  
 Sample Type: LCS  
 Inject. Date: 03-Dec-2016 16:11:09 ALS Bottle#: 33 Worklist Smp#: 23  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: lcs 320-139749/2-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:30:02 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 10:27:02

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|--------|--------|--------|----------|--------------|---------------|------|-----|-------|
|--------|----|--------|--------|--------|----------|--------------|---------------|------|-----|-------|

## D 2 13C4 PFBA

217.00 &gt; 172.00 1.558 1.574 -0.016 17560233 52.3 105 1375246

## 1 Perfluorobutyric acid

212.90 &gt; 169.00 1.558 1.577 -0.019 1.000 4857268 15.8 79.1 25509

## 3 Perfluoropentanoic acid

262.90 &gt; 219.00 1.849 1.861 -0.012 1.000 4268708 14.4 72.1 31016

## D 4 13C5-PFPeA

267.90 &gt; 223.00 1.849 1.861 -0.012 14590160 55.2 110 741230

## 5 Perfluorobutanesulfonic acid

298.90 &gt; 80.00 1.887 1.900 -0.013 1.000 7584330 14.5 81.8

298.90 &gt; 99.00 1.887 1.900 -0.013 1.000 3290381 2.31(0.00-0.00)

## 7 Perfluorohexanoic acid

313.00 &gt; 269.00 2.146 2.164 -0.018 1.000 3467656 14.9 74.6 82066

## D 6 13C2 PFHxA

315.00 &gt; 270.00 2.146 2.164 -0.018 12196862 51.4 103 1065490

## D 11 13C4-PFHpA

367.00 &gt; 322.00 2.485 2.511 -0.026 11238097 54.2 108 755063

## 12 Perfluoroheptanoic acid

363.00 &gt; 319.00 2.485 2.512 -0.027 1.000 3523219 15.3 76.3 41059

## 9 Perfluorohexanesulfonic acid

399.00 &gt; 80.00 2.507 2.531 -0.024 1.000 4525408 12.5 68.9

## D 10 18O2 PFHxS

403.00 &gt; 84.00 2.507 2.531 -0.024 15545077 49.8 105 872611

## D 14 13C4 PFOA

417.00 &gt; 372.00 2.847 2.880 -0.033 11822855 53.9 108 938614

## 15 Perfluorooctanoic acid

413.00 &gt; 369.00 2.847 2.887 -0.040 1.000 3754301 14.8 74.1 66200

413.00 &gt; 169.00 2.855 2.887 -0.032 1.003 2189699 1.71(0.90-1.10) 79418

| Signal                           | RT              | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 13 Perfluoroheptanesulfonic Acid | 449.00 > 80.00  | 2.863     | 2.888     | -0.025    | 1.000    | 4174557         | 13.8            | 72.7 |        |       |
| 18 Perfluorooctane sulfonic acid | 499.00 > 80.00  | 3.227     | 3.258     | -0.031    | 1.000    | 3625231         | 13.0            | 70.3 | 194917 |       |
|                                  | 499.00 > 99.00  | 3.227     | 3.258     | -0.031    | 1.000    | 816437          | 4.44(0.90-1.10) |      | 61899  |       |
| D 17 13C4 PFOS                   | 503.00 > 80.00  | 3.227     | 3.259     | -0.032    |          | 12244746        | 49.8            | 104  | 475079 |       |
| D 19 13C5 PFNA                   | 468.00 > 423.00 | 3.227     | 3.263     | -0.036    |          | 9311847         | 56.0            | 112  | 652523 |       |
| 20 Perfluorononanoic acid        | 463.00 > 419.00 | 3.227     | 3.263     | -0.036    | 1.000    | 2697531         | 14.5            | 72.7 | 55697  |       |
| D 21 13C8 FOSA                   | 506.00 > 78.00  | 3.549     | 3.571     | -0.022    |          | 9046557         | 22.5            | 45.0 | 398080 |       |
| 22 Perfluorooctane Sulfonamide   | 498.00 > 78.00  | 3.558     | 3.574     | -0.016    | 1.000    | 2588905         | 15.3            | 76.6 | 139330 |       |
| 24 Perfluorodecanoic acid        | 513.00 > 469.00 | 3.592     | 3.623     | -0.031    | 1.000    | 2441183         | 14.7            | 73.4 | 68408  |       |
| D 23 13C2 PFDA                   | 515.00 > 470.00 | 3.592     | 3.626     | -0.034    |          | 8656247         | 54.8            | 110  | 217190 |       |
| 26 Perfluorodecane Sulfonic acid | 599.00 > 80.00  | 3.900     | 3.936     | -0.036    | 1.000    | 2203517         | 13.4            | 69.7 |        |       |
| 28 Perfluoroundecanoic acid      | 563.00 > 519.00 | 3.917     | 3.955     | -0.038    | 1.000    | 1723441         | 12.5            | 62.5 | 44705  |       |
| D 27 13C2 PFUnA                  | 565.00 > 520.00 | 3.917     | 3.958     | -0.041    |          | 6471442         | 54.5            | 109  | 456235 |       |
| 29 Perfluorododecanoic acid      | 613.00 > 569.00 | 4.217     | 4.250     | -0.033    | 1.000    | 1628778         | 14.2            | 70.8 | 30811  |       |
| D 30 13C2 PFDaA                  | 615.00 > 570.00 | 4.210     | 4.251     | -0.041    |          | 6057552         | 54.0            | 108  | 187381 |       |
| 31 Perfluorotridecanoic acid     | 663.00 > 619.00 | 4.478     | 4.518     | -0.040    | 1.000    | 1741016         | 15.1            | 75.6 | 30701  |       |
| D 32 13C2-PFTeDA                 | 715.00 > 670.00 | 4.715     | 4.759     | -0.044    |          | 15011428        | 64.9            | 130  | 769401 |       |
| 33 Perfluorotetradecanoic acid   | 712.50 > 668.90 | 4.715     | 4.761     | -0.046    | 1.000    | 3709548         | 16.5            | 82.6 | 3985   |       |
|                                  | 713.00 > 169.00 | 4.715     | 4.761     | -0.046    | 1.000    | 633060          | 5.86(0.00-0.00) |      | 121080 |       |
| D 34 13C2-PFHxDA                 | 815.00 > 770.00 | 5.137     | 5.186     | -0.049    |          | 6159598         | 47.5            | 95.0 | 182215 |       |
| 35 Perfluorohexadecanoic acid    | 813.00 > 769.00 | 5.137     | 5.186     | -0.049    | 1.000    | 1622525         | 12.7            | 63.7 | 4013   |       |
| 36 Perfluorooctadecanoic acid    | 913.00 > 869.00 | 5.505     | 5.559     | -0.054    | 1.000    | 1681305         | 14.0            | 69.9 | 2156   |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_002.d

Injection Date: 03-Dec-2016 16:11:09

Instrument ID: A8\_N

Lims ID: LCS 320-139749/2-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 33

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

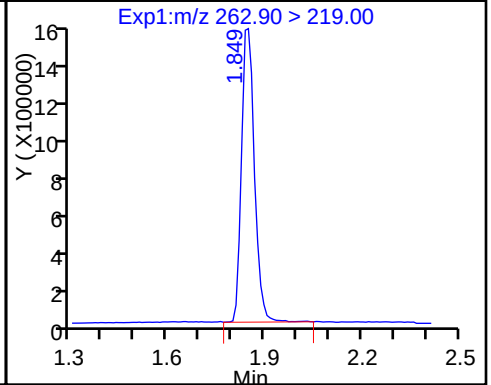
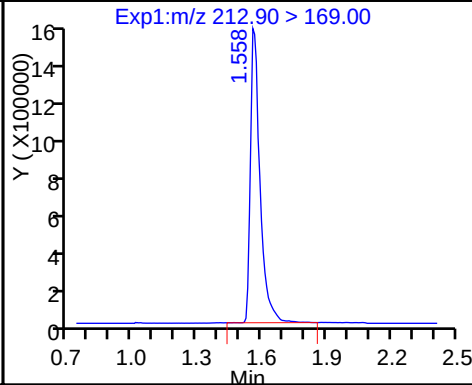
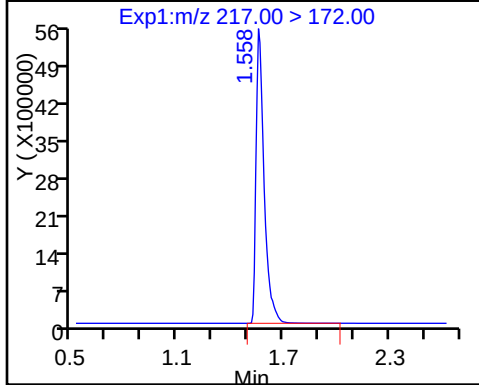
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

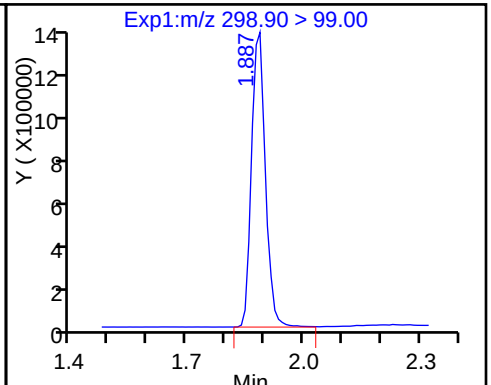
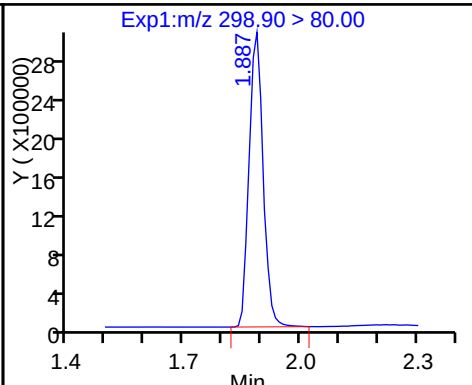
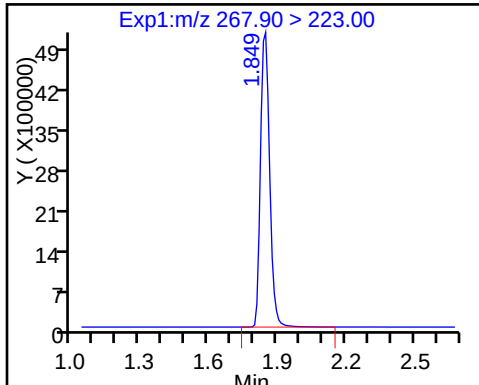
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

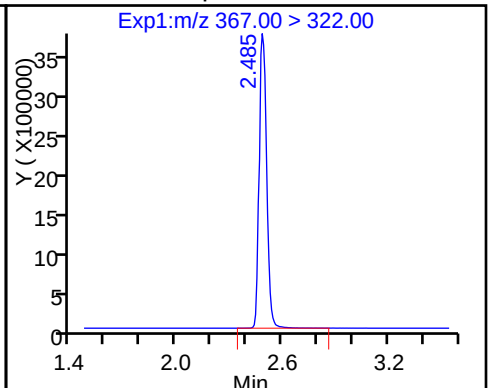
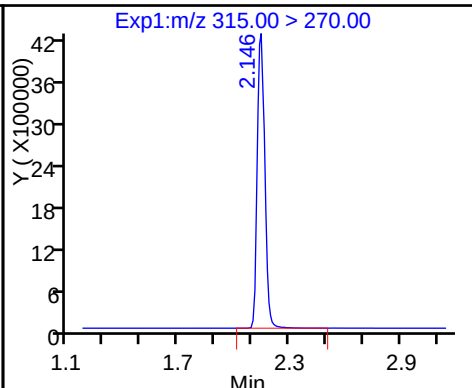
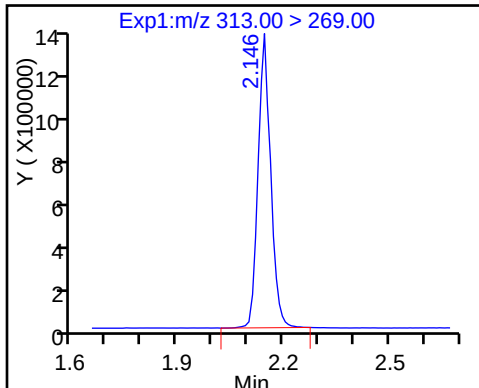
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

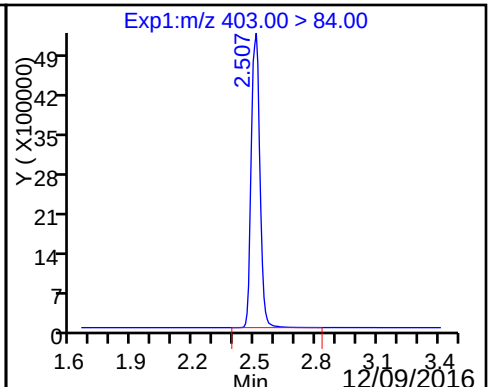
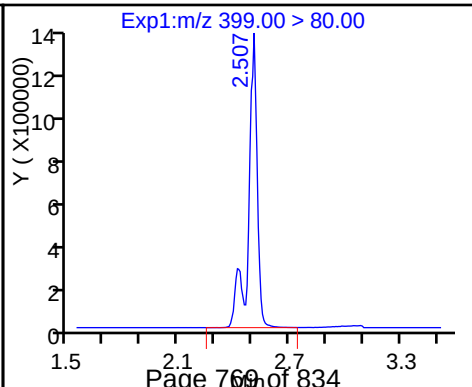
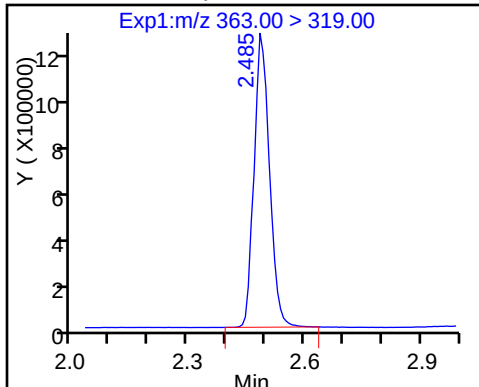
D 11 13C4-PFHpA



