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NAVFAC
Naval Facilities Engineering Command

# Groundwater Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, and Data Validation Report, Sample Location Report, SDG 1700804

*NSWC*
*White Oak MD*
December 2020

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

July 20, 2017

**Vista Work Order No. 1700804**

Ms. Nia Nikmanesh
KMEA
2423 Hoover Avenue
National City, CA 91950

Dear Ms. Nikmanesh,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on June 30, 2017. This sample set was analyzed on a rush turn-around time, under your Project Name 'NSWC White Oak'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

for

Martha Maier
Laboratory Director

*Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.*

**Vista Work Order No. 1700804**
**Case Narrative**

**Sample Condition on Receipt:**

Eleven water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

**Analytical Notes:**

**Modified EPA Method 537**

Samples "IRPSite7-GW-07GW41-20170629", "IRPSite33-GW-11MW204D-20170629", "Bldg 110-GW-11MW205D-20170629", "Bldg 110-GW-11MW205S-20170629", "IRPSite7-GW-07GW102-20170629" and "IRPSite5-GW-04GW82-20170629" contained particulate and were centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of 14 PFAS using Modified EPA Method 537.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The OPR recoveries were within the method acceptance criteria.

The labeled standard recovery for 13C2-PFTeDA in sample "Bldg 110-GW-FRB01-20170629" was below the method acceptance criteria at 6.10%. This sample was re-extracted and showed similar recoveries.

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

# QC Anomalies

| LabNumber | SampleName | Analysis | Analyte | Flag | %Rec |
|---|---|---|---|---|---|
| 1700804-02 | IRPSite5-GW-05GW01-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 37.4 |
| 1700804-04 | IRPSite33-GW-FRB01-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 44.6 |
| 1700804-05 | IRPSite33-GW-11MW204D-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 37.4 |
| 1700804-07 | Bldg 110-GW-11MW205D-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 41.4 |
| 1700804-08 | Bldg 110-GW-FRB01-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 28.2 |
| 1700804-08 | Bldg 110-GW-FRB01-20170629 | Modified EPA Method 537 | 13C2-PFTeDA | H | 6.10 |
| 1700804-11 | IRPSite5-GW-04GW82-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 37.0 |

H = Recovery was outside laboratory acceptance criteria.

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# Sample Inventory Report

| Vista Sample ID | Client Sample ID | Sampled | Received | Components/Containers |
|---|---|---|---|---|
| 1700804-01 | IRPSite7-GW-07GW41-20170629 | 29-Jun-17 10:02 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-02 | IRPSite5-GW-05GW01-20170629 | 29-Jun-17 10:58 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-03 | IRPSite5-GW-FD01-20170629 | 29-Jun-17 11:00 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-04 | IRPSite33-GW-FRB01-20170629 | 29-Jun-17 11:35 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-05 | IRPSite33-GW-11MW204D-20170629 | 29-Jun-17 12:30 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-06 | IRPSite33-GW-11MW204S-20170629 | 29-Jun-17 13:05 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-07 | Bldg 110-GW-11MW205D-20170629 | 29-Jun-17 14:51 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-08 | Bldg 110-GW-FRB01-20170629 | 29-Jun-17 14:10 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-09 | Bldg 110-GW-11MW205S-20170629 | 29-Jun-17 15:35 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-10 | IRPSite7-GW-07GW102-20170629 | 29-Jun-17 16:17 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-11 | IRPSite5-GW-04GW82-20170629 | 29-Jun-17 16:35 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |

**ANALYTICAL RESULTS**

## Sample ID: Method Blank

**Modified EPA Method 537**

Matrix: Aqueous
Sample Size: 0.125 L

QC Batch: B7G0049
Date Extracted: 13-Jul-2017 9:00

Lab Sample: B7G0049-BLK1
Date Analyzed: 13-Jul-17 17:10 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | ND | 1.79 | 5.00 | 8.00 | |
| PFHxA | ND | 2.18 | 5.00 | 8.00 | |
| PFHpA | ND | 0.591 | 5.00 | 8.00 | |
| PFHxS | ND | 0.947 | 5.00 | 8.00 | |
| PFOA | ND | 0.651 | 5.00 | 8.00 | |
| PFOS | ND | 0.807 | 5.00 | 8.00 | |
| PFNA | ND | 0.810 | 5.00 | 8.00 | |
| PFDA | ND | 1.49 | 5.00 | 8.00 | |
| MeFOSAA | ND | 1.65 | 5.00 | 8.00 | |
| PFUnA | ND | 1.05 | 5.00 | 8.00 | |
| EtFOSAA | ND | 1.37 | 5.00 | 8.00 | |
| PFDoA | ND | 0.792 | 5.00 | 8.00 | |
| PFTrDA | ND | 0.494 | 5.00 | 8.00 | |
| PFTeDA | ND | 0.755 | 5.00 | 8.00 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 122 | 50 - 150 | |
| IS | 13C2-PFHxA | 107 | 50 - 150 | |
| IS | 13C4-PFHpA | 93.2 | 50 - 150 | |
| IS | 18O2-PFHxS | 118 | 50 - 150 | |
| IS | 13C2-PFOA | 91.4 | 50 - 150 | |
| IS | 13C8-PFOS | 97.0 | 50 - 150 | |
| IS | 13C5-PFNA | 100 | 50 - 150 | |
| IS | 13C2-PFDA | 96.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 96.9 | 50 - 150 | |
| IS | 13C2-PFUnA | 80.2 | 50 - 150 | |
| IS | d5-EtFOSAA | 98.5 | 50 - 150 | |
| IS | 13C2-PFDoA | 56.7 | 50 - 150 | |
| IS | 13C2-PFTeDA | 148 | 50 - 150 | |

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

## Sample ID: OPR

## Modified EPA Method 537

| | | | | | |
|---|---|---|---|---|---|
| Matrix: | Aqueous | QC Batch: | B7G0049 | Lab Sample: | B7G0049-BS1 |
| Sample Size: | 0.125 L | Date Extracted: | 13-Jul-2017 9:00 | Date Analyzed: | 13-Jul-17 16:38 Column: BEH C18 |

| Analyte | Amt Found (ng/L) | Spike Amt | %R | Limits |
|---|---|---|---|---|
| PFBS | 65.5 | 80.0 | 81.9 | 70 - 130 |
| PFHxA | 72.1 | 80.0 | 90.1 | 70 - 130 |
| PFHpA | 67.1 | 80.0 | 83.8 | 70 - 130 |
| PFHxS | 76.3 | 80.0 | 95.3 | 70 - 130 |
| PFOA | 67.8 | 80.0 | 84.8 | 70 - 130 |
| PFOS | 78.0 | 80.0 | 97.5 | 70 - 130 |
| PFNA | 68.2 | 80.0 | 85.2 | 70 - 130 |
| PFDA | 64.5 | 80.0 | 80.7 | 70 - 130 |
| MeFOSAA | 69.9 | 80.0 | 87.3 | 70 - 130 |
| PFUnA | 73.5 | 80.0 | 