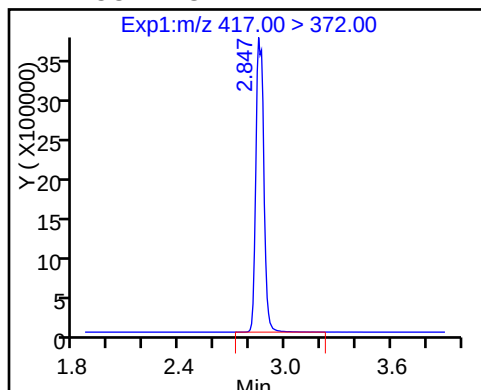
12 Perfluoroheptanoic acid

9 Perfluorohexanesulfonic acid

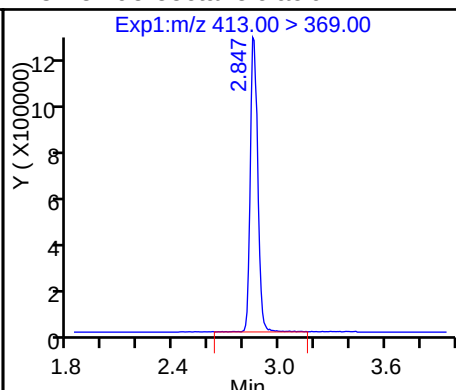
D 10 18O2 PFHxS



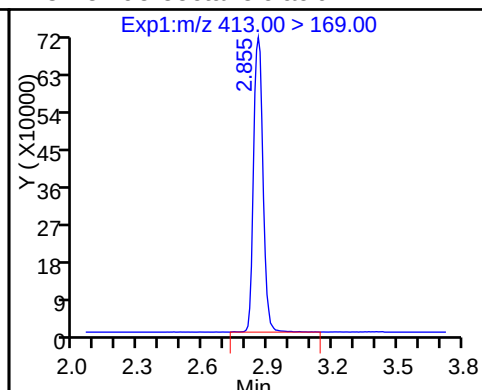
## D 14 13C4 PFOA



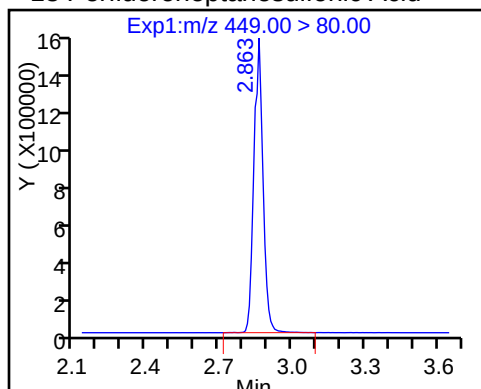
## 15 Perfluorooctanoic acid



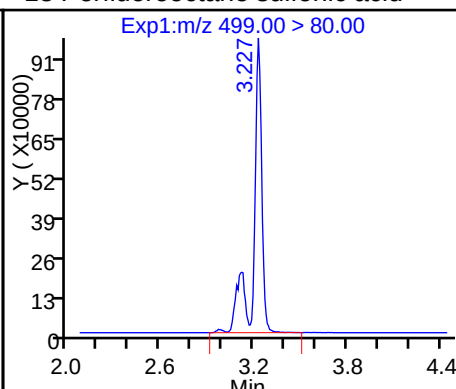
## 15 Perfluorooctanoic acid



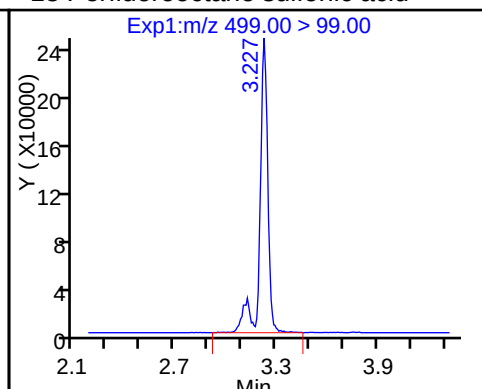
## 13 Perfluoroheptanesulfonic Acid



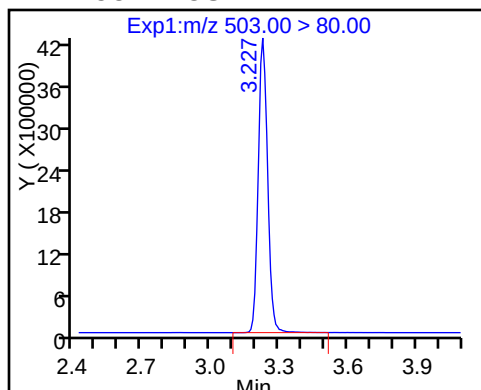
## 18 Perfluorooctane sulfonic acid



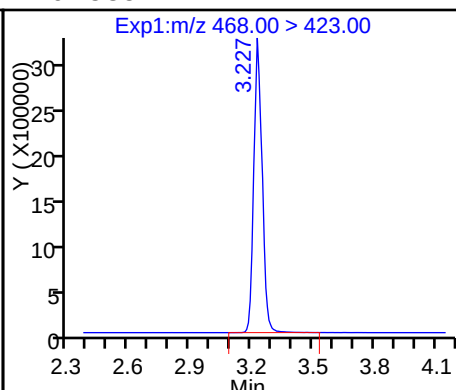
## 18 Perfluorooctane sulfonic acid



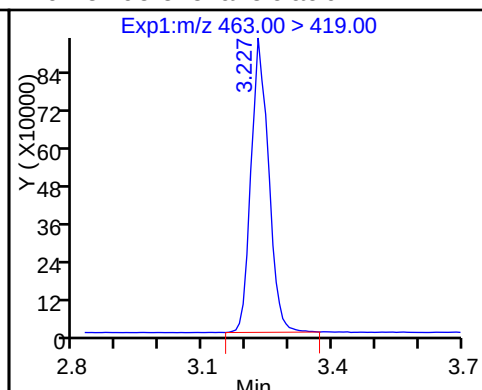
## D 17 13C4 PFOS



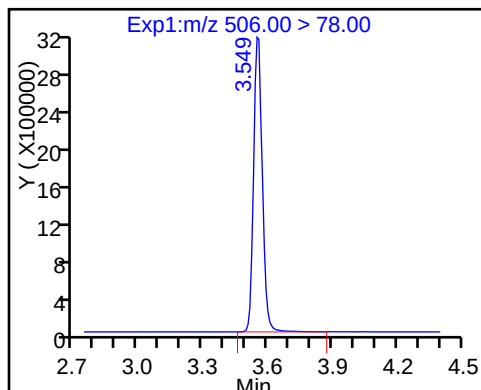
## D 19 13C5 PFNA



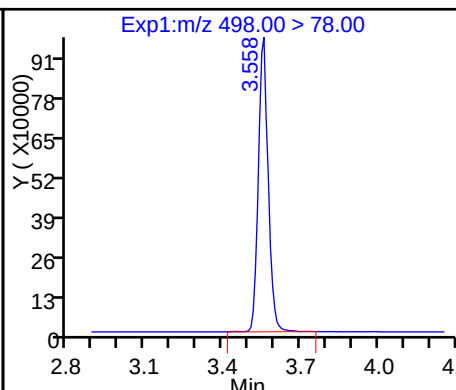
## 20 Perfluorononanoic acid



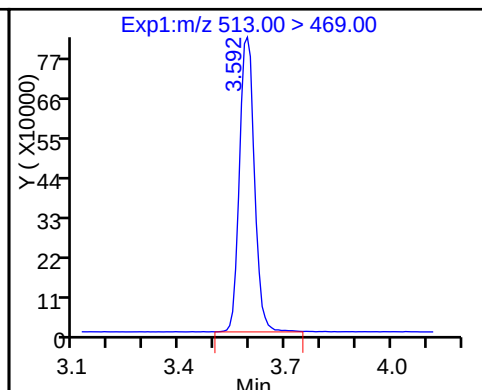
## D 21 13C8 FOSA



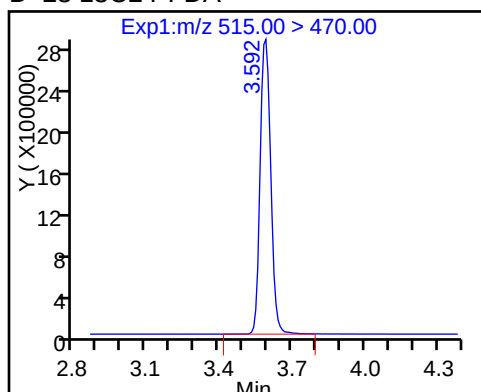
## 22 Perfluorooctane Sulfonamide



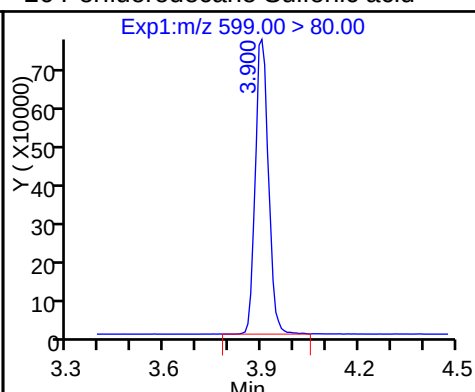
## 24 Perfluorodecanoic acid



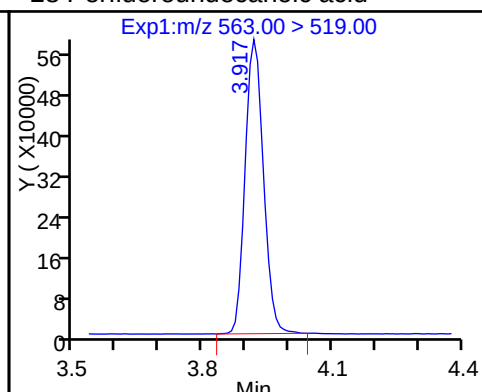
## D 23 13C2 PFDA



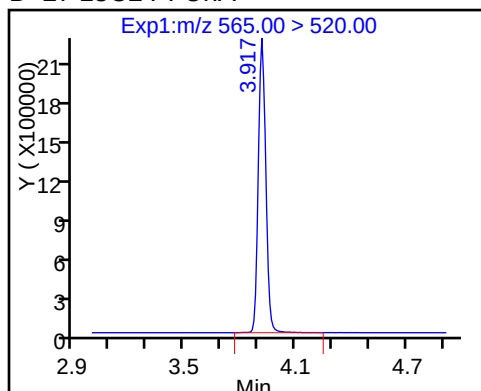
## 26 Perfluorodecane Sulfonic acid



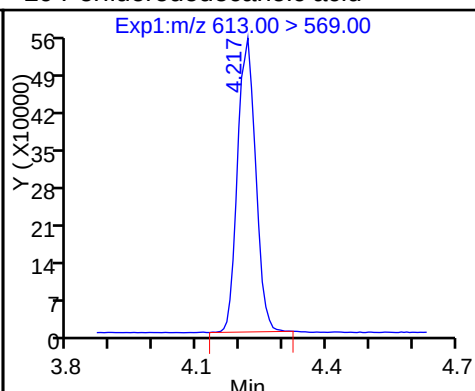
## 28 Perfluoroundecanoic acid



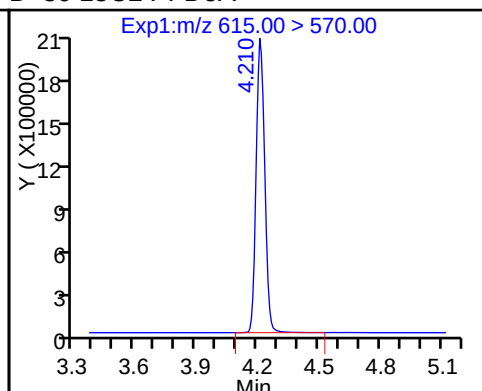
## D 27 13C2 PFUnA



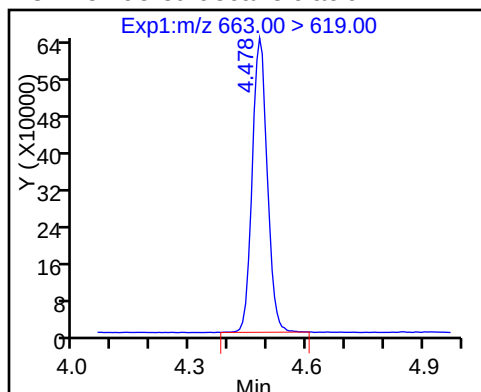
## 29 Perfluorododecanoic acid



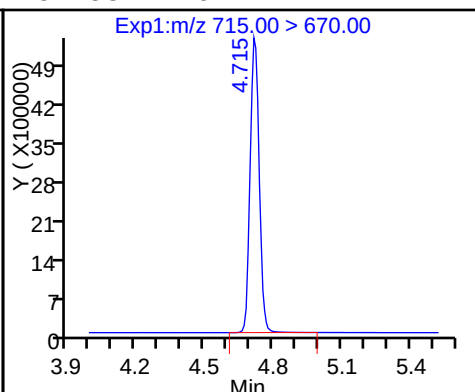
## D 30 13C2 PFDaA



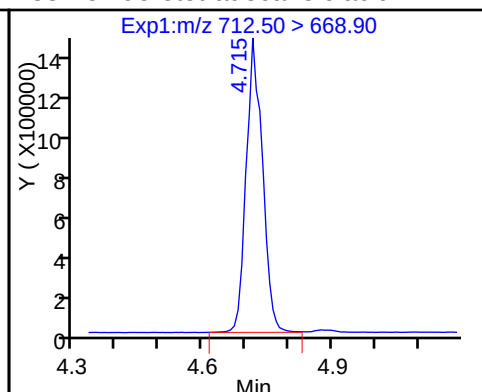
## 31 Perfluorotridecanoic acid



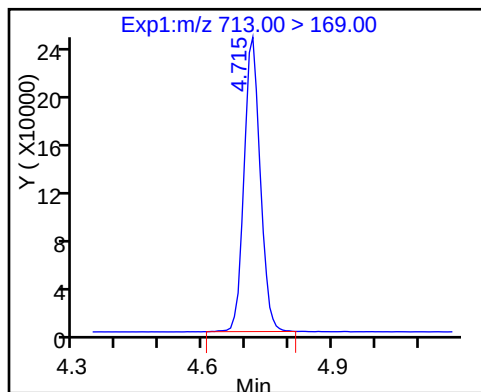
## D 32 13C2-PFTeDA



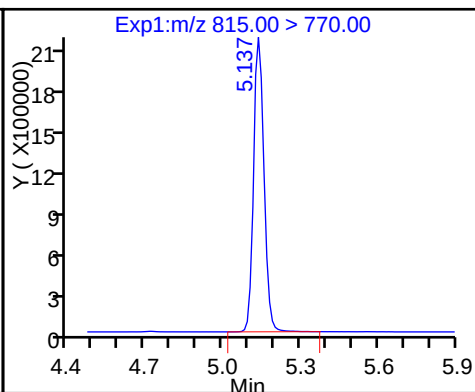
## 33 Perfluorotetradecanoic acid



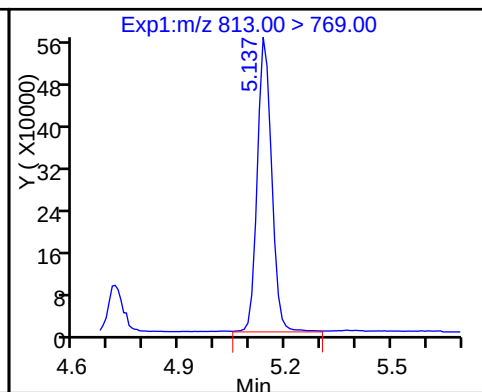
## 33 Perfluorotetradecanoic acid



## D 34 13C2-PFHxDA

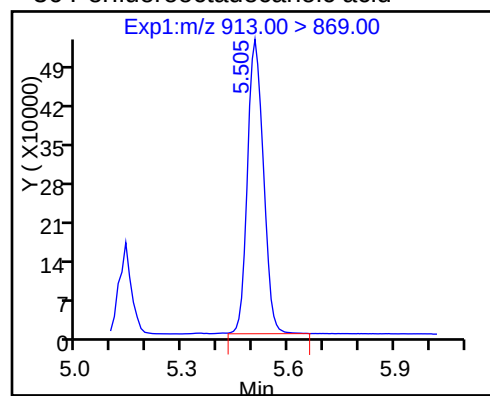


## 35 Perfluorohexadecanoic acid





36 Perfluorooctadecanoic acid



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCSD 320-139749/3-A  
 Matrix: Water Lab File ID: 03DEC2016B\_003.d  
 Analysis Method: 537 (Modified) Date Collected: \_\_\_\_\_  
 Extraction Method: 3535 Date Extracted: 11/28/2016 16:55  
 Sample wt/vol: 250 (mL) Date Analyzed: 12/03/2016 16:18  
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 140564 Units: ug/L

| CAS NO.   | COMPOUND NAME                       | RESULT | Q | RL     | MDL     |
|-----------|-------------------------------------|--------|---|--------|---------|
| 335-67-1  | Perfluorooctanoic acid (PFOA)       | 0.0314 |   | 0.0025 | 0.00075 |
| 1763-23-1 | Perfluorooctane Sulfonate (PFOS)    | 0.0289 |   | 0.0040 | 0.0013  |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS) | 0.0325 |   | 0.0025 | 0.00092 |

| CAS NO.  | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00990 | 13C4 PFOA        | 116  |   | 25-150 |
| STL00991 | 13C4 PFOS        | 104  |   | 25-150 |
| STL00994 | 18O2 PFHxS       | 104  |   | 25-150 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_003.d  
 Lims ID: LCSD 320-139749/3-A  
 Client ID:  
 Sample Type: LCSD  
 Inject. Date: 03-Dec-2016 16:18:41 ALS Bottle#: 34 Worklist Smp#: 24  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: lcsd 320-139749/3-a  
 Misc. Info.: Plate: 1 Rack: 4  
 Operator ID: A8-PC\A8 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\A8\_N.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 05-Dec-2016 10:30:02 Calib Date: 03-Dec-2016 15:33:40  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016A\_018.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 05-Dec-2016 10:29:05

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|------|-----|-------|

## D 2 13C4 PFBA

217.00 &gt; 172.00 1.574 1.574 0.0 17866151 53.2 106 1821301

## 1 Perfluorobutyric acid

212.90 &gt; 169.00 1.574 1.577 -0.003 1.000 5293479 16.9 84.7 31833

## 3 Perfluoropentanoic acid

262.90 &gt; 219.00 1.849 1.861 -0.012 1.000 4737227 16.0 79.8 31580

## D 4 13C5-PFPeA

267.90 &gt; 223.00 1.849 1.861 -0.012 14614763 55.2 110 1048466

## 5 Perfluorobutanesulfonic acid

298.90 &gt; 80.00 1.887 1.900 -0.013 1.000 8414372 16.3 92.0

298.90 &gt; 99.00 1.887 1.900 -0.013 1.000 3551354 2.37(0.00-0.00)

## 7 Perfluorohexanoic acid

313.00 &gt; 269.00 2.157 2.164 -0.007 1.000 3907622 16.5 82.7 93403

## D 6 13C2 PFHxA

315.00 &gt; 270.00 2.157 2.164 -0.007 12390841 52.2 104 587374

## D 11 13C4-PFHpA

367.00 &gt; 322.00 2.492 2.511 -0.019 11963765 57.7 115 1060650

## 12 Perfluoroheptanoic acid

363.00 &gt; 319.00 2.492 2.512 -0.020 1.000 3976171 16.2 80.9 54713

## 9 Perfluorohexanesulfonic acid

399.00 &gt; 80.00 2.507 2.531 -0.024 1.000 5147254 14.5 79.5

## D 10 18O2 PFHxS

403.00 &gt; 84.00 2.507 2.531 -0.024 15325146 49.1 104 1813532

## D 14 13C4 PFOA

417.00 &gt; 372.00 2.855 2.880 -0.025 12757885 58.2 116 874253

## 15 Perfluorooctanoic acid

413.00 &gt; 369.00 2.855 2.887 -0.032 1.000 4297812 15.7 78.6 76631

413.00 &gt; 169.00 2.855 2.887 -0.032 1.000 2552106 1.68(0.90-1.10) 113223

| Signal                           | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | %Rec | S/N    | Flags |
|----------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|--------|-------|
| 13 Perfluoroheptanesulfonic Acid |       |           |           |           |          |                 |                 |      |        |       |
| 449.00 > 80.00                   | 2.871 | 2.888     | -0.017    | 1.000     | 4626287  | 15.4            |                 | 81.0 |        |       |
| 18 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 499.00 > 80.00                   | 3.235 | 3.258     | -0.023    | 1.000     | 3998252  | 14.5            |                 | 77.9 | 251636 |       |
| 499.00 > 99.00                   | 3.235 | 3.258     | -0.023    | 1.000     | 884783   |                 | 4.52(0.90-1.10) |      | 44320  |       |
| D 17 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |        |       |
| 503.00 > 80.00                   | 3.235 | 3.259     | -0.024    |           | 12179746 | 49.5            |                 | 104  | 383271 |       |
| D 19 13C5 PFNA                   |       |           |           |           |          |                 |                 |      |        |       |
| 468.00 > 423.00                  | 3.235 | 3.263     | -0.028    |           | 9401849  | 56.5            |                 | 113  | 433505 |       |
| 20 Perfluorononanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 463.00 > 419.00                  | 3.235 | 3.263     | -0.028    | 1.000     | 3047600  | 16.3            |                 | 81.3 | 57192  |       |
| D 21 13C8 FOSA                   |       |           |           |           |          |                 |                 |      |        |       |
| 506.00 > 78.00                   | 3.557 | 3.571     | -0.014    |           | 5188852  | 12.9            |                 | 25.8 | 208610 |       |
| 22 Perfluorooctane Sulfonamide   |       |           |           |           |          |                 |                 |      |        |       |
| 498.00 > 78.00                   | 3.566 | 3.574     | -0.008    | 1.000     | 1597785  | 16.5            |                 | 82.4 | 70317  |       |
| 24 Perfluorodecanoic acid        |       |           |           |           |          |                 |                 |      |        |       |
| 513.00 > 469.00                  | 3.599 | 3.623     | -0.024    | 1.000     | 2761173  | 16.8            |                 | 84.0 | 94373  |       |
| D 23 13C2 PFDA                   |       |           |           |           |          |                 |                 |      |        |       |
| 515.00 > 470.00                  | 3.599 | 3.626     | -0.027    |           | 8558073  | 54.2            |                 | 108  | 483536 |       |
| 26 Perfluorodecane Sulfonic acid |       |           |           |           |          |                 |                 |      |        |       |
| 599.00 > 80.00                   | 3.909 | 3.936     | -0.027    | 1.000     | 2430460  | 14.9            |                 | 77.3 |        |       |
| 28 Perfluoroundecanoic acid      |       |           |           |           |          |                 |                 |      |        |       |
| 563.00 > 519.00                  | 3.927 | 3.955     | -0.028    | 1.000     | 1914632  | 13.7            |                 | 68.6 | 42765  |       |
| D 27 13C2 PFUnA                  |       |           |           |           |          |                 |                 |      |        |       |
| 565.00 > 520.00                  | 3.918 | 3.958     | -0.040    |           | 6546548  | 55.1            |                 | 110  | 363893 |       |
| 29 Perfluorododecanoic acid      |       |           |           |           |          |                 |                 |      |        |       |
| 613.00 > 569.00                  | 4.222 | 4.250     | -0.028    | 1.000     | 1846976  | 15.7            |                 | 78.6 | 38032  |       |
| D 30 13C2 PFDaA                  |       |           |           |           |          |                 |                 |      |        |       |
| 615.00 > 570.00                  | 4.222 | 4.251     | -0.029    |           | 6190705  | 55.2            |                 | 110  | 193387 |       |
| 31 Perfluorotridecanoic acid     |       |           |           |           |          |                 |                 |      |        |       |
| 663.00 > 619.00                  | 4.483 | 4.518     | -0.035    | 1.000     | 1866805  | 15.9            |                 | 79.4 | 22276  |       |
| D 32 13C2-PFTeDA                 |       |           |           |           |          |                 |                 |      |        |       |
| 715.00 > 670.00                  | 4.720 | 4.759     | -0.039    |           | 14267910 | 61.7            |                 | 123  | 995101 |       |
| 33 Perfluorotetradecanoic acid   |       |           |           |           |          |                 |                 |      |        |       |
| 712.50 > 668.90                  | 4.728 | 4.761     | -0.033    | 1.000     | 4138056  | 18.0            |                 | 90.2 | 2484   |       |
| 713.00 > 169.00                  | 4.720 | 4.761     | -0.041    | 0.998     | 675300   |                 | 6.13(0.00-0.00) |      | 123708 |       |
| D 34 13C2-PFHxDA                 |       |           |           |           |          |                 |                 |      |        |       |
| 815.00 > 770.00                  | 5.145 | 5.186     | -0.041    |           | 6470420  | 49.9            |                 | 99.8 | 167496 |       |
| 35 Perfluorohexadecanoic acid    |       |           |           |           |          |                 |                 |      |        |       |
| 813.00 > 769.00                  | 5.145 | 5.186     | -0.041    | 1.000     | 1855833  | 14.3            |                 | 71.7 | 3647   |       |
| 36 Perfluorooctadecanoic acid    |       |           |           |           |          |                 |                 |      |        |       |
| 913.00 > 869.00                  | 5.512 | 5.559     | -0.047    | 1.000     | 1891606  | 15.4            |                 | 76.9 | 3028   |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b\03DEC2016B\_003.d

Injection Date: 03-Dec-2016 16:18:41

Instrument ID: A8\_N

Lims ID: LCSD 320-139749/3-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 34

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

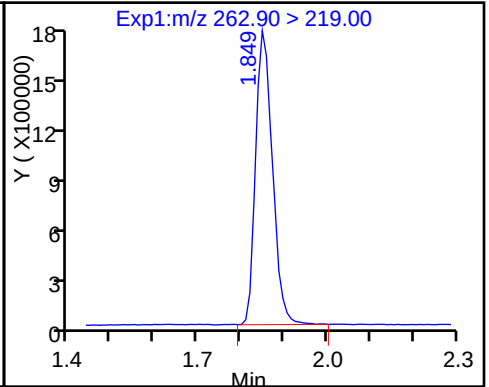
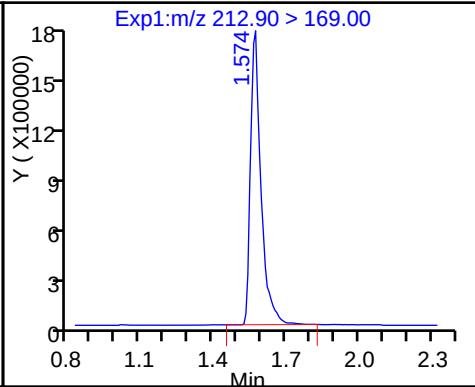
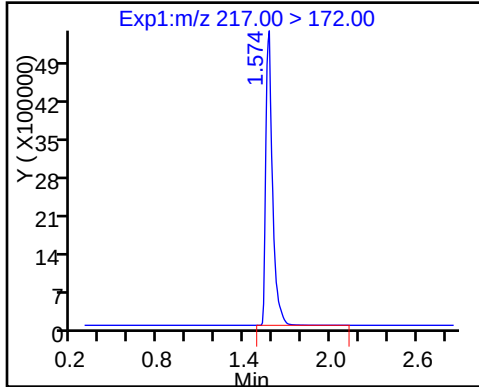
Method: A8\_N

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

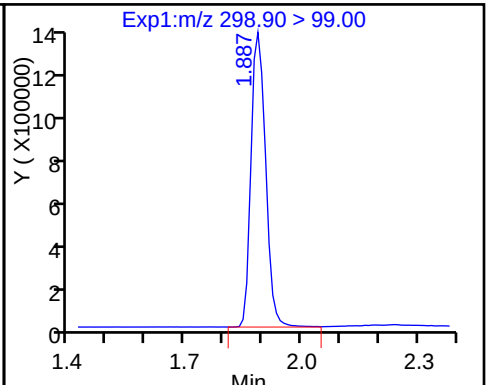
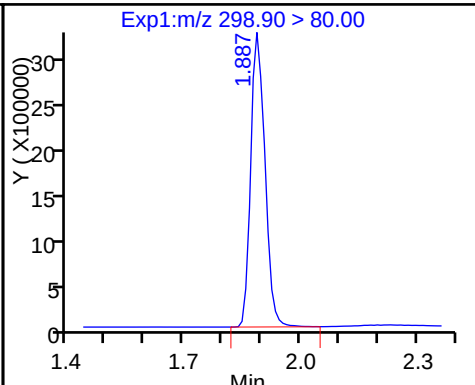
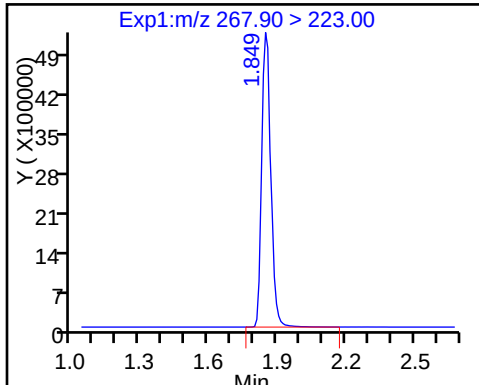
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

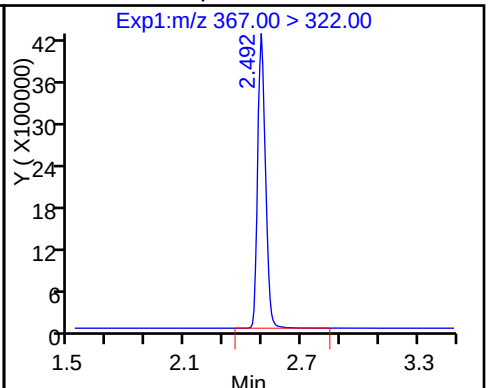
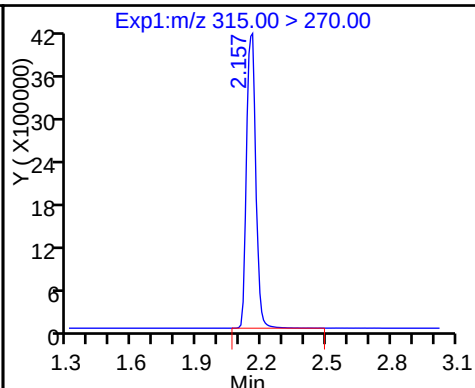
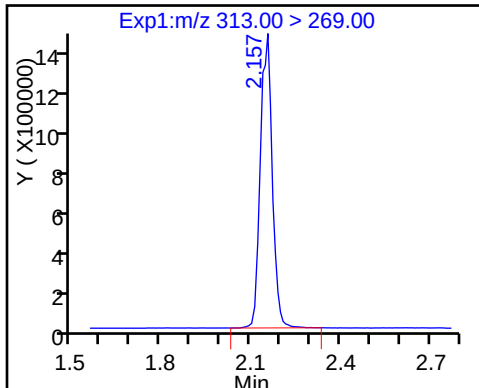
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

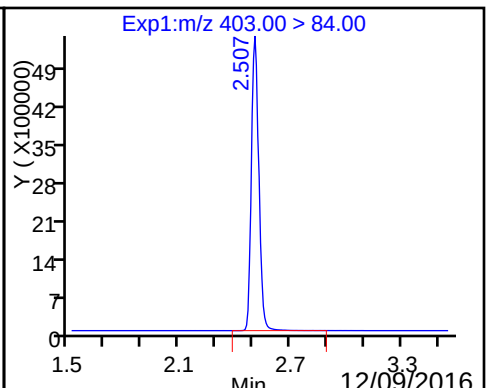
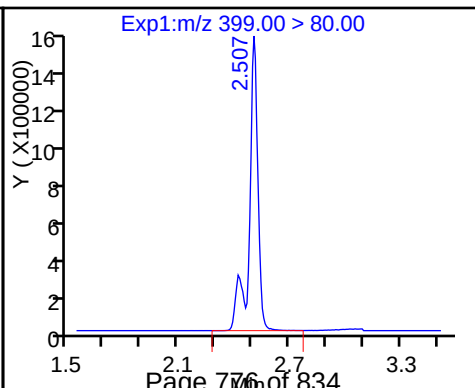
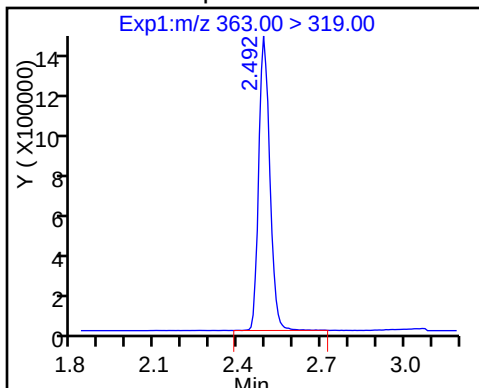
D 11 13C4-PFHpA



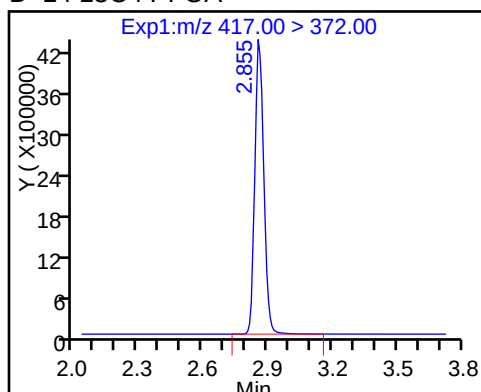
12 Perfluoroheptanoic acid

9 Perfluorohexanesulfonic acid

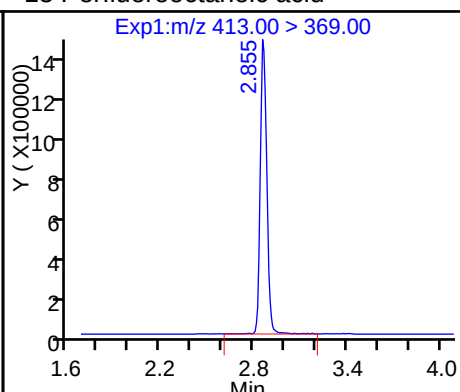
D 10 18O2 PFHxS



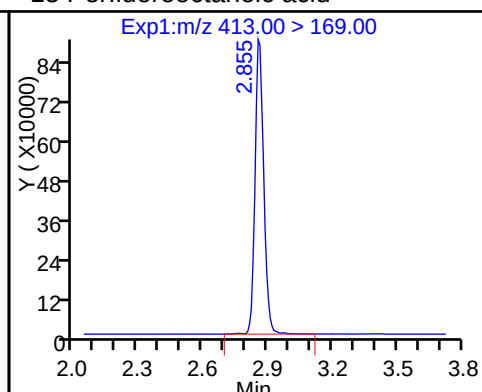
## D 14 13C4 PFOA



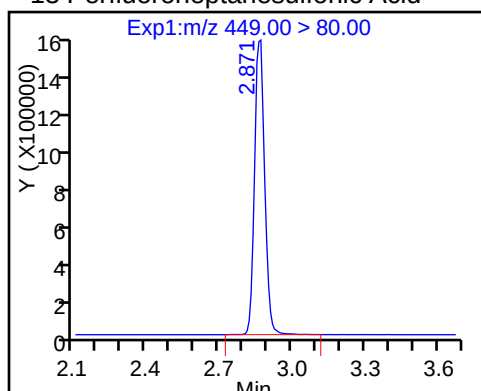
## 15 Perfluorooctanoic acid



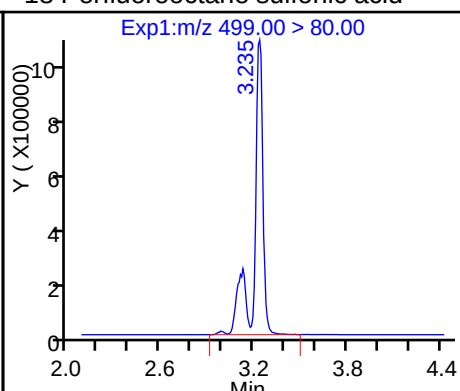
## 15 Perfluorooctanoic acid



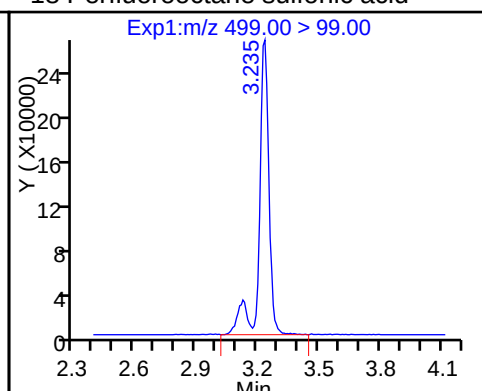
## 13 Perfluoroheptanesulfonic Acid



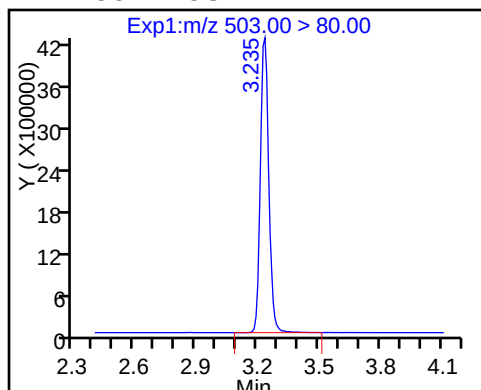
## 18 Perfluorooctane sulfonic acid



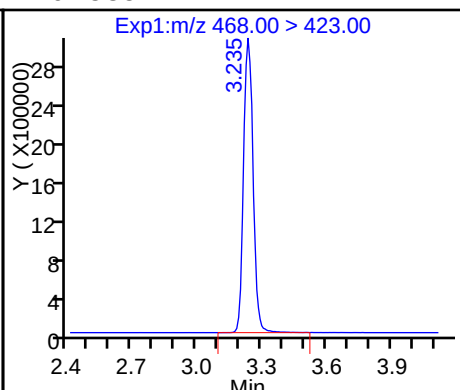
## 18 Perfluorooctane sulfonic acid



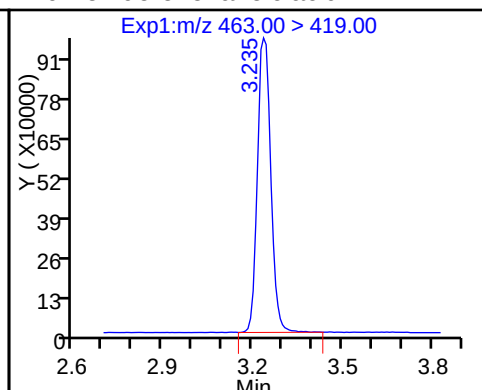
## D 17 13C4 PFOS



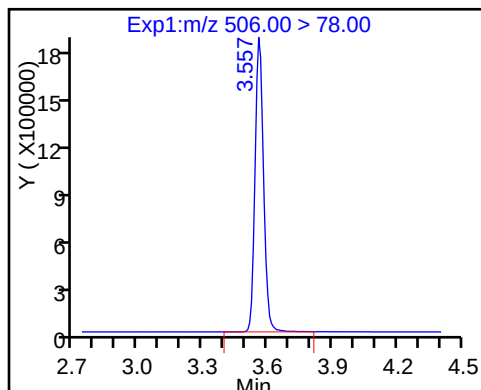
## D 19 13C5 PFNA



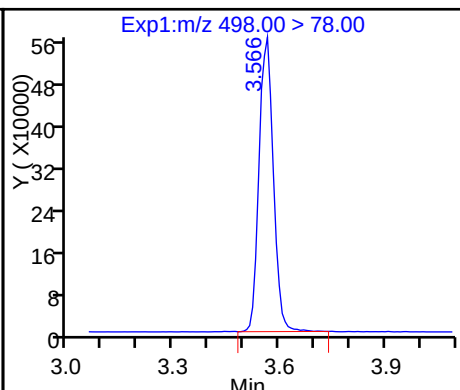
## 20 Perfluorononanoic acid



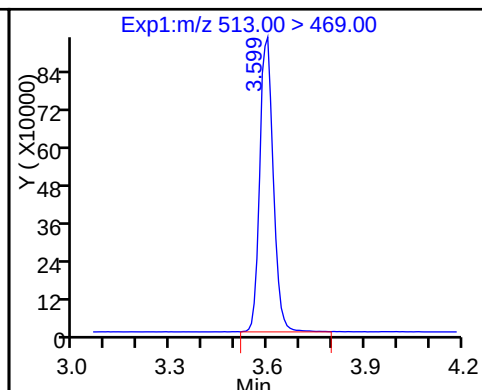
## D 21 13C8 FOSA



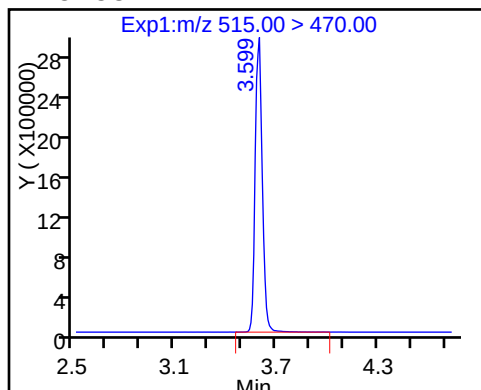
## 22 Perfluorooctane Sulfonamide



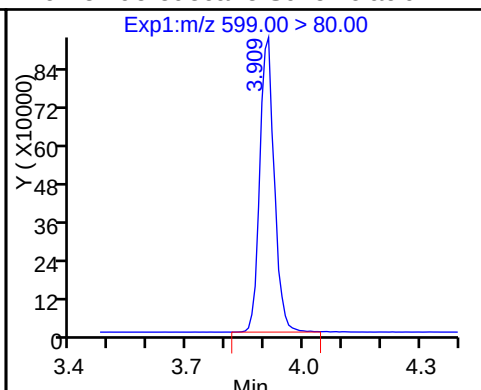
## 24 Perfluorodecanoic acid



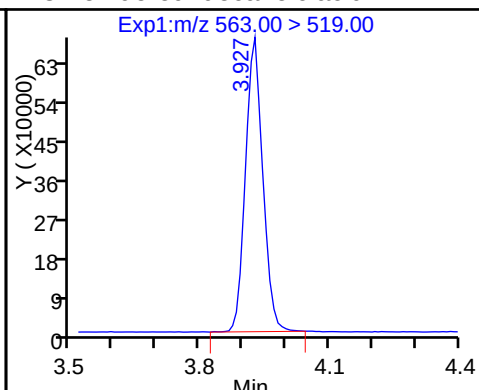
## D 23 13C2 PFDA



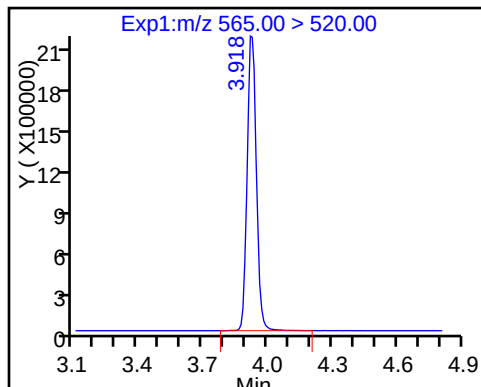
## 26 Perfluorodecane Sulfonic acid



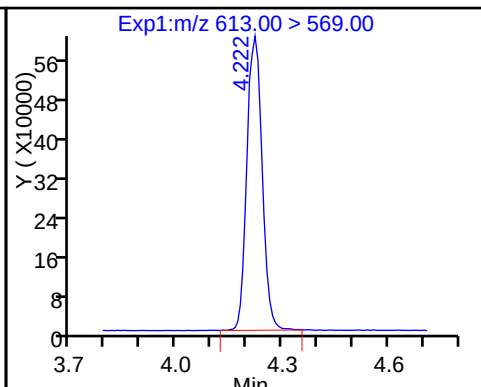
## 28 Perfluoroundecanoic acid



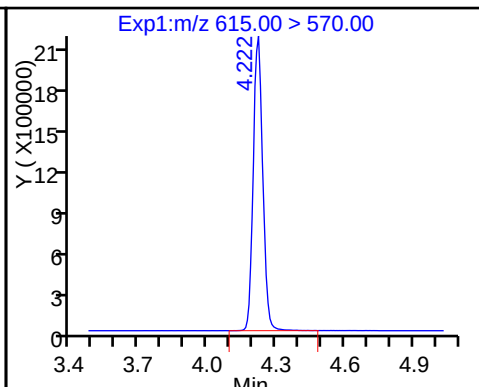
## D 27 13C2 PFUnA



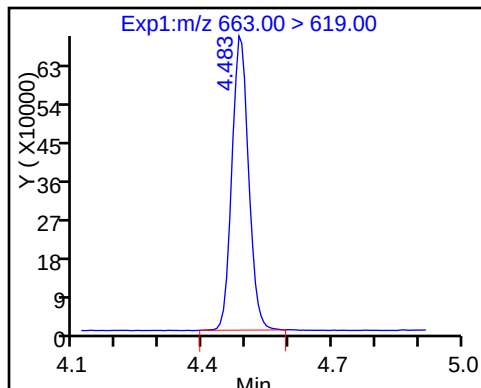
## 29 Perfluorododecanoic acid



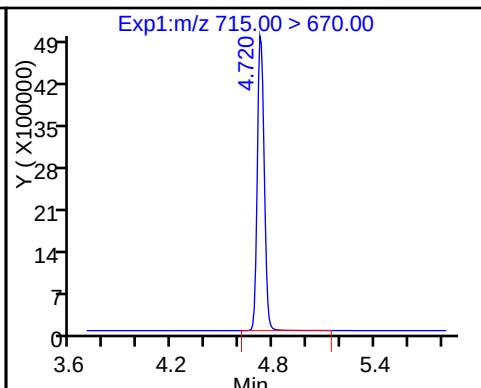
## D 30 13C2 PFDaA



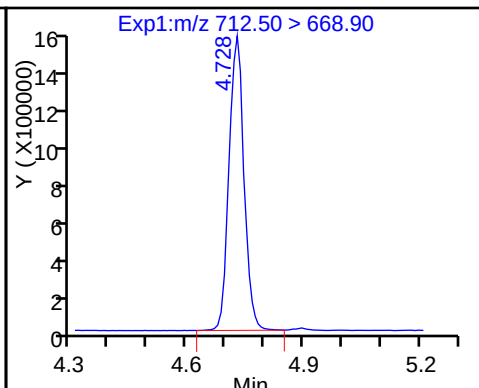
## 31 Perfluorotridecanoic acid



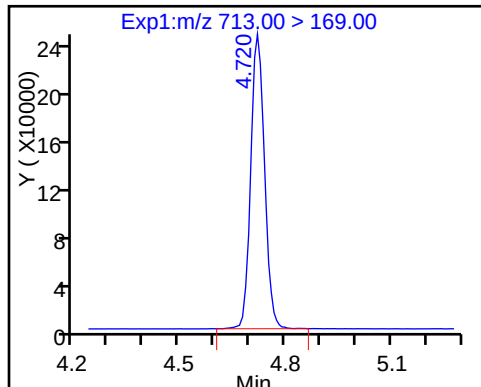
## D 32 13C2-PFTeDA



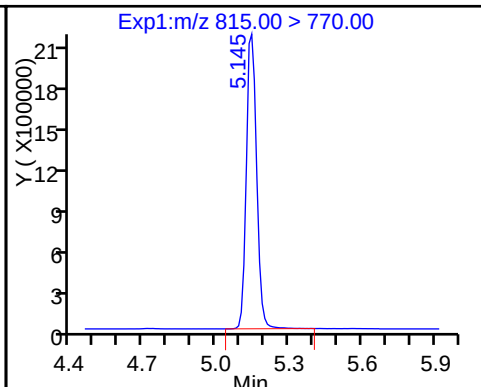
## 33 Perfluorotetradecanoic acid



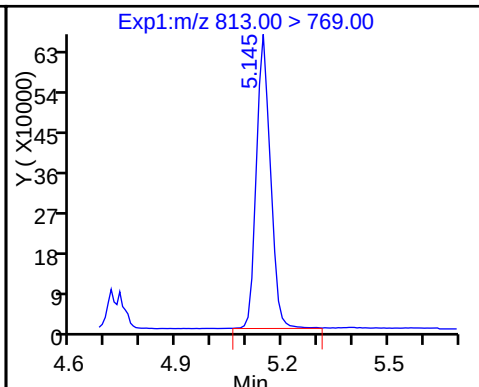
## 33 Perfluorotetradecanoic acid



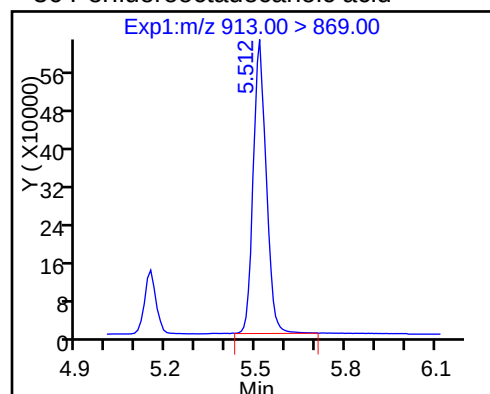
## D 34 13C2-PFHxDA



## 35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid





## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-23783-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_NStart Date: 12/02/2016 10:06Analysis Batch Number: 140382End Date: 12/02/2016 14:22

| LAB SAMPLE ID        | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID      | COLUMN ID        |
|----------------------|------------------|------------------|--------------------|------------------|------------------|
| RB 320-140382/1 CCB  |                  | 12/02/2016 10:06 | 1                  |                  | Acquity 2.1 (mm) |
| RB 320-140382/2 CCB  |                  | 12/02/2016 10:14 | 1                  |                  | Acquity 2.1 (mm) |
| RB 320-140382/3 CCB  |                  | 12/02/2016 10:22 | 1                  |                  | Acquity 2.1 (mm) |
| IC 320-140382/4      |                  | 12/02/2016 10:29 | 1                  | 02DEC2016A_004.d | Acquity 2.1 (mm) |
| IC 320-140382/5      |                  | 12/02/2016 10:37 | 1                  | 02DEC2016A_005.d | Acquity 2.1 (mm) |
| IC 320-140382/6      |                  | 12/02/2016 10:44 | 1                  | 02DEC2016A_006.d | Acquity 2.1 (mm) |
| IC 320-140382/7      |                  | 12/02/2016 10:52 | 1                  | 02DEC2016A_007.d | Acquity 2.1 (mm) |
| IC 320-140382/8      |                  | 12/02/2016 10:59 | 1                  | 02DEC2016A_008.d | Acquity 2.1 (mm) |
| IC 320-140382/9      |                  | 12/02/2016 11:07 | 1                  | 02DEC2016A_009.d | Acquity 2.1 (mm) |
| IC 320-140382/10     |                  | 12/02/2016 11:14 | 1                  | 02DEC2016A_010.d | Acquity 2.1 (mm) |
| ICB 320-140382/11    |                  | 12/02/2016 11:22 | 1                  |                  | Acquity 2.1 (mm) |
| ICV 320-140382/12    |                  | 12/02/2016 11:29 | 1                  | 02DEC2016A_012.d | Acquity 2.1 (mm) |
| RB 320-140382/13 CCB |                  | 12/02/2016 11:37 | 1                  |                  | Acquity 2.1 (mm) |
| IC 320-140382/14     |                  | 12/02/2016 11:44 | 1                  | 02DEC2016A_014.d | Acquity 2.1 (mm) |
| IC 320-140382/15     |                  | 12/02/2016 11:52 | 1                  | 02DEC2016A_015.d | Acquity 2.1 (mm) |
| IC 320-140382/16     |                  | 12/02/2016 11:59 | 1                  | 02DEC2016A_016.d | Acquity 2.1 (mm) |
| IC 320-140382/17     |                  | 12/02/2016 12:07 | 1                  | 02DEC2016A_017.d | Acquity 2.1 (mm) |
| IC 320-140382/18     |                  | 12/02/2016 12:14 | 1                  | 02DEC2016A_018.d | Acquity 2.1 (mm) |
| IC 320-140382/19     |                  | 12/02/2016 12:22 | 1                  | 02DEC2016A_019.d | Acquity 2.1 (mm) |
| IC 320-140382/20     |                  | 12/02/2016 12:29 | 1                  | 02DEC2016A_020.d | Acquity 2.1 (mm) |
| ICB 320-140382/21    |                  | 12/02/2016 12:36 | 1                  |                  | Acquity 2.1 (mm) |
| ICV 320-140382/22    |                  | 12/02/2016 12:44 | 1                  |                  | Acquity 2.1 (mm) |
| RB 320-140382/23 CCB |                  | 12/02/2016 12:51 | 1                  |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 12:59 | 100                |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 13:06 | 100                |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 13:14 | 100                |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 13:22 | 10                 |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 13:29 | 10                 |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 13:37 | 10                 |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 13:44 | 10                 |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 13:52 | 10                 |                  | Acquity 2.1 (mm) |
| RB 320-140382/32 CCB |                  | 12/02/2016 13:59 | 1                  |                  | Acquity 2.1 (mm) |
| CCV 320-140382/33    |                  | 12/02/2016 14:07 | 1                  |                  | Acquity 2.1 (mm) |
| CCV 320-140382/34    |                  | 12/02/2016 14:14 | 1                  |                  | Acquity 2.1 (mm) |
| RB 320-140382/35 CCB |                  | 12/02/2016 14:22 | 1                  |                  | Acquity 2.1 (mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-23783-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_NStart Date: 12/02/2016 14:29Analysis Batch Number: 140429End Date: 12/02/2016 17:52

| LAB SAMPLE ID        | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID      | COLUMN ID        |
|----------------------|------------------|------------------|--------------------|------------------|------------------|
| RB 320-140429/1 CCB  |                  | 12/02/2016 14:29 | 1                  |                  | Acquity 2.1 (mm) |
| CCV 320-140429/2     |                  | 12/02/2016 14:37 | 1                  | 02DEC2016B_014.d | Acquity 2.1 (mm) |
| CCV 320-140429/3     |                  | 12/02/2016 14:44 | 1                  |                  | Acquity 2.1 (mm) |
| RB 320-140429/4 CCB  |                  | 12/02/2016 14:52 | 1                  |                  | Acquity 2.1 (mm) |
| MB 320-139627/1-A    |                  | 12/02/2016 14:59 | 1                  | 02DEC2016C_001.d | Acquity 2.1 (mm) |
| LCS 320-139627/2-A   |                  | 12/02/2016 15:07 | 1                  | 02DEC2016C_002.d | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 15:14 | 1                  |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 15:22 | 1                  |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 15:29 | 1                  |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 15:37 | 1                  |                  | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 15:44 | 1                  |                  | Acquity 2.1 (mm) |
| 320-23783-1          |                  | 12/02/2016 15:52 | 1                  | 02DEC2016C_008.d | Acquity 2.1 (mm) |
| 320-23783-2          |                  | 12/02/2016 15:59 | 1                  | 02DEC2016C_009.d | Acquity 2.1 (mm) |
| 320-23783-5          |                  | 12/02/2016 16:07 | 1                  | 02DEC2016C_010.d | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/02/2016 16:14 | 10                 |                  | Acquity 2.1 (mm) |
| CCV 320-140429/16    |                  | 12/02/2016 16:22 | 1                  | 02DEC2016C_012.d | Acquity 2.1 (mm) |
| CCV 320-140429/17    |                  | 12/02/2016 16:29 | 1                  |                  | Acquity 2.1 (mm) |
| RB 320-140429/18 CCB |                  | 12/02/2016 16:37 | 1                  |                  | Acquity 2.1 (mm) |
| 320-23783-6          |                  | 12/02/2016 16:44 | 1                  | 02DEC2016C_015.d | Acquity 2.1 (mm) |
| 320-23783-7          |                  | 12/02/2016 16:52 | 1                  | 02DEC2016C_016.d | Acquity 2.1 (mm) |
| 320-23783-8          |                  | 12/02/2016 16:59 | 1                  | 02DEC2016C_017.d | Acquity 2.1 (mm) |
| 320-23783-9          |                  | 12/02/2016 17:07 | 1                  | 02DEC2016C_018.d | Acquity 2.1 (mm) |
| 320-23783-10         |                  | 12/02/2016 17:14 | 1                  | 02DEC2016C_019.d | Acquity 2.1 (mm) |
| 320-23783-11         |                  | 12/02/2016 17:22 | 1                  | 02DEC2016C_020.d | Acquity 2.1 (mm) |
| RB 320-140429/25 CCB |                  | 12/02/2016 17:29 | 1                  |                  | Acquity 2.1 (mm) |
| CCV 320-140429/26    |                  | 12/02/2016 17:37 | 1                  | 02DEC2016C_022.d | Acquity 2.1 (mm) |
| CCV 320-140429/27    |                  | 12/02/2016 17:44 | 1                  |                  | Acquity 2.1 (mm) |
| RB 320-140429/28 CCB |                  | 12/02/2016 17:52 | 1                  |                  | Acquity 2.1 (mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-23783-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_NStart Date: 12/03/2016 13:26Analysis Batch Number: 140564End Date: 12/03/2016 18:33

| LAB SAMPLE ID        | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID      | COLUMN ID       |
|----------------------|------------------|------------------|--------------------|------------------|-----------------|
| RB 320-140564/1 CCB  |                  | 12/03/2016 13:26 | 1                  |                  | Acquity 2.1(mm) |
| RB 320-140564/2 CCB  |                  | 12/03/2016 13:33 | 1                  |                  | Acquity 2.1(mm) |
| RB 320-140564/3 CCB  |                  | 12/03/2016 13:41 | 1                  |                  | Acquity 2.1(mm) |
| IC 320-140564/4      |                  | 12/03/2016 13:48 | 1                  | 03DEC2016A_004.d | Acquity 2.1(mm) |
| IC 320-140564/5      |                  | 12/03/2016 13:56 | 1                  | 03DEC2016A_005.d | Acquity 2.1(mm) |
| IC 320-140564/6      |                  | 12/03/2016 14:03 | 1                  | 03DEC2016A_006.d | Acquity 2.1(mm) |
| IC 320-140564/7      |                  | 12/03/2016 14:11 | 1                  | 03DEC2016A_007.d | Acquity 2.1(mm) |
| IC 320-140564/8      |                  | 12/03/2016 14:18 | 1                  | 03DEC2016A_008.d | Acquity 2.1(mm) |
| IC 320-140564/9      |                  | 12/03/2016 14:26 | 1                  | 03DEC2016A_009.d | Acquity 2.1(mm) |
| ICB 320-140564/10    |                  | 12/03/2016 14:33 | 1                  | 03DEC2016A_010.d | Acquity 2.1(mm) |
| ICV 320-140564/11    |                  | 12/03/2016 14:41 | 1                  | 03DEC2016A_011.d | Acquity 2.1(mm) |
| RB 320-140564/12 CCB |                  | 12/03/2016 14:48 | 1                  |                  | Acquity 2.1(mm) |
| IC 320-140564/13     |                  | 12/03/2016 14:56 | 1                  | 03DEC2016A_013.d | Acquity 2.1(mm) |
| IC 320-140564/14     |                  | 12/03/2016 15:03 | 1                  | 03DEC2016A_014.d | Acquity 2.1(mm) |
| IC 320-140564/15     |                  | 12/03/2016 15:11 | 1                  | 03DEC2016A_015.d | Acquity 2.1(mm) |
| IC 320-140564/16     |                  | 12/03/2016 15:18 | 1                  | 03DEC2016A_016.d | Acquity 2.1(mm) |
| IC 320-140564/17     |                  | 12/03/2016 15:26 | 1                  | 03DEC2016A_017.d | Acquity 2.1(mm) |
| IC 320-140564/18     |                  | 12/03/2016 15:33 | 1                  | 03DEC2016A_018.d | Acquity 2.1(mm) |
| ICB 320-140564/19    |                  | 12/03/2016 15:41 | 1                  |                  | Acquity 2.1(mm) |
| ICV 320-140564/20    |                  | 12/03/2016 15:48 | 1                  |                  | Acquity 2.1(mm) |
| RB 320-140564/21 CCB |                  | 12/03/2016 15:56 | 1                  |                  | Acquity 2.1(mm) |
| MB 320-139749/1-A    |                  | 12/03/2016 16:03 | 1                  | 03DEC2016B_001.d | Acquity 2.1(mm) |
| LCS 320-139749/2-A   |                  | 12/03/2016 16:11 | 1                  | 03DEC2016B_002.d | Acquity 2.1(mm) |
| LCSD 320-139749/3-A  |                  | 12/03/2016 16:18 | 1                  | 03DEC2016B_003.d | Acquity 2.1(mm) |
| 320-23783-3          |                  | 12/03/2016 16:26 | 1                  | 03DEC2016B_004.d | Acquity 2.1(mm) |
| 320-23783-4          |                  | 12/03/2016 16:33 | 1                  | 03DEC2016B_005.d | Acquity 2.1(mm) |
| 320-23783-12         |                  | 12/03/2016 16:41 | 1                  | 03DEC2016B_006.d | Acquity 2.1(mm) |
| 320-23783-13         |                  | 12/03/2016 16:48 | 1                  | 03DEC2016B_007.d | Acquity 2.1(mm) |
| RB 320-140564/29 CCB |                  | 12/03/2016 16:56 | 1                  |                  | Acquity 2.1(mm) |
| CCV 320-140564/30    |                  | 12/03/2016 17:03 | 1                  | 03DEC2016B_009.d | Acquity 2.1(mm) |
| CCV 320-140564/31    |                  | 12/03/2016 17:11 | 1                  |                  | Acquity 2.1(mm) |
| RB 320-140564/32 CCB |                  | 12/03/2016 17:18 | 1                  |                  | Acquity 2.1(mm) |
| RB 320-140564/39 CCB |                  | 12/03/2016 18:11 | 1                  |                  | Acquity 2.1(mm) |
| CCV 320-140564/40    |                  | 12/03/2016 18:18 | 1                  |                  | Acquity 2.1(mm) |
| CCV 320-140564/41    |                  | 12/03/2016 18:26 | 1                  |                  | Acquity 2.1(mm) |
| RB 320-140564/42 CCB |                  | 12/03/2016 18:33 | 1                  |                  | Acquity 2.1(mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-23783-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_NStart Date: 12/07/2016 12:18Analysis Batch Number: 141054End Date: 12/07/2016 16:25

| LAB SAMPLE ID            | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID          | COLUMN ID       |
|--------------------------|------------------|------------------|--------------------|----------------------|-----------------|
| RB 320-141054/3 CCB      |                  | 12/07/2016 12:18 | 1                  |                      | Acquity 2.1(mm) |
| RB 320-141054/4 CCB      |                  | 12/07/2016 12:25 | 1                  |                      | Acquity 2.1(mm) |
| CCV 320-141054/5<br>CCVL |                  | 12/07/2016 12:33 | 1                  | 07DEC2016A_003.<br>d | Acquity 2.1(mm) |
| CCV 320-141054/6<br>CCVL |                  | 12/07/2016 12:40 | 1                  |                      | Acquity 2.1(mm) |
| CCV 320-141054/7         |                  | 12/07/2016 12:48 | 1                  |                      | Acquity 2.1(mm) |
| CCV 320-141054/8         |                  | 12/07/2016 12:55 | 1                  |                      | Acquity 2.1(mm) |
| RB 320-141054/9 CCB      |                  | 12/07/2016 13:03 | 1                  |                      | Acquity 2.1(mm) |
| RB 320-141054/20 CCB     |                  | 12/07/2016 14:26 | 1                  |                      | Acquity 2.1(mm) |
| CCV 320-141054/21        |                  | 12/07/2016 14:33 | 1                  |                      | Acquity 2.1(mm) |
| CCV 320-141054/22        |                  | 12/07/2016 14:41 | 1                  |                      | Acquity 2.1(mm) |
| RB 320-141054/23 CCB     |                  | 12/07/2016 14:48 | 1                  |                      | Acquity 2.1(mm) |
| ZZZZZ                    |                  | 12/07/2016 14:55 | 1                  |                      | Acquity 2.1(mm) |
| ZZZZZ                    |                  | 12/07/2016 15:03 | 1                  |                      | Acquity 2.1(mm) |
| ZZZZZ                    |                  | 12/07/2016 15:11 | 1                  |                      | Acquity 2.1(mm) |
| ZZZZZ                    |                  | 12/07/2016 15:18 | 1                  |                      | Acquity 2.1(mm) |
| ZZZZZ                    |                  | 12/07/2016 15:26 | 1                  |                      | Acquity 2.1(mm) |
| ZZZZZ                    |                  | 12/07/2016 15:33 | 1                  |                      | Acquity 2.1(mm) |
| ZZZZZ                    |                  | 12/07/2016 15:41 | 1                  |                      | Acquity 2.1(mm) |
| RB 320-141054/31 CCB     |                  | 12/07/2016 15:48 | 1                  |                      | Acquity 2.1(mm) |
| RB 320-141054/32 CCB     |                  | 12/07/2016 15:55 | 1                  |                      | Acquity 2.1(mm) |
| RB 320-141054/33 CCB     |                  | 12/07/2016 16:03 | 1                  |                      | Acquity 2.1(mm) |
| CCV 320-141054/34        |                  | 12/07/2016 16:10 | 1                  |                      | Acquity 2.1(mm) |
| CCV 320-141054/35        |                  | 12/07/2016 16:18 | 1                  |                      | Acquity 2.1(mm) |
| RB 320-141054/36 CCB     |                  | 12/07/2016 16:25 | 1                  |                      | Acquity 2.1(mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-23783-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_NStart Date: 12/07/2016 16:40Analysis Batch Number: 141062End Date: 12/07/2016 21:10

| LAB SAMPLE ID        | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID          | COLUMN ID        |
|----------------------|------------------|------------------|--------------------|----------------------|------------------|
| CCV 320-141062/2     |                  | 12/07/2016 16:40 | 1                  | 07DEC2016B_002.<br>d | Acquity 2.1 (mm) |
| CCV 320-141062/3     |                  | 12/07/2016 16:48 | 1                  |                      | Acquity 2.1 (mm) |
| RB 320-141062/4 CCB  |                  | 12/07/2016 16:55 | 1                  |                      | Acquity 2.1 (mm) |
| 320-23783-12 DL      |                  | 12/07/2016 17:03 | 100                | 07DEC2016B_005.<br>d | Acquity 2.1 (mm) |
| 320-23783-3 DL       |                  | 12/07/2016 17:10 | 10                 | 07DEC2016B_006.<br>d | Acquity 2.1 (mm) |
| 320-23783-4 DL       |                  | 12/07/2016 17:18 | 10                 | 07DEC2016B_007.<br>d | Acquity 2.1 (mm) |
| 320-23783-13 DL      |                  | 12/07/2016 17:25 | 10                 | 07DEC2016B_008.<br>d | Acquity 2.1 (mm) |
| 320-23783-5 DL       |                  | 12/07/2016 17:33 | 10                 | 07DEC2016B_009.<br>d | Acquity 2.1 (mm) |
| ZZZZZ                |                  | 12/07/2016 17:40 | 1                  |                      | Acquity 2.1 (mm) |
| RB 320-141062/11 CCB |                  | 12/07/2016 17:48 | 1                  |                      | Acquity 2.1 (mm) |
| CCV 320-141062/12    |                  | 12/07/2016 17:55 | 1                  | 07DEC2016B_012.<br>d | Acquity 2.1 (mm) |
| CCV 320-141062/13    |                  | 12/07/2016 18:03 | 1                  |                      | Acquity 2.1 (mm) |
| RB 320-141062/14 CCB |                  | 12/07/2016 18:10 | 1                  |                      | Acquity 2.1 (mm) |
| RB 320-141062/20 CCB |                  | 12/07/2016 18:55 | 1                  |                      | Acquity 2.1 (mm) |
| RB 320-141062/21 CCB |                  | 12/07/2016 19:03 | 1                  |                      | Acquity 2.1 (mm) |
| CCV 320-141062/22    |                  | 12/07/2016 19:10 | 1                  |                      | Acquity 2.1 (mm) |
| CCV 320-141062/23    |                  | 12/07/2016 19:18 | 1                  |                      | Acquity 2.1 (mm) |
| RB 320-141062/24 CCB |                  | 12/07/2016 19:25 | 1                  |                      | Acquity 2.1 (mm) |
| RB 320-141062/36 CCB |                  | 12/07/2016 20:55 | 1                  |                      | Acquity 2.1 (mm) |
| CCV 320-141062/37    |                  | 12/07/2016 21:03 | 1                  |                      | Acquity 2.1 (mm) |
| CCV 320-141062/38    |                  | 12/07/2016 21:10 | 1                  |                      | Acquity 2.1 (mm) |

## LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

SDG No.: \_\_\_\_\_

Batch Number: 139627 Batch Start Date: 11/28/16 11:03 Batch Analyst: Arauz, Horacio JBatch Method: SHAKE Batch End Date: 11/30/16 16:30

| Lab Sample ID       | Client Sample ID   | Method Chain             | Basis | InitialAmount | FinalAmount | LCMPFCSU 00046 | LCPFCSP 00070 |  |  |
|---------------------|--------------------|--------------------------|-------|---------------|-------------|----------------|---------------|--|--|
| MB 320-139627/1     |                    | SHAKE, 537<br>(Modified) |       | 5.00 g        | 1.00 mL     | 50 uL          |               |  |  |
| LCS<br>320-139627/2 |                    | SHAKE, 537<br>(Modified) |       | 5.00 g        | 1.00 mL     | 50 uL          | 40 uL         |  |  |
| 320-23783-A-1       | DPT-16-35-SO-00-01 | SHAKE, 537<br>(Modified) | T     | 5.01 g        | 1.00 mL     | 50 uL          |               |  |  |
| 320-23783-A-2       | DPT-16-35-SO-19-20 | SHAKE, 537<br>(Modified) | T     | 5.07 g        | 1.00 mL     | 50 uL          |               |  |  |
| 320-23783-A-5       | DPT-16-19-SO-00-01 | SHAKE, 537<br>(Modified) | T     | 5.02 g        | 1.00 mL     | 50 uL          |               |  |  |
| 320-23783-A-6       | DPT-16-19-SO-17-18 | SHAKE, 537<br>(Modified) | T     | 5.06 g        | 1.00 mL     | 50 uL          |               |  |  |
| 320-23783-A-7       | DPT-16-32-SO-14-15 | SHAKE, 537<br>(Modified) | T     | 5.03 g        | 1.00 mL     | 50 uL          |               |  |  |
| 320-23783-A-8       | DPT-16-31-SO-14-15 | SHAKE, 537<br>(Modified) | T     | 5.00 g        | 1.00 mL     | 50 uL          |               |  |  |
| 320-23783-A-9       | DPT-16-30-SO-14-15 | SHAKE, 537<br>(Modified) | T     | 5.02 g        | 1.00 mL     | 50 uL          |               |  |  |
| 320-23783-A-10      | DPT-16-28-SO-14-15 | SHAKE, 537<br>(Modified) | T     | 5.03 g        | 1.00 mL     | 50 uL          |               |  |  |
| 320-23783-A-11      | DPT-16-15-SO-14-15 | SHAKE, 537<br>(Modified) | T     | 5.05 g        | 1.00 mL     | 50 uL          |               |  |  |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

537 (Modified)

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## LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

SDG No.: \_\_\_\_\_

Batch Number: 139627 Batch Start Date: 11/28/16 11:03 Batch Analyst: Arauz, Horacio JBatch Method: SHAKE Batch End Date: 11/30/16 16:30

| Batch Notes                       |                      |
|-----------------------------------|----------------------|
| Acetic Acid ID                    | 429065               |
| Balance ID                        | QA-070               |
| Batch Comment                     | Pipette MD05306      |
| Hexane ID                         | J.T.BAKER 0000146278 |
| Manifold ID                       | 5,9                  |
| Methanol ID                       | 789824               |
| Methanolic Potassium Hydroxide ID | 757037               |
| Millipore Water Dispense Date     | 11-29-16             |
| Sodium Hydroxide ID               | 758321               |
| Ammonium Hydroxide/MeOH ID        | 794501               |
| Analyst ID - Reagent Drop Witness | NSH                  |
| Blank Sand Lot #                  | Fisher 156690        |
| SPE Cartridge ID                  | 016636277A           |
| SPE Cartridge Type                | WAX 150mg            |

| Basis | Basis Description |
|-------|-------------------|
| T     | Total/NA          |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

## LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

SDG No.: \_\_\_\_\_

Batch Number: 139749 Batch Start Date: 11/28/16 16:55 Batch Analyst: Marchenko, Veronika PBatch Method: 3535 Batch End Date: 11/29/16 14:06

| Lab Sample ID        | Client Sample ID   | Method Chain            | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | LCMPFCSU 00046 | LCPFCSU 00070 |
|----------------------|--------------------|-------------------------|-------|-------------|------------|---------------|-------------|----------------|---------------|
| MB 320-139749/1      |                    | 3535, 537<br>(Modified) |       |             | 25.53 g    | 250 mL        | 0.5 mL      | 25 uL          |               |
| LCS<br>320-139749/2  |                    | 3535, 537<br>(Modified) |       |             | 25.67 g    | 250 mL        | 0.5 mL      | 25 uL          | 20 uL         |
| LCSD<br>320-139749/3 |                    | 3535, 537<br>(Modified) |       |             | 25.81 g    | 250 mL        | 0.5 mL      | 25 uL          | 20 uL         |
| 320-23783-A-3        | DPT-16-35-GW-21-25 | 3535, 537<br>(Modified) | T     | 276.82 g    | 26.59 g    | 250.2 mL      | 0.5 mL      | 25 uL          |               |
| 320-23783-A-4        | DPT-16-35-GW-31-35 | 3535, 537<br>(Modified) | T     | 275.75 g    | 26.19 g    | 249.6 mL      | 0.5 mL      | 25 uL          |               |
| 320-23783-A-12       | DPT-16-15-GW-18-22 | 3535, 537<br>(Modified) | T     | 275.60 g    | 25.93 g    | 249.7 mL      | 0.5 mL      | 25 uL          |               |
| 320-23783-A-13       | DPT-16-15-GW-31-35 | 3535, 537<br>(Modified) | T     | 272.23 g    | 26.37 g    | 245.9 mL      | 0.5 mL      | 25 uL          |               |

| Lab Sample ID        | Client Sample ID   | Method Chain            | Basis | AnalysisComment                                                 |  |  |  |  |  |
|----------------------|--------------------|-------------------------|-------|-----------------------------------------------------------------|--|--|--|--|--|
| MB 320-139749/1      |                    | 3535, 537<br>(Modified) |       |                                                                 |  |  |  |  |  |
| LCS<br>320-139749/2  |                    | 3535, 537<br>(Modified) |       |                                                                 |  |  |  |  |  |
| LCSD<br>320-139749/3 |                    | 3535, 537<br>(Modified) |       | See NCM<br>regarding these<br>samples,<br>contains<br>sediment. |  |  |  |  |  |
| 320-23783-A-3        | DPT-16-35-GW-21-25 | 3535, 537<br>(Modified) | T     |                                                                 |  |  |  |  |  |
| 320-23783-A-4        | DPT-16-35-GW-31-35 | 3535, 537<br>(Modified) | T     |                                                                 |  |  |  |  |  |
| 320-23783-A-12       | DPT-16-15-GW-18-22 | 3535, 537<br>(Modified) | T     |                                                                 |  |  |  |  |  |
| 320-23783-A-13       | DPT-16-15-GW-31-35 | 3535, 537<br>(Modified) | T     |                                                                 |  |  |  |  |  |

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.

537 (Modified)

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## LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

SDG No.: \_\_\_\_\_

Batch Number: 139749 Batch Start Date: 11/28/16 16:55 Batch Analyst: Marchenko, Veronika PBatch Method: 3535 Batch End Date: 11/29/16 14:06

| Batch Notes                          |                       |
|--------------------------------------|-----------------------|
| Balance ID                           | QA-070                |
| Batch Comment                        | 0.1N NaOH/H2O: 794892 |
| H2O ID                               | 11/28/16              |
| Hexane ID                            | 0000146278            |
| Manifold ID                          | 1                     |
| Methanol ID                          | 769613                |
| Pipette ID                           | MD05306               |
| Analyst ID - Reagent Drop            | VPM                   |
| Analyst ID - SU Reagent Drop         | VPM                   |
| Analyst ID - SU Reagent Drop Witness | KMK                   |
| Solvent Lot #                        | 794501                |
| Solvent Name                         | 0.3% NH4OH/MeOH       |
| SOP Number                           | WS-LC-0025            |
| SPE Cartridge Type                   | WAX 500mg             |
| Solid Phase Extraction Disk ID       | 002836112A            |

| Basis | Basis Description |
|-------|-------------------|
| T     | Total/NA          |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

## HPLC/LCMS Data Review Checklist

Job Number(s): 23542; 23651; 23718; 23783 Work List ID(s): 37450; 37461  
 Extraction Batch: 138217; 138291; 139627 Analysis Batch(es): 140382; 140429  
 Delivery Rank: 4 Due Date: 11/19/16; 11/25/16

| A. Calibration/Instrument Run QC                                                                                           | 1 <sup>st</sup> Level | 2 <sup>nd</sup> Level | N/A |
|----------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----|
| 1. ICAL locked in Chrom and TALS? ICAL Batch# <u>140382;</u>                                                               | ✓                     | ✓                     |     |
| 2. ICAL, CCV Frequency & Criteria met.                                                                                     | ✓                     | ✓                     |     |
| • RF <sub>average</sub> criteria appropriate for the method.                                                               | ✓                     | ✓                     |     |
| • Linear Regression criteria appropriate if required ( $r \geq 0.995$ ).                                                   | ✓                     | ✓                     |     |
| • Quadratic fit criteria appropriate if required ( $r^2 \geq 0.990$ ).                                                     |                       |                       | ✓   |
| • For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005? | ✓                     | ✓                     |     |
| • All curve points show calculated concentrations.                                                                         | ✓                     | ✓                     |     |
| 3. Peaks correctly ID'd by data system.                                                                                    | ✓                     | ✓                     |     |
| 5. Tune check frequency & criteria met and Tune check report attached.                                                     | ✓                     | ✓                     |     |
| B. QA/QC                                                                                                                   |                       |                       |     |
| 1. Are all QC samples properly linked in TALS?                                                                             | ✓                     | ✓                     |     |
| 2. Method blank, LCS/LCSD and MS/SD frequencies met.                                                                       | ✓                     | ✓                     |     |
| 3. LCS/LCSD and MB data are within control limits. If not, NCM is present.                                                 | ✓                     | ✓                     |     |
| 4. Are MS/MSD recoveries and RPD within control limits?                                                                    | ✓                     | ✓                     |     |
| 5. Holding Times were met for prep and analytical.                                                                         | ✓                     | ✓                     |     |
| 6. IS/Surrogate recoveries meet criteria or properly noted.                                                                | ✓                     | ✓                     |     |
| C. Sample Analysis                                                                                                         |                       |                       |     |
| 1. Was correct analysis performed and were project instructions followed?                                                  | ✓                     | ✓                     |     |
| 2. If required, are compounds within RT windows?                                                                           | ✓                     | ✓                     |     |
| 3. If required, are positive hits confirmed and >40% RPD flagged?                                                          |                       |                       | ✓   |
| 4. Manual Integrations reviewed and appropriate.                                                                           | ✓                     | ✓                     |     |
| 5. All analytes correctly reported. (Primary, secondary, acceptable status)                                                | ✓                     | ✓                     |     |
| 6. Correct reporting limits used. (based on client request, prep factors, and dilutions)                                   | ✓                     | ✓                     |     |
| D. Documentation                                                                                                           |                       |                       |     |
| 1. Are all non-conformances documented/attached? NCM# <u>71898; 71899</u>                                                  | ✓                     | ✓                     |     |
| 2. Do results make sense (e.g. dilutions, etc.)?                                                                           | ✓                     | ✓                     |     |
| 3. Have all flags been reviewed for appropriateness?                                                                       | ✓                     | ✓                     |     |
| 4. For level 3 and 4 reports, have forms and raw data been reviewed?                                                       | ✓                     | ✓                     |     |
| 5. Was QC Checker run for this job?                                                                                        | ✓                     | ✓                     |     |

\*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1<sup>st</sup> Level (Analyst):  Date: 12/4/16  
 2<sup>nd</sup> Level Reviewer:  Date: 12/5/16

NCMs: 71898; 71899; 71937; 71940

TestAmerica Laboratories  
Worklist QC Batch Report

Worklist Name: 02DEC2016A\_PFC

Worklist Number: 37450

Instrument Name: A8\_N

Chrom Method: A8\_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37450.b

QC Batching: Disabled

Limit Group Batching: Enabled

| QC Batch: 1             | LC PFC_DOD ICAL<br>Raw Batch: 140382 | LC PFC ICAL<br>Raw Batch: 140383 | LC PFAS ICAL<br>Raw Batch: 140384 |
|-------------------------|--------------------------------------|----------------------------------|-----------------------------------|
| # 1 RB                  | # 1 RB                               |                                  |                                   |
| # 2 RB                  | # 2 RB                               |                                  |                                   |
| # 3 RB                  | # 3 RB                               |                                  |                                   |
| # 4 IC L1               | # 4 IC L1                            | # 4 IC L1                        | # 4 IC L1                         |
| # 5 IC L2               | # 5 IC L2                            | # 5 IC L2                        | # 5 IC L2                         |
| # 6 IC L3               | # 6 IC L3                            | # 6 IC L3                        | # 6 IC L3                         |
| # 7 IC L4               | # 7 IC L4                            | # 7 IC L4                        | # 7 IC L4                         |
| # 8 IC L5               | # 8 IC L5                            | # 8 IC L5                        | # 8 IC L5                         |
| # 9 IC L6               | # 9 IC L6                            | # 9 IC L6                        | # 9 IC L6                         |
| #10 IC L7               | #10 IC L7                            | #10 IC L7                        | #10 IC L7                         |
| #11 ICB                 | #11 ICB                              | #11 ICB                          | #11 ICB                           |
| #12 ICV                 | #12 ICV <i>Tune NCM</i>              | #12 ICV                          |                                   |
| #13 RB                  | #13 RB <i>71898</i>                  | #13 RB                           | #13 RB                            |
| #14 IC L1 Add-on        | #14 IC L1 Add-on                     | #14 IC L1 Add-on                 | #14 IC L1 Add-on                  |
| #15 IC L2 Add-on        | #15 IC L2 Add-on                     | #15 IC L2 Add-on                 | #15 IC L2 Add-on                  |
| #16 IC L3 Add-on        | #16 IC L3 Add-on                     | #16 IC L3 Add-on                 | #16 IC L3 Add-on                  |
| #17 IC L4 Add-on        | #17 IC L4 Add-on                     | #17 IC L4 Add-on                 | #17 IC L4 Add-on                  |
| #18 IC L5 Add-on        | #18 IC L5 Add-on                     | #18 IC L5 Add-on                 | #18 IC L5 Add-on                  |
| #19 IC L6 Add-on        | #19 IC L6 Add-on                     | #19 IC L6 Add-on                 | #19 IC L6 Add-on                  |
| #20 IC L7 Add-on        | #20 IC L7 Add-on                     | #20 IC L7 Add-on                 | #20 IC L7 Add-on                  |
| #21 ICB                 | #21 ICB                              | #21 ICB                          | #21 ICB                           |
| #22 ICV Add-on          | #22 ICV Add-on                       | #22 ICV Add-on                   |                                   |
| #23 RB                  | #23 RB                               | #23 RB                           | #23 RB                            |
| #24 320-23542-A-2-A     | #24 320-23542-A-2-A                  |                                  |                                   |
| #25 320-23542-A-2-B MS  | #25 320-23542-A-2-B MS               |                                  |                                   |
| #26 320-23542-A-2-C MSD | #26 320-23542-A-2-C MSD              |                                  |                                   |
| #27 320-23542-A-1-A     | #27 320-23542-A-1-A                  |                                  |                                   |
| #28 320-23542-A-4-A     | #28 320-23542-A-4-A <i>misinject</i> |                                  |                                   |
| #29 320-23542-A-3-A     | #29 320-23542-A-3-A                  |                                  |                                   |
| #30 320-23542-A-3-B MS  | #30 320-23542-A-3-B MS               |                                  |                                   |
| #31 320-23542-A-3-C MSD | #31 320-23542-A-3-C MSD              |                                  |                                   |
| #32 RB                  | #32 RB                               | #32 RB                           | #32 RB                            |
| #33 CCV L5              | #33 CCV L5                           | #33 CCV L5                       | #33 CCV L5                        |
| #34 CCV L5 Add-on       | #34 CCV L5 Add-on                    | #34 CCV L5 Add-on                | #34 CCV L5 Add-on                 |
| #35 RB                  | #35 RB                               | #35 RB                           | #35 RB                            |

*MS/MSD high targets NCM 71899*

## TestAmerica Laboratories

## Worklist QC Batch Report

Worklist Name: 02DEC2016B\_PFC

Worklist Number: 37461

Instrument Name: A8\_N

Chrom Method: A8\_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8\_N\20161202-37461.b

QC Batching: Disabled

Limit Group Batching: Enabled

| QC Batch: 1             | LC PFC_DOD ICAL<br>Raw Batch: 140429            | LC PFC ICAL<br>Raw Batch: 140430 | LC PFAS ICAL<br>Raw Batch: 140431 |
|-------------------------|-------------------------------------------------|----------------------------------|-----------------------------------|
| # 1 RB                  | # 1 RB                                          | # 1 RB                           | # 1 RB                            |
| # 2 CCV L5              | # 2 CCV L5                                      | # 2 CCV L5                       | # 2 CCV L5                        |
| # 3 CCV L5 Add-on       | # 3 CCV L5 Add-on                               | # 3 CCV L5 Add-on                | # 3 CCV L5 Add-on                 |
| # 4 RB                  | # 4 RB                                          | # 4 RB                           | # 4 RB                            |
| # 5 MB 320-139627/1-A   | # 5 MB 320-139627/1-A                           |                                  |                                   |
| # 6 LCS 320-139627/2-A  | # 6 LCS 320-139627/2-A                          |                                  |                                   |
| # 7 320-23651-A-2-A     | # 7 320-23651-A-2-A                             |                                  |                                   |
| # 8 320-23651-A-3-A     | # 8 320-23651-A-3-A                             |                                  |                                   |
| # 9 320-23718-A-3-A     | # 9 320-23718-A-3-A                             |                                  |                                   |
| #10 320-23718-A-3-B MS  | #10 320-23718-A-3-B MS                          |                                  |                                   |
| #11 320-23718-A-3-C MSD | #11 320-23718-A-3-C MSD                         |                                  |                                   |
| #12 320-23783-A-1-A     | #12 320-23783-A-1-A                             |                                  |                                   |
| #13 320-23783-A-2-A     | #13 320-23783-A-2-A                             |                                  |                                   |
| #14 320-23783-A-5-A     | #14 320-23783-A-5-A E 10x PFOS E flag NCM 71937 |                                  |                                   |
| #15 320-23542-A-4-A     | #15 320-23542-A-4-A                             |                                  |                                   |
| #16 CCV L5              | #16 CCV L5                                      | #16 CCV L5                       | #16 CCV L5                        |
| #17 CCV L5 Add-on       | #17 CCV L5 Add-on                               | #17 CCV L5 Add-on                | #17 CCV L5 Add-on                 |
| #18 RB                  | #18 RB                                          | #18 RB                           | #18 RB                            |
| #19 320-23783-A-6-A     | #19 320-23783-A-6-A                             |                                  |                                   |
| #20 320-23783-A-7-A     | #20 320-23783-A-7-A                             |                                  |                                   |
| #21 320-23783-A-8-A     | #21 320-23783-A-8-A                             |                                  |                                   |
| #22 320-23783-A-9-A     | #22 320-23783-A-9-A                             |                                  |                                   |
| #23 320-23783-A-10-A    | #23 320-23783-A-10-A                            |                                  |                                   |
| #24 320-23783-A-11-A    | #24 320-23783-A-11-A                            |                                  |                                   |
| #25 RB                  | #25 RB                                          | #25 RB                           | #25 RB                            |
| #26 CCV L5              | #26 CCV L5                                      | #26 CCV L5                       | #26 CCV L5                        |
| #27 CCV L5 Add-on       | #27 CCV L5 Add-on                               | #27 CCV L5 Add-on                | #27 CCV L5 Add-on                 |
| #28 RB                  | #28 RB                                          | #28 RB                           | #28 RB                            |

ICV 140382

Tune + SBC 12/4/16

Tune NCM 71998

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138217  
Method Code: 320-3535\_IWWT-320

Analyst: Arauz, Horacio J

AB 11/20/16  
AB 12/2/16

Batch Open: 11/17/2016 8:49:00AM  
Batch End: 11/18/2016 2:20:00PM

## Solid-Phase Extraction (SPE)

| Input Sample Lab ID<br>(Analytical Method) | SDG<br>(Job #)       | GrossWt<br>TareWt   | InitAmt<br>FinAmt  | PHs<br>Adj1 Adj2 | Due Date | Analytical<br>TAT | Div<br>Rank | Comments      | Output Sample Lab ID |
|--------------------------------------------|----------------------|---------------------|--------------------|------------------|----------|-------------------|-------------|---------------|----------------------|
| 1<br>MS-320-138217-1<br>N/A                | N/A                  |                     | 250 mL<br>0.5 mL   |                  | N/A      | N/A               | N/A         |               |                      |
| 2<br>LCS-320-138217-2<br>N/A               | N/A                  |                     | 250 mL<br>0.5 mL   |                  | N/A      | N/A               | N/A         |               |                      |
| 3<br>320-23542-A-1<br>(PFC_IDA_DOD5)       | N/A<br>(320-23542-1) | 266.74 g<br>26.14 g | 240.6 mL<br>0.5 mL |                  | 11/19/16 | 16_Days           | 4           | 10x PFOS ✓    |                      |
| 4<br>320-23542-A-2<br>(PFC_IDA_DOD5)       | N/A<br>(320-23542-1) | 284.91 g<br>26.35 g | 258.6 mL<br>0.5 mL |                  | 11/19/16 | 16_Days           | 4           | 100x PFOS ✓   |                      |
| 5<br>320-23542-A-2-MSD<br>(PFC_IDA_DOD5)   | N/A<br>(320-23542-1) | 277.51 g<br>26.23 g | 251.3 mL<br>0.5 mL |                  | 11/19/16 | 16_Days           | 4           |               |                      |
| 6<br>320-23542-A-2-MSD<br>(PFC_IDA_DOD5)   | N/A<br>(320-23542-1) | 273.81 g<br>26.03 g | 247.8 mL<br>0.5 mL |                  | 11/19/16 | 16_Days           | 4           |               |                      |
| 7<br>320-23542-A-4<br>(PFC_IDA_DOD5)       | N/A<br>(320-23542-1) | 280.63 g<br>26.42 g | 254.2 mL<br>0.5 mL |                  | 11/19/16 | 16_Days           | 4           | 10x PFOS PI ✓ |                      |

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Arauz, Horacio J

Batch Number: 320-138217

Method Code: 320-3535\_IVWT-320

Batch Open: 11/17/2016 8:49:00AM

Batch End: 11-8-16 14:20

## Solid-Phase Extraction (SPE)

| Input Sample Lab ID<br>(Analytical Method) | SDG<br>(Job #)       | GrossWt<br>TareWt | IntAmt<br>FinAmt | PHs<br>Rcvd Adj1 Adj2 | Due Date | Analytical<br>TAT | Div<br>Rank | Comments | Output Sample Lab ID |
|--------------------------------------------|----------------------|-------------------|------------------|-----------------------|----------|-------------------|-------------|----------|----------------------|
| 1 MB-320-1382171<br>N/A                    | N/A                  |                   | 250 mL<br>0.5 mL |                       | N/A      | N/A               | N/A         |          |                      |
| 2 LGS-320-1382172<br>N/A                   | N/A                  |                   | 250 mL<br>0.5 mL |                       | N/A      | N/A               | N/A         |          |                      |
| 3 320-23542-A-1<br>(PFC_IDA_DOD5)          | N/A<br>(320-23542-1) | 266.74 g          | 0.5 mL           |                       | 11/19/16 | 16_Days           | 4           |          |                      |
| 4 320-23542-A-2<br>(PFC_IDA_DOD5)          | N/A<br>(320-23542-1) | 284.91 g          | 0.5 mL           |                       | 11/19/16 | 16_Days           | 4           |          |                      |
| 5 320-23542-A-2-MS<br>(PFC_IDA_DOD5)       | N/A<br>(320-23542-1) | 277.51 g          | 0.5 mL           |                       | 11/19/16 | 16_Days           | 4           |          |                      |
| 6 320-23542-A-2-MSD<br>(PFC_IDA_DOD5)      | N/A<br>(320-23542-1) | 273.81 g          | 0.5 mL           |                       | 11/19/16 | 16_Days           | 4           |          |                      |
| 7 320-23542-A-4<br>(PFC_IDA_DOD5)          | N/A<br>(320-23542-1) | 280.63 g          | 0.5 mL           |                       | 11/19/16 | 16_Days           | 4           |          |                      |

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End:

Batch Number: 320-138217

Method Code: 320-3535\_IVWT-320

## Batch Notes

Manifold ID 5

Methanol ID 769617

Hexane ID 000146278

Sodium Hypochlorite ID NA

First Start time NA

First End time NA

Balanca ID QA-070

SPE Cartridge Type WAX 500mg

Solid Phase Extraction Disk ID 002836112A

H2O ID 11-14-16

Pipette ID MD05306

Solvent Name 0.3% NH4OH-Me

Solvent Lot # 776672

Analyst ID - Reagent Drop HJA

Analyst ID - SU Reagent Drop HJA

Analyst ID - SU Reagent Drop Witness NGK

Acid Name NA

Acid ID NA

Reagent ID NA

Reagent Lot Number NA

NaCl ID NA

Printed : 11/17/2016

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TestAmerica Sacramento

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138217  
Method Code: 320-3535\_IWWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1N NaOH/H2O\_00026

Comments



# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Arauz, Horacio J

Batch Number: 320-138217

Method Code: 320-3535\_IWWT-320

Batch Open: 11/17/2016 8:49:00AM

Batch End:

## Reagent Additions Worksheet

| Lab ID            | Reagent Code   | Amount Added | Final Amount | By           | Witness      |
|-------------------|----------------|--------------|--------------|--------------|--------------|
| MB 320-138217/1   | LCMPFCSU_00046 | 25 uL        | 0.5 mL       | HSA 11-17-16 | New 11-17-16 |
| LCS 320-138217/2  | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |
| LCS 320-138217/2  | LCPFCSU_00066  | 20 uL        | 0.5 mL       |              |              |
| 320-23542-A-1     | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |
| 320-23542-A-2     | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |
| 320-23542-A-2 MS  | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |
| 320-23542-A-2 MS  | LCPFCSU_00066  | 20 uL        | 0.5 mL       |              |              |
| 320-23542-A-2 MSD | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |
| 320-23542-A-2 MSD | LCPFCSU_00066  | 20 uL        | 0.5 mL       |              |              |
| 320-23542-A-4     | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Arauz, Horacio J

Batch Number: 320-138217

Method Code: 320-3535\_IWWT-320

Batch Open: 11/17/2016 8:49:00AM

Batch End:

| Reagent | Other Reagents: |       |
|---------|-----------------|-------|
|         | Amount/Units    | Lot#: |
|         |                 |       |
|         |                 |       |
|         |                 |       |
|         |                 |       |
|         |                 |       |
|         |                 |       |

**Sacramento  
Preparation Data Review Checklist**

Preparation Batch Number(s): 320-138217 Test: PFC-L

Earliest Holding Time: 11-21-16

| 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                                                                                                                      | NA                             | NA                             |
| Weights in anticipated range and not targeted                                                                                                       | /                              | /                              |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | /                              | /                              |
| The pH is transcribed correctly in TALS                                                                                                             | NA                             | NA                             |
| All additional information transcribed into TALS is correct and raw data is attached                                                                | /                              | /                              |
| Comments are transcribed correctly in TALS                                                                                                          | /                              | /                              |
| Reagents Tab                                                                                                                                        | 1 <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: HSA

Date: 11-18-16

2<sup>nd</sup> Level Reviewer: VPM

Date: 11/18/16

Comments: \_\_\_\_\_

Job # 23542

Date 12/2/16

**Comments:**

# Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138291  
Method Code: 320-Shake\_Bath\_14D-320

Analyst: Sharifi, Nooshin

Batch Open: 11/17/2016 12:48:00PM

Batch End: 11-18-16 13:18pm

## Shake Extraction with Ultrasonic Bath Extraction

| Input Sample Lab ID<br>(Analytical Method) | SDG<br>(Job #)       | Initial<br>Amount | Final<br>Amount | Due Date | Analytical<br>TAT | Div<br>Rank | Comments   | Output Sample Lab ID |
|--------------------------------------------|----------------------|-------------------|-----------------|----------|-------------------|-------------|------------|----------------------|
| 1 MB-320-138291/1<br>N/A                   | N/A                  | 4.98 g            | 1.0 mL          | N/A      | N/A               | N/A         |            |                      |
| 2 LCS-320-138291/2<br>N/A                  | N/A                  | 5.03 g            | 1.0 mL          | N/A      | N/A               | N/A         |            |                      |
| 3 320-23542-A-3<br>(PFC_IDA_DOD5)          | N/A<br>(320-23542-1) | 5.05 g            | 1.0 mL          | 11/18/16 | 16_Days           | 4           | 10x PFCs ✓ |                      |
| 4 320-23542-A-3-MS<br>(PFC_IDA_DOD5)       | N/A<br>(320-23542-1) | 4.99 g            | 1.0 mL          | 11/18/16 | 16_Days           | 4           | 10x PFCs ✓ |                      |
| 5 320-23542-A-3-MSD<br>(PFC_IDA_DOD5)      | N/A<br>(320-23542-1) | 5.03 g            | 1.0 mL          | 11/18/16 | 16_Days           | 4           | 10x PFCs ✓ |                      |

# Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138291

Method Code: 320-Shake\_Bath\_14D-320

Analyst: Sharifi, Nooshin

Batch Open: 11/17/2016 12:46:00PM

Batch End:

## Batch Notes

Balance ID QA-070

Blank Sand Lot # 156690

Filter ID NA

Millipore Water Dispense Date

Analyst ID - Reagent Drop Witness NSH

SPE Cartridge ID 016336091A

SPE Cartridge Type WAX150mg

Hexane ID 0000146278

Methanol ID 769617

Ammonium Hydroxide/MeOH ID 776672

Sodium Hydroxide ID 758321

Methanolic Potassium Hydroxide ID 757037

Manifold ID

Interference check solution ID NA

Acetic Acid ID 429065

Batch Comment Pipette ID: MD05306, MG05455

## Comments

Printed : 11/17/2016

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TestAmerica Sacramento

# Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138291

Method Code: 320-Shake\_Bath\_14D-320

Analyst: Sharifi, Nooshin

Batch Open: 11/17/2016 12:46:00PM

Batch End:

## Reagent Additions Worksheet

| Lab ID            | Reagent Code   | Amount Added | Final Amount | By           | Witness      |
|-------------------|----------------|--------------|--------------|--------------|--------------|
| MB 320-138291/1   | LCMPFCSU_00046 | 50 uL        | 1.0 mL       | NSH 11-17-16 | HSA 11-17-16 |
| LCS 320-138291/2  | LCMPFCSU_00046 | 50 uL        | 1.0 mL       |              |              |
| LCS 320-138291/2  | LCPFCSU_00064  | 40 uL        | 1.0 mL       |              |              |
| 320-23542-A-3     | LCMPFCSU_00046 | 50 uL        | 1.0 mL       |              |              |
| 320-23542-A-3 MS  | LCMPFCSU_00046 | 50 uL        | 1.0 mL       |              |              |
| 320-23542-A-3 MS  | LCPFCSU_00064  | 40 uL        | 1.0 mL       |              |              |
| 320-23542-A-3 MSD | LCMPFCSU_00046 | 50 uL        | 1.0 mL       |              |              |
| 320-23542-A-3 MSD | LCPFCSU_00064  | 40 uL        | 1.0 mL       |              |              |

## Other Reagents:

Amount/Units

Lot#:

Printed : 11/17/2016

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TestAmerica Sacramento

Preparation Batch Number(s): 138291 Test: PFC-S  
Earliest Holding Time: 11-28-16

| 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)                                                                                                   | NA                             | NA                             |
| 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                                                                                                                      | NA                             | NA                             |
| Weights in anticipated range and not targeted                                                                                                       | /                              | /                              |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | /                              | /                              |
| The pH is transcribed correctly in TALS                                                                                                             | NA                             | NA                             |
| All additional information transcribed into TALS is correct and raw data is attached                                                                | /                              | /                              |
| Comments are transcribed correctly in TALS                                                                                                          | /                              | /                              |
| Reagents Tab                                                                                                                                        | 1 <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: NSH Date: 11-19-16  
2<sup>nd</sup> Level Reviewer: HSA Date: 11-19-16  
Comments: \_\_\_\_\_



## Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

AB 12/2/16

Batch Number: 320-139627

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Batch End: 11-30-16 16:30

Method Code: 320-Shake\_Bath\_14D-320

## Shake Extraction with Ultrasonic Bath Extraction

| Input Sample Lab ID<br>(Analytical Method) | SDG<br>(Job #) | Initial<br>Amount | Final<br>Amount | Due Date | Analytical<br>TAT | Div<br>Rank | Comments        | Output Sample Lab ID |
|--------------------------------------------|----------------|-------------------|-----------------|----------|-------------------|-------------|-----------------|----------------------|
| MB-320-139627/1<br>N/A                     | N/A            | 5.00 g            | 1.00 mL         | N/A      | N/A               | N/A         |                 | MB 320-139627/1-A    |
| LCS-320-139627/2<br>N/A                    | N/A            | 5.00 g            | 1.00 mL         | N/A      | N/A               | N/A         |                 | LCS 320-139627/2-A   |
| 320-23651-A-2<br>(PFC_IDA_DOD5)            | (320-23651-1)  | 5.07 g            | 1.00 mL         | 11/21/16 | 16_Days           | 4           |                 | 320-23651-A-2-A      |
| 320-23651-A-3<br>(PFC_IDA_DOD5)            | (320-23651-1)  | 5.05 g            | 1.00 mL         | 11/21/16 | 16_Days           | 4           |                 | 320-23651-A-3-A      |
| 320-23718-A-3<br>(PFC_IDA_DOD5)            | (320-23718-1)  | 5.00 g            | 1.00 mL         | 11/25/16 | 16_Days           | 4           |                 | 320-23718-A-3-A      |
| 320-23718-A-3-MS<br>(PFC_IDA_DOD5)         | (320-23718-1)  | 5.01 g            | 1.00 mL         | 11/25/16 | 16_Days           | 4           |                 | 320-23718-A-3-B      |
| 320-23718-A-3-MSD<br>(PFC_IDA_DOD5)        | (320-23718-1)  | 5.08 g            | 1.00 mL         | 11/25/16 | 16_Days           | 4           |                 | 320-23718-A-3-C      |
| 320-23783-A-1<br>(PFC_IDA_DOD5)            | (320-23783-1)  | 5.01 g            | 1.00 mL         | 11/29/16 | 11_Day_Rush       | 4           |                 | 320-23783-A-1-A      |
| 320-23783-A-2<br>(PFC_IDA_DOD5)            | (320-23783-1)  | 5.07 g            | 1.00 mL         | 11/29/16 | 11_Day_Rush       | 4           |                 | 320-23783-A-2-A      |
| 320-23783-A-5<br>(PFC_IDA_DOD5)            | (320-23783-1)  | 5.02 g            | 1.00 mL         | 11/29/16 | 11_Day_Rush       | 4           | 10X PFOS 681.79 | 320-23783-A-5-A      |
| 320-23783-A-6<br>(PFC_IDA_DOD5)            | (320-23783-1)  | 5.06 g            | 1.00 mL         | 11/29/16 | 11_Day_Rush       | 4           |                 | 320-23783-A-6-A      |
| 320-23783-A-7<br>(PFC_IDA_DOD5)            | (320-23783-1)  | 5.03 g            | 1.00 mL         | 11/29/16 | 11_Day_Rush       | 4           |                 | 320-23783-A-7-A      |
| 320-23783-A-8<br>(PFC_IDA_DOD5)            | (320-23783-1)  | 5.00 g            | 1.00 mL         | 11/29/16 | 11_Day_Rush       | 4           |                 | 320-23783-A-8-A      |
| 320-23783-A-9<br>(PFC_IDA_DOD5)            | (320-23783-1)  | 5.02 g            | 1.00 mL         | 11/29/16 | 11_Day_Rush       | 4           |                 | 320-23783-A-9-A      |
| 320-23783-A-10<br>(PFC_IDA_DOD5)           | (320-23783-1)  | 5.03 g            | 1.00 mL         | 11/29/16 | 11_Day_Rush       | 4           |                 | 320-23783-A-10-A     |

# Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139627

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Method Code: 320-Shake\_Bath\_14D-320

Batch End:

|                                  |                      |        |         |          |             |   |
|----------------------------------|----------------------|--------|---------|----------|-------------|---|
| 320-23783-A-11<br>(PFC_IDA_DOD5) | N/A<br>(320-23783-1) | 5.05 g | 1.00 mL | 11/29/16 | 11_Day_Rush | 4 |
|----------------------------------|----------------------|--------|---------|----------|-------------|---|

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## Batch Notes

Balance ID QA-070

Blank Sand Lot # Fisher 156690

Filter ID NA

Millipore Water Dispense Date 11-29-16

Analyst ID - Reagent Drop Witness MSH

SPE Cartridge ID 016636277A

SPE Cartridge Type WAX 150mg

Hexane ID J.T.BAKER 0000146278

Methanol ID 789824

Ammonium Hydroxide/MeOH ID 794501

Sodium Hydroxide ID 758321

Methanolic Potassium Hydroxide ID 757037

Manifold ID 5,9

Interference check solution ID NA

Acetic Acid ID 429065

Batch Comment Pipette MD05306

# Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139627

Method Code: 320-Shake\_Bath\_14D-320

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Batch End:

| Comments |
|----------|
|----------|

# Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Batch End:

Batch Number: 320-139627

Method Code: 320-Shake\_Bath\_14D-320

## Reagent Additions Worksheet

| Lab ID            | Reagent Code   | Amount Added | Final Amount | By           | Witness      |
|-------------------|----------------|--------------|--------------|--------------|--------------|
| MB 320-139627/1   | LCMPFCSU_00046 | 50 uL        | 1.00 mL      | HSA 11-28-16 | NSH 11-28-16 |
| LCS 320-139627/2  | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| LCS 320-139627/2  | LCPFCSU_00070  | 40 uL        | 1.00 mL      |              |              |
| 320-23651-A-2     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23651-A-3     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23718-A-3     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23718-A-3 MS  | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23718-A-3 MS  | LCPFCSU_00070  | 40 uL        | 1.00 mL      |              |              |
| 320-23718-A-3 MSD | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23718-A-3 MSD | LCPFCSU_00070  | 40 uL        | 1.00 mL      |              |              |
| 320-23783-A-1     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23783-A-2     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23783-A-5     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23783-A-6     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23783-A-7     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23783-A-8     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23783-A-9     | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |
| 320-23783-A-10    | LCMPFCSU_00046 | 50 uL        | 1.00 mL      |              |              |

# Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139627

Method Code: 320-Shake\_Bath\_14D-320

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Batch End:

|                |                |       |         |              |              |
|----------------|----------------|-------|---------|--------------|--------------|
| 320-23783-A-11 | LCMPFCSU_00046 | 50 uL | 1.00 mL | HSA 11-28-16 | NSH 11-28-16 |
|----------------|----------------|-------|---------|--------------|--------------|

| Other Reagents: |              |       |
|-----------------|--------------|-------|
| Reagent         | Amount/Units | Lot#: |
|                 |              |       |
|                 |              |       |
|                 |              |       |
|                 |              |       |
|                 |              |       |
|                 |              |       |

Preparation Batch Number(s): 320-139627 Test: PEC-IDA-0005

Earliest Holding Time: 11-29-16

| 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)                                                                                                   |  | NA                             | NA                             |
| 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                                                                                                                      |  | NA                             | NA                             |
| Weights in anticipated range and not targeted                                                                                                       |  | /                              | /                              |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) |  | /                              | /                              |
| The pH is transcribed correctly in TALS                                                                                                             |  | NA                             | NA                             |
| All additional information transcribed into TALS is correct and raw data is attached                                                                |  | /                              | /                              |
| Comments are transcribed correctly in TALS                                                                                                          |  | /                              | /                              |
| Reagents Tab                                                                                                                                        |  | 1 <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: HSA

Date: 11-30-16

2<sup>nd</sup> Level Reviewer: VPM

Date: 11-30-16

Comments: \_\_\_\_\_

## HPLC/LCMS Data Review Checklist

Job Number(s): 23783; 23770; 23801

Work List ID(s): 37491

Extraction Batch: 139749; 139834

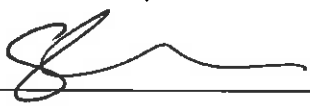
Analysis Batch(es): 140564; 140565

Delivery Rank 4; 2

Due Date: 11/29/16; 11/30/16

|                                                                                                                            | 1 <sup>st</sup> Level | 2 <sup>nd</sup> Level | N/A |
|----------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----|
| <b>A. Calibration/Instrument Run QC</b>                                                                                    |                       |                       |     |
| 1. ICAL locked in Chrom and TALS? ICAL Batch#                                                                              | ✓                     | ✓                     |     |
| 2. ICAL, CCV Frequency & Criteria met.                                                                                     | ✓                     | ✓                     |     |
| • RF <sub>average</sub> criteria appropriate for the method.                                                               | ✓                     | ✓                     |     |
| • Linear Regression criteria appropriate if required ( $r \geq 0.995$ ).                                                   | ✓                     | ✓                     |     |
| • Quadratic fit criteria appropriate if required ( $r^2 \geq 0.990$ ).                                                     |                       |                       | ✓   |
| • For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005? | ✓                     | ✓                     |     |
| • All curve points show calculated concentrations.                                                                         | ✓                     | ✓                     |     |
| 3. Peaks correctly ID'd by data system.                                                                                    | ✓                     | ✓                     |     |
| 5. Tune check frequency & criteria met and Tune check report attached.                                                     | ✓                     | ✓                     |     |
| <b>B. QA/QC</b>                                                                                                            |                       |                       |     |
| 1. Are all QC samples properly linked in TALS?                                                                             | ✓                     | ✓                     |     |
| 2. Method blank, LCS/LCSD and MS/SD frequencies met.                                                                       | ✓                     | ✓                     |     |
| 3. LCS/LCSD and MB data are within control limits. If not, NCM is present.                                                 | ✓                     | ✓                     |     |
| 4. Are MS/MSD recoveries and RPD within control limits? <i>SBC 12/5/16</i>                                                 | ✓                     | ✓                     | ✓   |
| 5. Holding Times were met for prep and analytical.                                                                         | ✓                     | ✓                     |     |
| 6. IS/Surrogate recoveries meet criteria or properly noted.                                                                | ✓                     | ✓                     |     |
| <b>C. Sample Analysis</b>                                                                                                  |                       |                       |     |
| 1. Was correct analysis performed and were project instructions followed?                                                  | ✓                     | ✓                     |     |
| 2. If required, are compounds within RT windows?                                                                           | ✓                     | ✓                     |     |
| 3. If required, are positive hits confirmed and >40% RPD flagged?                                                          |                       |                       | ✓   |
| 4. Manual Integrations reviewed and appropriate.                                                                           | ✓                     | ✓                     |     |
| 5. All analytes correctly reported. (Primary, secondary, acceptable status)                                                | ✓                     | ✓                     |     |
| 6. Correct reporting limits used. (based on client request, prep factors, and dilutions)                                   | ✓                     | ✓                     |     |
| <b>D. Documentation</b>                                                                                                    |                       |                       |     |
| 1. Are all non-conformances documented/attached? NCM#                                                                      | ✓                     | ✓                     |     |
| 2. Do results make sense (e.g. dilutions, etc.)?                                                                           | ✓                     | ✓                     |     |
| 3. Have all flags been reviewed for appropriateness?                                                                       | ✓                     | ✓                     |     |
| 4. For level 3 and 4 reports, have forms and raw data been reviewed?                                                       | ✓                     | ✓                     |     |
| 5. Was QC Checker run for this job?                                                                                        | ✓                     | ✓                     |     |

\*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1<sup>st</sup> Level (Analyst): 

Date: 12/5/16

2<sup>nd</sup> Level Reviewer: 

Date: 12/6/16

NCMs: 71975; 71977; 71973; 71979

TestAmerica Laboratories  
Worklist QC Batch Report

Worklist Name: 03DEC2016A\_PFC

Worklist Number: 37491

Instrument Name: A8\_N

Chrom Method: A8\_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8\_N\20161205-37491.b

QC Batching: Disabled

Limit Group Batching: Enabled

| QC Batch: 1             | LC PFC_DOD ICAL<br>Raw Batch: 140564        | LC PFC ICAL<br>Raw Batch: 140565 | LC PFAS ICAL<br>Raw Batch: 140566 |
|-------------------------|---------------------------------------------|----------------------------------|-----------------------------------|
| # 1 RB                  | # 1 RB                                      |                                  |                                   |
| # 2 RB                  | # 2 RB                                      |                                  |                                   |
| # 3 RB                  | # 3 RB                                      |                                  |                                   |
| # 4 IC L1               | # 4 IC L1                                   | # 4 IC L1                        | # 4 IC L1                         |
| # 5 IC L2               | # 5 IC L2                                   | # 5 IC L2                        | # 5 IC L2                         |
| # 6 IC L3               | # 6 IC L3                                   | # 6 IC L3                        | # 6 IC L3                         |
| # 7 IC L4               | # 7 IC L4                                   | # 7 IC L4                        | # 7 IC L4                         |
| # 8 IC L5               | # 8 IC L5                                   | # 8 IC L5                        | # 8 IC L5                         |
| # 9 IC L6               | # 9 IC L6                                   | # 9 IC L6                        | # 9 IC L6                         |
| #10 ICB                 | #10 ICB                                     | #10 ICB                          | #10 ICB                           |
| #11 ICV                 | #11 ICV                                     | #11 ICV                          |                                   |
| #12 RB                  | #12 RB                                      | #12 RB                           | #12 RB                            |
| #13 IC L1 Add-on        | #13 IC L1 Add-on                            | #13 IC L1 Add-on                 | #13 IC L1 Add-on                  |
| #14 IC L2 Add-on        | #14 IC L2 Add-on                            | #14 IC L2 Add-on                 | #14 IC L2 Add-on                  |
| #15 IC L3 Add-on        | #15 IC L3 Add-on                            | #15 IC L3 Add-on                 | #15 IC L3 Add-on                  |
| #16 IC L4 Add-on        | #16 IC L4 Add-on                            | #16 IC L4 Add-on                 | #16 IC L4 Add-on                  |
| #17 IC L5 Add-on        | #17 IC L5 Add-on                            | #17 IC L5 Add-on                 | #17 IC L5 Add-on                  |
| #18 IC L6 Add-on        | #18 IC L6 Add-on                            | #18 IC L6 Add-on                 | #18 IC L6 Add-on                  |
| #19 ICB                 | #19 ICB                                     | #19 ICB                          | #19 ICB                           |
| #20 ICV Add-on          | #20 ICV Add-on                              | #20 ICV Add-on                   |                                   |
| #21 RB                  | #21 RB                                      | #21 RB                           | #21 RB                            |
| #22 MB 320-139749/1-A   | #22 MB 320-139749/1-A                       |                                  |                                   |
| #23 LCS 320-139749/2-A  | #23 LCS 320-139749/2-A                      |                                  |                                   |
| #24 LCSD 320-139749/3-A | #24 LCSD 320-139749/3-A                     |                                  |                                   |
| #25 320-23783-A-3-A     | #25 320-23783-A-3-A 10x                     |                                  |                                   |
| #26 320-23783-A-4-A     | #26 320-23783-A-4-A 10x                     |                                  |                                   |
| #27 320-23783-A-12-A    | #27 320-23783-A-12-A IDA low NCM 71977 100x |                                  |                                   |
| #28 320-23783-A-13-A    | #28 320-23783-A-13-A RI, 10x                |                                  |                                   |
| #29 RB                  | #29 RB                                      | #29 RB                           | #29 RB                            |
| #30 CCV L5              | #30 CCV L5                                  | #30 CCV L5                       | #30 CCV L5                        |
| #31 CCV L5 Add-on       | #31 CCV L5 Add-on                           | #31 CCV L5 Add-on                | #31 CCV L5 Add-on                 |
| #32 RB                  | #32 RB                                      | #32 RB                           | #32 RB                            |
| #33 MB 320-139834/1-A   |                                             | #33 MB 320-139834/1-A            | #33 MB 320-139834/1-A             |
| #34 LCS 320-139834/2-A  |                                             | #34 LCS 320-139834/2-A           | #34 LCS 320-139834/2-A            |
| #35 LCSD 320-139834/3-A |                                             | #35 LCSD 320-139834/3-A          | #35 LCSD 320-139834/3-A           |
| #36 320-23770-A-1-A     |                                             | #36 320-23770-A-1-A              | #36 320-23770-A-1-A               |
| #37 320-23801-A-1-A     |                                             | #37 320-23801-A-1-A              | #37 320-23801-A-1-A               |
| #38 320-23801-A-2-A     |                                             | #38 320-23801-A-2-A              | #38 320-23801-A-2-A               |
| #39 RB                  | #39 RB                                      | #39 RB                           | #39 RB                            |
| #40 CCV L5              | #40 CCV L5                                  | #40 CCV L5                       | #40 CCV L5                        |
| #41 CCV L5 Add-on       | #41 CCV L5 Add-on                           | #41 CCV L5 Add-on                | #41 CCV L5 Add-on                 |
| #42 RB                  | #42 RB                                      | #42 RB                           | #42 RB                            |

Tune NCM 71975

FOSA IDA low NCM 71973



# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139834

Method Code: 320-3535\_IVWT-320

Analyst: Marchenko, Veronika P

Batch Open: 11/29/2016 12:27:00PM

Batch End: 11-29-2016 9:33 PM

A8 11/30/16

12/2/16

12/3/16

## Solid-Phase Extraction (SPE)

| Input Sample Lab ID<br>(Analytical Method) | SDG<br>(Job #)       | GrossWt<br>TareWt   | InitAmnt<br>FinAmnt | PHs<br>Rcvd Adj1 Adj2 | Due Date | Analytical<br>TAT | Div<br>Rank | Comments | Output Sample Lab ID |
|--------------------------------------------|----------------------|---------------------|---------------------|-----------------------|----------|-------------------|-------------|----------|----------------------|
| 1 MB-320-139834/1<br>N/A                   | N/A                  | 26.51 g             | 250 mL<br>0.5 mL    |                       | N/A      | N/A               | N/A         |          | MB 320-139834/1-A    |
| 2 LCS-320-139834/2<br>N/A                  | N/A                  | 25.54 g             | 250 mL<br>0.5 mL    |                       | N/A      | N/A               | N/A         |          | LCS 320-139834/2-A   |
| 3 LCSD-320-139834/3<br>N/A                 | N/A                  | 26.49 g             | 250 mL<br>0.5 mL    |                       | N/A      | N/A               | N/A         |          | LCSD 320-139834/3-A  |
| 4 320-23770-A-1<br>(PFC_IDA)               | N/A<br>(320-23770-1) | 275.89 g<br>24.16 g | 251.7 mL<br>0.5 mL  |                       | 12/7/16  | 10_Days           | 2           |          | 320-23770-A-1-A      |
| 5 320-23801-A-1<br>(PFC_IDA)               | N/A<br>(320-23801-1) | 275.99 g<br>26.45 g | 249.5 mL<br>0.5 mL  |                       | 11/30/16 | 8_Days            | 2           |          | 320-23801-A-1-A      |
| 6 320-23801-A-2<br>(PFC_IDA)               | N/A<br>(320-23801-1) | 280.68 g<br>26.87 g | 253.8 mL<br>0.5 mL  |                       | 11/30/16 | 8_Days            | 2           |          | 320-23801-A-2-A      |

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139834

Analyst: Marchenko, Veronika P

Batch Open: 11/29/2016 12:27:00PM

Method Code: 320-3535\_IVWT-320

Batch End:

| Batch Notes                    |                 |
|--------------------------------|-----------------|
| Manifold ID                    | 1               |
| Methanol ID                    | 769613          |
| Hexane ID                      | 0000146278      |
| Sodium Hypochlorite ID         | NA              |
| First Start time               | NA              |
| First End time                 | NA              |
| Balance ID                     | QA-070          |
| SPE Cartridge Type             | WAX 500mg       |
| Solid Phase Extraction Disk ID | 002836112A      |
| H2O ID                         | 11/29/16        |
| Pipette ID                     | MD05306         |
| Solvent Name                   | 0.3% NH4OH/MeOH |
| Solvent Lot #                  | 758321          |
| Analyst ID - Reagent Drop      | VPM             |
| Analyst ID - SU Reagent Drop   | VPM             |
| Analyst ID - SU Reagent Drop   | ERW             |
| Witness                        |                 |
| Acid Name                      | NA              |
| Acid ID                        | NA              |
| Reagent ID                     | NA              |
| Reagent Lot Number             | NA              |
| NaCl ID                        | NA              |

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139834

Method Code: 320-3535\_IVWT-320

Analyst: Marchenko, Veronika P

Batch Open: 11/29/2016 12:27:00PM

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1N NaOH/H2O: 758321

Comments

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Marchenko, Veronika P

Batch Number: 320-139834

Method Code: 320-3535\_IVWT-320

Batch Open: 11/29/2016 12:27:00PM

Batch End:

## Reagent Additions Worksheet

| Lab ID            | Reagent Code   | Amount Added | Final Amount | By           | Witness      |
|-------------------|----------------|--------------|--------------|--------------|--------------|
| MB 320-139834/1   | LCMPFCSU_00046 | 25 uL        | 0.5 mL       | VPM 11-29-16 | EWL 11/29/16 |
| LCS 320-139834/2  | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |
| LCS 320-139834/2  | LCPFCSU_00070  | 20 uL        | 0.5 mL       |              |              |
| LCSD 320-139834/3 | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |
| LCSD 320-139834/3 | LCPFCSU_00070  | 20 uL        | 0.5 mL       |              |              |
| 320-23770-A-1     | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |
| 320-23801-A-1     | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |
| 320-23801-A-2     | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |              |

## Other Reagents:

Reagent Amount/Units Lot#:

Preparation Batch Number(s): 139834 Test: PFC-10A  
Earliest Holding Time: 11/29/16

| 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                                                                                                                      | NA                             | NA                             |
| Weights in anticipated range and not targeted                                                                                                       | /                              | /                              |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | /                              | /                              |
| The pH is transcribed correctly in TALS                                                                                                             | NA                             | NA                             |
| All additional information transcribed into TALS is correct and raw data is attached                                                                | /                              | /                              |
| Comments are transcribed correctly in TALS                                                                                                          | /                              | /                              |
| Reagents Tab                                                                                                                                        | 1 <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: NSH Date: 11-29-16  
2<sup>nd</sup> Level Reviewer: [Signature] Date: 11/29/16  
Comments: \_\_\_\_\_

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Marchenko, Veronika P

Batch Number: 320-139749

Method Code: 320-3535\_IVWT-320

A8 11/30/16

12/2/16

Batch Open: 11/28/2016 4:55:00PM

Batch End: 11/29/2016 2:06:00PM

12/3/16

## Solid-Phase Extraction (SPE)

| Input Sample Lab ID<br>(Analytical Method) | SDG<br>(Job #)       | GrossWt<br>TareWt | InitAmt<br>FinAmt | PHs<br>Rcvd Adj1 Adj2 | Due Date | Analytical<br>TAT | Div<br>Rank | Comments                                                        | Output Sample Lab ID |
|--------------------------------------------|----------------------|-------------------|-------------------|-----------------------|----------|-------------------|-------------|-----------------------------------------------------------------|----------------------|
| MB-320-139749/1<br>N/A                     | N/A                  |                   | 250 mL            |                       | N/A      | N/A               | N/A         |                                                                 |                      |
|                                            |                      | 25.53 g           | 0.5 mL            |                       |          |                   |             |                                                                 |                      |
| LCS-320-139749/2<br>N/A                    | N/A                  |                   | 250 mL            |                       | N/A      | N/A               | N/A         |                                                                 |                      |
|                                            |                      | 25.67 g           | 0.5 mL            |                       |          |                   |             |                                                                 |                      |
| LCS-320-139749/3<br>N/A                    | N/A                  |                   | 250 mL            |                       | N/A      | N/A               | N/A         | See NCM<br>regarding these<br>samples,<br>contains<br>sediment. |                      |
|                                            |                      | 25.81 g           | 0.5 mL            |                       |          |                   |             |                                                                 |                      |
| 320-23783-A-3<br>(PFC_IDA_DOD5)            | N/A<br>(320-23783-1) | 276.82 g          | 250.2 mL          |                       | 11/29/16 | 11_Day_Rush       | 4           | 10x PFOA, PFOS                                                  |                      |
|                                            |                      | 26.59 g           | 0.5 mL            |                       |          |                   |             |                                                                 |                      |
| 320-23783-A-4<br>(PFC_IDA_DOD5)            | N/A<br>(320-23783-1) | 275.75 g          | 249.6 mL          |                       | 11/29/16 | 11_Day_Rush       | 4           | 10x PFBS, PFOA,<br>PFOS                                         |                      |
|                                            |                      | 26.19 g           | 0.5 mL            |                       |          |                   |             |                                                                 |                      |
| 320-23783-A-12<br>(PFC_IDA_DOD5)           | N/A<br>(320-23783-1) | 275.60 g          | 249.7 mL          |                       | 11/29/16 | 11_Day_Rush       | 4           | 100x PFBS, PFOA,<br>PFOS                                        |                      |
|                                            |                      | 25.93 g           | 0.5 mL            |                       |          |                   |             |                                                                 |                      |
| 320-23783-A-13<br>(PFC_IDA_DOD5)           | N/A<br>(320-23783-1) | 272.23 g          | 245.9 mL          |                       | 11/29/16 | 11_Day_Rush       | 4           | PI 1x possible<br>PFBS, PFOA<br>10x PFOS                        |                      |
|                                            |                      | 26.37 g           | 0.5 mL            |                       |          |                   |             |                                                                 |                      |

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Marchenko, Veronika P

Batch Open: 11/28/2016 4:55:00PM

Batch End:

Batch Number: 320-139749

Method Code: 320-3535\_IVWT-320

## Batch Notes

Manifold ID 1

Methanol ID 769613

Hexane ID 0000146278

Sodium Hypochlorite ID NA

First Start time NA

First End time NA

Balance ID QA-070

SPE Cartridge Type WAX 500mg

Solid Phase Extraction Disk ID 002836112A

H2O ID 11/28/16

Pipette ID MD05306

Solvent Name 0.3% NH4OH/MeOH

Solvent Lot # 794501

Analyst ID - Reagent Drop VPM

Analyst ID - SU Reagent Drop VPM

Analyst ID - SU Reagent Drop Witness  
KMK 11-28-16

Acid Name NA

Acid ID NA

Reagent ID NA

Reagent Lot Number NA

NaCl ID NA

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139749

Method Code: 320-3535\_IVWT-320

Analyst: Marchenko, Veronika P

Batch Open: 11/28/2016 4:55:00PM

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1N NaOH/H2O: 794892

Comments



# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Marchenko, Veronika P

Batch Number: 320-139749

Batch Open: 11/28/2016 4:55:00PM

Method Code: 320-3535\_IVWT-320

Batch End:

## Reagent Additions Worksheet

| Lab ID            | Reagent Code   | Amount Added | Final Amount | By           | Witness |
|-------------------|----------------|--------------|--------------|--------------|---------|
| MB 320-139749/1   | LCMPFCSU_00046 | 25 uL        | 0.5 mL       | VPM 11/28/16 | KMK     |
| LCS 320-139749/2  | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |         |
| LCS 320-139749/2  | LCPFCSU_00070  | 20 uL        | 0.5 mL       |              |         |
| LCSD 320-139749/3 | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |         |
| LCSD 320-139749/3 | LCPFCSU_00070  | 20 uL        | 0.5 mL       |              |         |
| 320-23783-A-3     | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |         |
| 320-23783-A-4     | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |         |
| 320-23783-A-12    | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |         |
| 320-23783-A-13    | LCMPFCSU_00046 | 25 uL        | 0.5 mL       |              |         |

## Other Reagents:

Reagent Amount/Units Lot#:

Preparation Batch Number(s): 1397749 Test: PFC-10A-0005 (L)  
Earliest Holding Time: 11/28/16

| 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                                                                                                                      | NA                             | NA                             |
| Weights in anticipated range and not targeted                                                                                                       | /                              | /                              |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | /                              | /                              |
| The pH is transcribed correctly in TALS                                                                                                             | NA                             | NA                             |
| All additional information transcribed into TALS is correct and raw data is attached                                                                | /                              | /                              |
| Comments are transcribed correctly in TALS                                                                                                          | /                              | /                              |
| Reagents Tab                                                                                                                                        | 1 <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: 11/29/16

2<sup>nd</sup> Level Reviewer: HSA

Date: 11-29-16

Comments: \_\_\_\_\_

# GENERAL CHEMISTRY

COVER PAGE  
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-23783-1

SDG No.: \_\_\_\_\_

Project: Former Bay Head Road Annex (RFP JU06-01)

| Client Sample ID          | Lab Sample ID       |
|---------------------------|---------------------|
| <u>DPT-16-35-SO-00-01</u> | <u>320-23783-1</u>  |
| <u>DPT-16-35-SO-19-20</u> | <u>320-23783-2</u>  |
| <u>DPT-16-19-SO-00-01</u> | <u>320-23783-5</u>  |
| <u>DPT-16-19-SO-17-18</u> | <u>320-23783-6</u>  |
| <u>DPT-16-32-SO-14-15</u> | <u>320-23783-7</u>  |
| <u>DPT-16-31-SO-14-15</u> | <u>320-23783-8</u>  |
| <u>DPT-16-30-SO-14-15</u> | <u>320-23783-9</u>  |
| <u>DPT-16-28-SO-14-15</u> | <u>320-23783-10</u> |
| <u>DPT-16-15-SO-14-15</u> | <u>320-23783-11</u> |

Comments:

9-IN  
DETECTION LIMITS  
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento

Job Number: 320-23783-1

SDG Number: \_\_\_\_\_

Matrix: Solid

Instrument ID: NOEQUIP

Method: D 2216

RL Date: 01/01/2012 08:18

| Analyte          | Wavelength/<br>Mass | RL<br>(%) |  |
|------------------|---------------------|-----------|--|
| Percent Moisture |                     | 0.1       |  |
| Percent Solids   |                     | 0.1       |  |

9-IN  
CALIBRATION BLANK DETECTION LIMITS  
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento

Job Number: 320-23783-1

SDG Number: \_\_\_\_\_

Matrix: Solid

Instrument ID: NOEQUIP

Method: D 2216

XRL Date: 01/01/2012 08:19

| Analyte          | Wavelength/<br>Mass | XRL<br>(%) |  |
|------------------|---------------------|------------|--|
| Percent Moisture |                     | 0.1        |  |
| Percent Solids   |                     | 0.1        |  |

13-IN  
ANALYSIS RUN LOG  
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: NOEQUIP Analysis Method: D 2216  
 Start Date: 12/01/2016 09:31 End Date: 12/01/2016 09:31

| Lab Sample Id | D/F | T<br>y<br>p<br>e | Time  | Analytes         |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------|-----|------------------|-------|------------------|-----------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|               |     |                  |       | %<br>S<br>o<br>l | M<br>o<br>i<br>s<br>t |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 09:31 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 320-23783-1   | 1   | T                | 09:31 | X                | X                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 320-23783-2   | 1   | T                | 09:31 | X                | X                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 320-23783-5   | 1   | T                | 09:31 | X                | X                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 320-23783-6   | 1   | T                | 09:31 | X                | X                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Prep Types: \_\_\_\_\_  
 T = Total/NA

13-IN  
ANALYSIS RUN LOG  
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: NOEQUIP Analysis Method: D 2216  
 Start Date: 12/01/2016 11:23 End Date: 12/01/2016 11:23

| Lab Sample Id | D/F | T<br>y<br>p<br>e | Time  | Analytes         |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------|-----|------------------|-------|------------------|-----------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|               |     |                  |       | %<br>S<br>o<br>l | M<br>o<br>i<br>s<br>t |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 320-23783-7   | 1   | T                | 11:23 | X                | X                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 320-23783-11  | 1   | T                | 11:23 | X                | X                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 320-23783-8   | 1   | T                | 11:23 | X                | X                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 320-23783-9   | 1   | T                | 11:23 | X                | X                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 320-23783-10  | 1   | T                | 11:23 | X                | X                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ZZZZZZ        |     |                  | 11:23 |                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Prep Types: \_\_\_\_\_  
 T = Total/NA



## GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

SDG No.: \_\_\_\_\_

Batch Number: 140129 Batch Start Date: 12/01/16 09:31 Batch Analyst: Martin, ChristineBatch Method: D 2216 Batch End Date: 12/02/16 09:43

| Lab Sample ID | Client Sample ID   | Method Chain | Basis | DISH# | DishWeight | SampleMassWet | SampleMassDry |  |  |
|---------------|--------------------|--------------|-------|-------|------------|---------------|---------------|--|--|
| 320-23783-A-1 | DPT-16-35-SO-00-01 | D 2216       | T     | 17    | 0.99 g     | 10.88 g       | 9.54 g        |  |  |
| 320-23783-A-2 | DPT-16-35-SO-19-20 | D 2216       | T     | 18    | 0.99 g     | 13.25 g       | 11.14 g       |  |  |
| 320-23783-A-5 | DPT-16-19-SO-00-01 | D 2216       | T     | 19    | 1.01 g     | 12.45 g       | 10.93 g       |  |  |
| 320-23783-A-6 | DPT-16-19-SO-17-18 | D 2216       | T     | 20    | 1.00 g     | 10.78 g       | 8.79 g        |  |  |

| Batch Notes                             |                    |
|-----------------------------------------|--------------------|
| Balance ID                              | QA-069 No Unit     |
| Date and Time Samples in Desiccator     | 12/02/2016 @ 09:05 |
| Date and Time Samples out of Desiccator | 12/02/2016 @ 09:43 |
| Date samples were placed in the oven    | 12/01/2016         |
| Oven Temp In                            | 108 Degrees C      |
| Time samples were place in the oven     | 10:16              |
| Date samples were removed from oven     | 12/02/2016         |
| Oven Temp Out                           | 108 Degrees C      |
| Time Samples were removed from oven     | 09:05              |
| Oven ID                                 | Soil Prep #1       |
| Thermometer ID                          | 151969626          |

| 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.

## GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23783-1

SDG No.: \_\_\_\_\_

Batch Number: 140181 Batch Start Date: 12/01/16 11:23 Batch Analyst: Lo, KitSeong SBatch Method: D 2216 Batch End Date: 12/02/16 09:43

| Lab Sample ID  | Client Sample ID   | Method Chain | Basis | DISH# | DishWeight | SampleMassWet | SampleMassDry |  |  |
|----------------|--------------------|--------------|-------|-------|------------|---------------|---------------|--|--|
| 320-23783-A-7  | DPT-16-32-SO-14-15 | D 2216       | T     | 1     | 1.02 g     | 6.39 g        | 5.44 g        |  |  |
| 320-23783-A-11 | DPT-16-15-SO-14-15 | D 2216       | T     | 2     | 1.02 g     | 6.38 g        | 5.34 g        |  |  |
| 320-23783-A-8  | DPT-16-31-SO-14-15 | D 2216       | T     | 3     | 1.06 g     | 8.15 g        | 7.00 g        |  |  |
| 320-23783-A-9  | DPT-16-30-SO-14-15 | D 2216       | T     | 4     | 1.04 g     | 6.64 g        | 5.73 g        |  |  |
| 320-23783-A-10 | DPT-16-28-SO-14-15 | D 2216       | T     | 5     | 1.02 g     | 7.58 g        | 6.61 g        |  |  |

| Batch Notes                             |                    |
|-----------------------------------------|--------------------|
| Balance ID                              | QA-068 No Unit     |
| Date and Time Samples in Desiccator     | 12/02/2016 @ 09:05 |
| Date and Time Samples out of Desiccator | 12/02/2016 @ 09:43 |
| Date samples were placed in the oven    | 12/01/2016         |
| Oven Temp In                            | 107 Degrees C      |
| Time samples were place in the oven     | 12:00              |
| Date samples were removed from oven     | 12/02/2016         |
| Oven Temp Out                           | 108 Degrees C      |
| Time Samples were removed from oven     | 09:05              |
| Oven ID                                 | soil prep #1       |
| Thermometer ID                          | 151969626          |

| 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.

Preparation Batch Number(s): 140181

Test: 7. Moisture

Earliest Holding Time: N/A

| 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) |  | N/A                            | /                              |
| The pH is transcribed correctly in TALS                                                                                                             |  | N/A                            | /                              |
| 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                                                                                            |  | N/A                            | /                              |
| All spike amounts correct and added to necessary samples and QC                                                                                     |  | N/A                            | /                              |
| 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: GMD

Date: 12/02/16

2<sup>nd</sup> Level Reviewer: [Signature]

Date: 12/2/16

Comments: [Signature]

# Shipping and Receiving Documents

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Temperature on Receipt \_\_\_\_\_

Drinking Water? Yes ☐ No ☒

## Chain of Custody Record

TAL-4124 (1007)

|                                                                                  |                                                                  |                                    |                                          |
|----------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------|------------------------------------------|
| Client<br><b>AECOM</b>                                                           | Project Manager<br><b>Kurt Vangelde</b>                          | Date<br><b>11/22/16</b>            | Chain of Custody Number<br><b>299019</b> |
| Address<br><b>3101 WILSON BLVD</b>                                               | Telephone Number (Area Code)/Fax Number<br><b>(703) 682-9041</b> | Lab Number<br><b>1</b>             | Page<br><b>2</b>                         |
| City<br><b>ARLINGTON</b>                                                         | State<br><b>VA</b>                                               | Zip Code<br><b>22201</b>           |                                          |
| Project Name and Location (State)<br><b>Former Bay Head Rd Annex - Arlington</b> | Site Contact<br><b>MIKE CLINSKI</b>                              | Lab Contact<br><b>Jill Kellman</b> |                                          |
| Contract/Purchase Order/Quote No.<br><b>32007449 / 60444465</b>                  | Carrier/Waybill Number<br><b>Fedex</b>                           |                                    |                                          |

| Sample I.D. No. and Description<br>(Containers for each sample may be combined on one line) | Date     | Time | Matrix |         |     |      |        | Containers & Preservatives |      |     |      |           | Analysis (Attach list if more space is needed) | Special Instructions/<br>Conditions of Receipt |
|---------------------------------------------------------------------------------------------|----------|------|--------|---------|-----|------|--------|----------------------------|------|-----|------|-----------|------------------------------------------------|------------------------------------------------|
|                                                                                             |          |      | Air    | Aqueous | Sed | Soil | Unpres | H2SO4                      | HNO3 | HCl | NaOH | ZnAc/NaOH |                                                |                                                |
| DPT-16-35-50-00-01                                                                          | 11/22/16 | 0924 |        |         |     | ✓    | 1      |                            |      |     |      |           | ✓ PFO4                                         |                                                |
| DPT-16-35-50-19-20                                                                          |          | 0936 |        |         |     | ✓    | 1      |                            |      |     |      |           | ✓ PFO5                                         |                                                |
| DPT-16-35-50-21-25                                                                          |          | 1010 |        | ✓       |     |      | 2      |                            |      |     |      |           | ✓ PFO5                                         |                                                |
| DPT-16-35-50-31-35                                                                          |          | 1030 |        | ✓       |     |      | 2      |                            |      |     |      |           | ✓ PFO5                                         |                                                |
| DPT-16-19-50-00-01                                                                          |          | 1120 |        |         |     | ✓    | 1      |                            |      |     |      |           | ✓ PFO4                                         |                                                |
| DPT-16-19-50-17-18                                                                          |          | 1130 |        |         |     | ✓    | 1      |                            |      |     |      |           | ✓ PFO5                                         |                                                |
| DPT-16-32-50-14-15                                                                          | 11/21/16 | 0936 |        |         |     | ✓    | 1      |                            |      |     |      |           | ✓ PFO5                                         |                                                |
| DPT-16-31-50-14-15                                                                          |          | 1012 |        |         |     | ✓    | 1      |                            |      |     |      |           | ✓ PFO5                                         |                                                |
| DPT-16-30-50-14-15                                                                          |          | 1046 |        |         |     | ✓    | 1      |                            |      |     |      |           | ✓ PFO5                                         |                                                |
| DPT-16-28-50-14-15                                                                          |          | 1154 |        |         |     | ✓    | 1      |                            |      |     |      |           | ✓ PFO5                                         |                                                |
| DPT-16-15-50-14-15                                                                          |          | 1250 |        |         |     | ✓    | 1      |                            |      |     |      |           | ✓ PFO5                                         |                                                |
| DPT-16-15-GW-18-22                                                                          |          | 1330 | ✓      |         |     |      | 2      |                            |      |     |      |           | ✓ PFO5                                         |                                                |



320-23783 Chain of Custody

|                                                                                                                                                                                                         |                                                                                                                                          |                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Possible Hazard Identification                                                                                                                                                                          | Sample Disposal                                                                                                                          | QC Requirements (Specify)                                                           |
| <input checked="" type="checkbox"/> Non-Hazard<br><input type="checkbox"/> Flammable<br><input type="checkbox"/> Skin Irritant<br><input type="checkbox"/> Poison B<br><input type="checkbox"/> Unknown | <input type="checkbox"/> Return To Client<br><input checked="" type="checkbox"/> Disposal By Lab<br><input type="checkbox"/> Archive For | (A fee may be assessed if samples are retained longer than 1 month)<br>Months _____ |

|                                                                                                                                                                                                                                |                    |                 |             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|-------------|
| Turn Around Time Required                                                                                                                                                                                                      | 1. Relinquished By | Date            | Time        |
| <input type="checkbox"/> 24 Hours<br><input type="checkbox"/> 48 Hours<br><input checked="" type="checkbox"/> 7 Days<br><input type="checkbox"/> 14 Days<br><input type="checkbox"/> 21 Days<br><input type="checkbox"/> Other | <b>WJH</b>         | <b>11/22/16</b> | <b>1400</b> |
| 2. Relinquished By                                                                                                                                                                                                             | Date               | Time            |             |
|                                                                                                                                                                                                                                |                    |                 |             |
| Relinquished By                                                                                                                                                                                                                | Date               | Time            |             |
|                                                                                                                                                                                                                                |                    |                 |             |

Comments: 1.5" ice \* Sample labeled states "DPT-16-22-50-14-15" not 11/20/16

1. Received By: **TRANSFER TO FEDEX** Date: **11/22/16** Time: **1400**

2. Received By: **Jump - Jym Troy Gr. Turpen JAS** Date: **11/25/16** Time: **09:30**

3. Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

## TestAmerica

Drinking Water? Yes ☐ No ☒

Drinking Water? Yes ☐ No ☒

|         |                  |                                         |                 |            |          |                         |        |
|---------|------------------|-----------------------------------------|-----------------|------------|----------|-------------------------|--------|
| Client  | AE com           | Project Manager                         | Kurt Van Gelder | Date       | 11/22/16 | Chain of Custody Number | 295162 |
| Address | 3101 WILSON BLVD | Telephone Number (Area Code)/Fax Number |                 | Lab Number |          | Page                    | 2 of 2 |

|         |                  |                                         |                 |            |          |                         |        |
|---------|------------------|-----------------------------------------|-----------------|------------|----------|-------------------------|--------|
| Client  | AE com           | Project Manager                         | Kurt Van Gelder | Date       | 11/22/16 | Chain of Custody Number | 295162 |
| Address | 3101 WILSON BLVD | Telephone Number (Area Code)/Fax Number |                 | Lab Number |          | Page                    | 2 of 2 |

|      |           |       |    |          |       |              |              |             |         |                                                |  |
|------|-----------|-------|----|----------|-------|--------------|--------------|-------------|---------|------------------------------------------------|--|
| City | ARLINGTON | State | VA | Zip Code | 22201 | Site Contact | MIKE GLINSKY | Lab Contact | JILL K. | Analysis (Attach list if more space is needed) |  |
|------|-----------|-------|----|----------|-------|--------------|--------------|-------------|---------|------------------------------------------------|--|

|                                   |                          |
|-----------------------------------|--------------------------|
| Carrier/Waybill Number            | FEDEX                    |
| Project Name and Location (State) | Corner 15th Hwy Rd Annex |

Special Instructions/

|                                   |         |        |          |                            |                |                       |
|-----------------------------------|---------|--------|----------|----------------------------|----------------|-----------------------|
| Contract/Purchase Order/Quote No. | 3207449 | Matrix | 60444465 | Containers & Preservatives | 0A<br>05<br>B5 | Conditions of Receipt |
|-----------------------------------|---------|--------|----------|----------------------------|----------------|-----------------------|

[illegible]

|                    |          |      |   |   |    |
|--------------------|----------|------|---|---|----|
| DPY-16-15-GW-31-35 | 11/21/16 | 1400 | ✓ | 2 | ✓✓ |
|--------------------|----------|------|---|---|----|

Pa

Page 83

33 of 8

334

A blank sheet of graph paper with a grid pattern. The grid consists of horizontal and vertical lines forming small squares. There are two main vertical lines running down the page, creating three columns. The middle column is wider than the two side columns. The top of the page has some faint, illegible markings.

[illegible]

|                                                |                                    |                                        |                                   |                                  |                                                      |                                          |                                                   |
|------------------------------------------------|------------------------------------|----------------------------------------|-----------------------------------|----------------------------------|------------------------------------------------------|------------------------------------------|---------------------------------------------------|
| <input checked="" type="checkbox"/> Non-Hazard | <input type="checkbox"/> Flammable | <input type="checkbox"/> Skin Irritant | <input type="checkbox"/> Poison B | <input type="checkbox"/> Unknown | <input checked="" type="checkbox"/> Return To Client | <input type="checkbox"/> Disposal By Lab | <input type="checkbox"/> Archive For _____ Months |
| Turn Around Time Required _____                |                                    |                                        |                                   |                                  |                                                      |                                          | QC Requirements (Specify) _____                   |

| 1. Relinquished By |      | 1. Received By |      |
|--------------------|------|----------------|------|
| Date               | Time | Date           | Time |
|                    |      |                |      |

| 2. Relinquished By | Date     | Time | 2. Received By     | Date     | Time |
|--------------------|----------|------|--------------------|----------|------|
| MAX BLANK / AECOM  | 11/22/16 | 1400 | TRANSFER TO FEDEX  | 11/22/16 | 1400 |
|                    |          |      | TRANSFER TO TRAVEL |          |      |

| Relinquished By | Date | Time | Received By                | Date     | Time  |
|-----------------|------|------|----------------------------|----------|-------|
|                 |      |      | <i>And. J. J. J. J. J.</i> | 11/25/16 | 09:30 |

|      |          |          |     |  |  |
|------|----------|----------|-----|--|--|
| 2016 | Comments | 1.5% x 2 | 251 |  |  |
|------|----------|----------|-----|--|--|

**DISTRIBUTION:** *WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy*

## Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 320-23783-1

**Login Number: 23783**  
**List Number: 1**  
**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

| 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   | CUSTODY SEALS                                              |
| Sample custody seals, if present, are intact.                                            | N/A    |                                                            |
| The cooler or samples do not appear to have been compromised or tampered with.           | True   |                                                            |
| Samples were received on ice.                                                            | True   |                                                            |
| Cooler Temperature is acceptable.                                                        | True   |                                                            |
| Cooler Temperature is recorded.                                                          | True   |                                                            |
| COC is present.                                                                          | True   |                                                            |
| COC is filled out in ink and legible.                                                    | True   |                                                            |
| COC is filled out with all pertinent information.                                        | True   |                                                            |
| Is the Field Sampler's name present on COC?                                              | N/A    |                                                            |
| There are no discrepancies between the containers received and the COC.                  | False  | IDs on containers do not match the COC. Logged in per COC. |
| 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    |                                                            |

"DPT-16-15-GW-18-22","537","12/03/16","16:41","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","5.8","","TRG","No","Y","EM","Y","0.00075","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-18-22","537","12/03/16","16:41","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","1.2","","TRG","No","Y","E","Y","0.00092","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-18-22","537","12/03/16","16:41","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","6.5","","TRG","No","Y","EM","Y","0.0013","0.0030","0.0040","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-18-22","537","12/07/16","17:03","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","12","","TRG","Yes","Y","D","Y","0.13","0.30","0.40","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-18-22","537","12/07/16","17:03","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","15","","TRG","Yes","Y","D","Y","0.075","0.20","0.25","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-18-22","537","12/07/16","17:03","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.54","","TRG","Yes","Y","D","Y","0.092","0.20","0.25","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-31-35","537","12/03/16","16:48","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.46","","TRG","No","Y","E","Y","0.0013","0.0031","0.0041","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-31-35","537","12/03/16","16:48","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.27","","TRG","Yes","Y","M","Y","0.00076","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-31-35","537","12/03/16","16:48","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.048","","TRG","Yes","Y","","Y","0.00093","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-31-35","537","12/07/16","17:25","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.45","","TRG","Yes","Y","D","Y","0.013","0.031","0.041","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-31-35","537","12/07/16","17:25","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.035","","TRG","No","Y","D","Y","0.0093","0.020","0.025","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-GW-31-35","537","12/07/16","17:25","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","0.27","","TRG","No","Y","D","Y","0.0076","0.020","0.025","UG\_L","UG\_L","","","0","","","0","","","  
","DPT-16-15-SO-14-15","537","12/02/16","17:22","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","11","","TRG","Yes","Y","M","Y","0.15","0.37","0.61","UG\_KG","UG\_KG","","","0","","","0","","","  
","DPT-16-15-SO-14-15","537","12/02/16","17:22","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.13","0.37","0.49","UG\_KG","UG\_KG","","","0","","","0","","","  
","DPT-16-15-SO-14-15","537","12/02/16","17:22","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.51","","TRG","Yes","Y","J","Y","0.13","0.37","0.61","UG\_KG","UG\_KG","","","0","","","0","","","  
","DPT-16-19-SO-00-01","537","12/02/16","16:07","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","3.8","","TRG","Yes","Y","","Y","0.12","0.34","0.57","UG\_KG","UG\_KG","","","0","","","0","","","  
","DPT-16-19-SO-00-01","537","12/02/16","16:07","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","130","","TRG","No","Y","ME","Y","0.14","0.34","0.57","UG\_KG","UG\_KG","","","0","","","0","","","  
","DPT-16-19-SO-00-01","537","12/02/16","16:07","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.18","","TRG","Yes","Y","J","Y","0.12","0.34","0.46","UG\_KG","UG\_KG","","","0","","","0","","","





"DPT-16-35-GW-21-25","537","12/03/16","16:26","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.60","","TRG","No","Y","EM","Y","0.00075","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-21-25","537","12/03/16","16:26","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.28","","TRG","Yes","Y","","Y","0.00092","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-21-25","537","12/03/16","16:26","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","1.9","","TRG","No","Y","EM","Y","0.0013","0.0030","0.0040","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-21-25","537","12/07/16","17:10","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.19","","TRG","No","Y","D","Y","0.0092","0.020","0.025","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-21-25","537","12/07/16","17:10","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","0.76","","TRG","Yes","Y","D","Y","0.0075","0.020","0.025","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-21-25","537","12/07/16","17:10","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","2.4","","TRG","Yes","Y","D","Y","0.013","0.030","0.040","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-31-35","537","12/03/16","16:33","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.72","","TRG","No","Y","E","Y","0.0013","0.0030","0.0040","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-31-35","537","12/03/16","16:33","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","1.1","","TRG","No","Y","EM","Y","0.00075","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-31-35","537","12/03/16","16:33","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.58","","TRG","No","Y","E","Y","0.00092","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-31-35","537","12/07/16","17:18","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.38","","TRG","Yes","Y","D","Y","0.0092","0.020","0.025","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-31-35","537","12/07/16","17:18","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.80","","TRG","Yes","Y","D","Y","0.013","0.030","0.040","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-GW-31-35","537","12/07/16","17:18","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","1.4","","TRG","Yes","Y","D","Y","0.0075","0.020","0.025","UG\_L","UG\_L","","","0","","","0","","",  
"DPT-16-35-SO-00-01","537","12/02/16","15:52","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.21","","TRG","Yes","Y","J","Y","0.12","0.35","0.46","UG\_KG","UG\_KG","","","0","","","0","","",  
"DPT-16-35-SO-00-01","537","12/02/16","15:52","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","28","","TRG","Yes","Y","","Y","0.15","0.35","0.58","UG\_KG","UG\_KG","","","0","","","0","","",  
"DPT-16-35-SO-00-01","537","12/02/16","15:52","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","12","","TRG","Yes","Y","M","Y","0.12","0.35","0.58","UG\_KG","UG\_KG","","","0","","","0","","",  
"DPT-16-35-SO-19-20","537","12/02/16","15:59","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","TRG","Yes","N","U","Y","0.12","0.36","0.48","UG\_KG","UG\_KG","","","0","","","0","","",  
"DPT-16-35-SO-19-20","537","12/02/16","15:59","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","4.0","","TRG","Yes","Y","M","Y","0.15","0.36","0.60","UG\_KG","UG\_KG","","","0","","","0","","",  
"DPT-16-35-SO-19-20","537","12/02/16","15:59","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.56","","TRG","Yes","Y","J","Y","0.12","0.36","0.60","UG\_KG","UG\_KG","","","0","","","0","","",

","","","","","","","","","","","","","","",""  
"LCS 320-139627/2-A","537","12/02/16","15:07","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","4.03","","SC","Yes","Y","","Y","0.10","0.30","0.40","UG\_KG","UG\_KG","","","0","3.54","4.03","114","0",  
","","","","50","150","","","","","","","",""  
"LCS 320-139627/2-A","537","12/02/16","15:07","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate  
(PFOS)","3.66","","SC","Yes","Y","","Y","0.13","0.30","0.50","UG\_KG","UG\_KG","","","0","3.71","3.66","99","0",  
","","","","60","140","","","","","","","",""  
"LCS 320-139627/2-A","537","12/02/16","15:07","T","NA","Initial","335-67-1","Perfluorooctanoic acid  
(PFOA)","4.25","","SC","Yes","Y","","Y","0.10","0.30","0.50","UG\_KG","UG\_KG","","","0","4.00","4.25","106","0",  
","","","","60","140","","","","","","","",""  
"LCS 320-139749/2-A","537","12/03/16","16:11","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","0.0289","","SC","Yes","Y","","Y","0.00092","0.0020","0.0025","UG\_L","UG\_L","","","0","0.0354","0.0289  
","82","0","","","","50","150","","","","","","",""  
"LCS 320-139749/2-A","537","12/03/16","16:11","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate  
(PFOS)","0.0261","","SC","Yes","Y","","Y","0.0013","0.0030","0.0040","UG\_L","UG\_L","","","0","0.0371","0.0261",  
"70","0","","","","60","140","","","","","","",""  
"LCS 320-139749/2-A","537","12/03/16","16:11","T","NA","Initial","335-67-1","Perfluorooctanoic acid  
(PFOA)","0.0296","","SC","Yes","Y","","Y","0.00075","0.0020","0.0025","UG\_L","UG\_L","","","0","0.0400","0.0296  
","74","0","","","","60","140","","","","","","",""  
"LCSD 320-139749/3-A","537","12/03/16","16:18","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","0.0325","","SC","Yes","Y","","Y","0.00092","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","0.03  
54","0.0325","92","12","50","150","30","","","","","",""  
"LCSD 320-139749/3-A","537","12/03/16","16:18","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate  
(PFOS)","0.0289","","SC","Yes","Y","","Y","0.0013","0.0030","0.0040","UG\_L","UG\_L","","","0","","","0","0.037  
1","0.0289","78","10","60","140","30","","","","","",""  
"LCSD 320-139749/3-A","537","12/03/16","16:18","T","NA","Initial","335-67-1","Perfluorooctanoic acid  
(PFOA)","0.0314","","SC","Yes","Y","","Y","0.00075","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","0.04  
00","0.0314","79","6","60","140","30","","","","","",""  
"MB 320-139627/1-A","537","12/02/16","14:59","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","","","TRG","Yes","N","U","Y","0.10","0.30","0.40","UG\_KG","UG\_KG","","","0","","","0","","","",""  
","","","","50","150","","","","","","","",""  
"MB 320-139627/1-A","537","12/02/16","14:59","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate  
(PFOS)","","","TRG","Yes","N","U","Y","0.13","0.30","0.50","UG\_KG","UG\_KG","","","0","","","0","","","",""  
","","","","60","140","","","","","","","",""  
"MB 320-139627/1-A","537","12/02/16","14:59","T","NA","Initial","335-67-1","Perfluorooctanoic acid  
(PFOA)","","","TRG","Yes","N","U","Y","0.10","0.30","0.50","UG\_KG","UG\_KG","","","0","","","0","","","",""  
","","","","60","140","","","","","","","",""  
"MB 320-139749/1-A","537","12/03/16","16:03","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","","","TRG","Yes","N","U","Y","0.00092","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","",""  
","","","","60","140","","","","","","","",""  
"MB 320-139749/1-A","537","12/03/16","16:03","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate  
(PFOS)","","","TRG","Yes","N","U","Y","0.0013","0.0030","0.0040","UG\_L","UG\_L","","","0","","","0","","",""  
","","","","60","140","","","","","","","",""  
"MB 320-139749/1-A","537","12/03/16","16:03","T","NA","Initial","335-67-1","Perfluorooctanoic acid  
(PFOA)","","","TRG","Yes","N","U","Y","0.00075","0.0020","0.0025","UG\_L","UG\_L","","","0","","","0","","",""  
","","","","60","140","","","","","","","",""



Resolution Consultants  
250 Apollo Drive  
Chelmsford, MA 01824

978.905.2100 tel  
978.905.2101 fax

## Data Validation Report

|                        |                                                                                                                                                                            |                        |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Project:               | Former Bay Head Road Annex- Annapolis, MD                                                                                                                                  |                        |
| Laboratory:            | TestAmerica-West Sacramento, CA                                                                                                                                            |                        |
| Job Number:            | 320-23783-1                                                                                                                                                                |                        |
| Analyses/Method:       | Perfluorinated Compounds (PFCs) in Water, Soils, Sediments and Tissues by Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS)/ Revision 1.4 (August 2015) |                        |
| Validation Level:      | Limited                                                                                                                                                                    |                        |
| Resolution Consultants | 60444465-DM.DE                                                                                                                                                             |                        |
| Project Number:        |                                                                                                                                                                            |                        |
| Prepared by:           | Paula DiMattei/Resolution Consultants                                                                                                                                      | Completed on: 12/13/16 |
| Reviewed by:           | Robert Kennedy/Resolution Consultants                                                                                                                                      | Completed on: 12/13/16 |
| File Name:             | J23783-1_PFC memo.docx                                                                                                                                                     |                        |

### SUMMARY

The samples listed below were collected by Resolution Consultants from the Former Bay Head Road Annex site in Annapolis, MD on November 21-22, 2016.

| Sample ID          | Matrix/Sample Type |
|--------------------|--------------------|
| DPT-16-15-GW-18-22 | Groundwater        |
| DPT-16-15-GW-31-35 | Groundwater        |
| DPT-16-15-SO-14-15 | Soil               |
| DPT-16-19-SO-00-01 | Soil               |
| DPT-16-19-SO-17-18 | Soil               |
| DPT-16-28-SO-14-15 | Soil               |
| DPT-16-30-SO-14-15 | Soil               |
| DPT-16-31-SO-14-15 | Soil               |
| DPT-16-32-SO-14-15 | Soil               |
| DPT-16-35-GW-21-25 | Groundwater        |
| DPT-16-35-GW-31-35 | Groundwater        |
| DPT-16-35-SO-00-01 | Soil               |
| DPT-16-35-SO-19-20 | Soil               |

Data validation activities were conducted with reference to:

- TestAmerica-West Sacramento SOP: Perfluorinated Compounds (PFCs) in Water, Soils, Sediments and Tissues by Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS)/Revision 1.4 (August 2015);

- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (September 2016);
- USEPA Contract Laboratory Program National Functional Guidelines for High Resolution Superfund Methods Data Review (April 2016)
- Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (DoD, July 2013); and
- the project-specific Sampling and Analysis Plan.

In the absence of method-specific information, laboratory quality control (QC) limits, project-specific requirements and/or professional judgment were used as appropriate.

## REVIEW ELEMENTS

The data were evaluated based on the following review elements (where applicable to the method):

|    |                                                                                    |
|----|------------------------------------------------------------------------------------|
| X  | Data completeness (chain-of-custody (COC)/sample integrity                         |
| ✓  | Holding times/sample preservation                                                  |
| ✓  | Initial calibration/initial and continuing calibration verification                |
| ✓  | Laboratory method blanks/equipment blanks                                          |
| NA | Matrix spike (MS) and/or matrix spike duplicate (MSD) results                      |
| ✓  | Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results |
| NA | Field duplicate results                                                            |
| X  | Labeled compound results                                                           |
| ✓  | Sample results/reporting issues                                                    |

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. An "NA" indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (X) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Select data points were qualified as estimated due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

## RESULTS

### Data Completeness (chain-of-custody (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

The laboratory noted that the sample container label for sample 320-23783-10 identified the sample as DPT-16-**22**-SO-14-15 while the COC identified this sample as DPT-16-**28**-SO-14-15. The sample ID listed on the COC was used to identify this sample.

The laboratory noted in the case narrative that all groundwater samples were decanted to new bottles prior to spiking and extraction because of the presence of excessive amounts of sediment present in the sample bottles. In these cases, the sample bottles are not rinsed as required by the method. Consequently, professional judgment was applied to qualify the positive results for all target compounds in these samples as estimated (J-) indicating a potential loss of target compounds that may have remained in the original sample bottle. Qualified sample results are presented in Table 1.

### **Holding Times/Sample Preservation**

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

### **Initial Calibration/Initial and Continuing Calibration Verification**

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD) or correlation coefficient (r) or coefficient of determination ( $r^2$ ) method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met; and
- the continuing calibration verification standard (CCV) frequency and method percent difference or percent drift (%D) criteria were met.

All QC acceptance criteria were met or qualification of the data was not required.

### **Laboratory Method Blanks/Equipment Blanks**

Laboratory method blanks and equipment blanks are evaluated as to whether there are contaminants detected above the detection limit (DL). Target compounds were not detected in the laboratory method blanks associated with the samples in this data set. An equipment blank was not submitted with the samples in this data set.

### **MS/MSD Results**

MS/MSD analyses were not performed on a sample from this data set. The data were not qualified on this basis.

### **LCS/LCSD Results**

The LCS/LCSD percent recoveries (%Rs) and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

### **Field Duplicate Results**

A field duplicate pair was not submitted with this data set. Data were not qualified on this basis.

### **Labeled Compound Results**

The labeled compound results were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met except for the labeled compound results summarized below.

| Sample ID          | Labeled Compound       | % Recovery | QC Limits |
|--------------------|------------------------|------------|-----------|
| DPT-16-15-GW-31-35 | 13C <sub>4</sub> -PFOA | 22         | 25-150    |

Samples were qualified as follows:

**Actions:** (Based on NFG 2011)

| Criteria                             | Actions   |              |
|--------------------------------------|-----------|--------------|
|                                      | Detected  | Not detected |
| %R > Upper Acceptance Limit          | J         | UJ           |
| %R >10% but < Lower Acceptance Limit | J         | UJ           |
| %R <10%                              | See below |              |
| <10% and S/N >10:1                   | J         | R            |
| <10% and S/N <10:1                   | R         | R            |

Qualified sample results are presented in Table 1.

### **Sample Results/Reporting Issues**

If applicable, compounds detected at concentrations less than the LOQ but greater than the DL are qualified by the laboratory as estimated (J). This "J" qualifier is retained during data validation.

### **QUALIFICATION ACTIONS**

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

### **ATTACHMENTS**

Attachment A: Qualifier Codes and Explanations

Attachment B: Reason Codes and Explanations

**Table 1 - Data Validation Summary of Qualified Data**

| Sample ID          | Matrix | Compound                            | Result | LOD    | LOQ    | Units | Validation Qualifiers | Validation Reason |
|--------------------|--------|-------------------------------------|--------|--------|--------|-------|-----------------------|-------------------|
| DPT-16-15-GW-18-22 | WG     | Perfluorooctanesulfonic Acid (PFOS) | 12     | 0.30   | 0.40   | µg/L  | J-                    | si                |
| DPT-16-15-GW-18-22 | WG     | Perfluorooctanoic Acid (PFOA)       | 15     | 0.20   | 0.25   | µg/L  | J-                    | si                |
| DPT-16-15-GW-18-22 | WG     | Perfluorobutanesulfonic Acid (PFBS) | 0.54   | 0.20   | 0.25   | µg/L  | J-                    | si                |
| DPT-16-15-GW-31-35 | WG     | Perfluorooctanoic Acid (PFOA)       | 0.27   | 0.0020 | 0.0025 | µg/L  | J                     | lc,si             |
| DPT-16-15-GW-31-35 | WG     | Perfluorobutanesulfonic Acid (PFBS) | 0.048  | 0.0020 | 0.0025 | µg/L  | J-                    | si                |
| DPT-16-15-GW-31-35 | WG     | Perfluorooctanesulfonic Acid (PFOS) | 0.45   | 0.031  | 0.041  | µg/L  | J-                    | si                |
| DPT-16-35-GW-21-25 | WG     | Perfluorobutanesulfonic Acid (PFBS) | 0.28   | 0.0020 | 0.0025 | µg/L  | J-                    | si                |
| DPT-16-35-GW-21-25 | WG     | Perfluorooctanesulfonic Acid (PFOS) | 2.4    | 0.030  | 0.040  | µg/L  | J-                    | si                |
| DPT-16-35-GW-21-25 | WG     | Perfluorooctanoic Acid (PFOA)       | 0.76   | 0.020  | 0.025  | µg/L  | J-                    | si                |
| DPT-16-35-GW-31-35 | WG     | Perfluorooctanesulfonic Acid (PFOS) | 0.80   | 0.030  | 0.040  | µg/L  | J-                    | si                |
| DPT-16-35-GW-31-35 | WG     | Perfluorooctanoic Acid (PFOA)       | 1.4    | 0.020  | 0.025  | µg/L  | J-                    | si                |
| DPT-16-35-GW-31-35 | WG     | Perfluorobutanesulfonic Acid (PFBS) | 0.38   | 0.020  | 0.025  | µg/L  | J-                    | si                |



## Attachment A

### Qualifier Codes and Explanations

| Qualifier | Explanation                                                                                                                                                                                                                                                               |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| J         | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.                                                                                                                                      |
| J+        | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample and is potentially biased high.                                                                                                       |
| J-        | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample and is potentially biased low.                                                                                                        |
| JN        | The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.                                                                                                                                     |
| UJ        | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. |
| U         | The analyte was analyzed for, but was not detected above the reported sample quantitation limit.                                                                                                                                                                          |
| R         | The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.                                                                            |

## Attachment B

### Reason Codes and Explanations

| Reason Code | Explanation                                                        |
|-------------|--------------------------------------------------------------------|
| be          | Equipment blank contamination                                      |
| bf          | Field blank contamination                                          |
| bl          | Laboratory blank contamination                                     |
| c           | Calibration issue                                                  |
| d           | Reporting limit raised due to chromatographic interference         |
| fd          | Field duplicate RPDs                                               |
| h           | Holding times                                                      |
| i           | Internal standard areas                                            |
| k           | Estimated Maximum Possible Concentration (EMPC)                    |
| l           | LCS or OPR recoveries                                              |
| lc          | Labeled compound recovery                                          |
| ld          | Laboratory duplicate RPDs                                          |
| lp          | Laboratory control sample/laboratory control sample duplicate RPDs |
| m           | Matrix spike recovery                                              |
| md          | Matrix spike/matrix spike duplicate RPDs                           |
| nb          | Negative laboratory blank contamination                            |
| p           | Chemical preservation issue                                        |
| r           | Dual column RPD                                                    |
| q           | Quantitation issue                                                 |
| s           | Surrogate recovery                                                 |
| si          | Sample integrity issue                                             |
| su          | Ion suppression                                                    |
| t           | Temperature preservation issue                                     |
| x           | Percent solids                                                     |
| y           | Serial dilution results                                            |
| z           | ICS results                                                        |

| INSTALLATION_ID | SITE_NAME  | LOCATION_NAME | LOCATION_TYPE_DESC   | COORD_X | COORD_Y | SAMPLE_NAME        | SAMPLE_MATRIX_DESC | COLLECT_DATE | ANALYTICAL_METHOD_GRP_DESC | SDG         |
|-----------------|------------|---------------|----------------------|---------|---------|--------------------|--------------------|--------------|----------------------------|-------------|
| DAVID_TAYLOR_RC | SITE 00003 | DPT-16-15     | Direct Push/Geoprobe | 1474570 | 496367  | DPT-16-15-GW-18-22 | Ground water       | 11/21/2016   | Perfluoroalkyl Compounds   | 320-23783-1 |
| DAVID_TAYLOR_RC | SITE 00003 | DPT-16-15     | Direct Push/Geoprobe | 1474570 | 496367  | DPT-16-15-GW-31-35 | Ground water       | 11/21/2016   | Perfluoroalkyl Compounds   | 320-23783-1 |
| DAVID_TAYLOR_RC | SITE 00003 | DPT-16-35     | Direct Push/Geoprobe | 1474570 | 496312  | DPT-16-35-GW-21-25 | Ground water       | 11/22/2016   | Perfluoroalkyl Compounds   | 320-23783-1 |
| DAVID_TAYLOR_RC | SITE 00003 | DPT-16-35     | Direct Push/Geoprobe | 1474570 | 496312  | DPT-16-35-GW-31-35 | Ground water       | 11/22/2016   | Perfluoroalkyl Compounds   | 320-23783-1 |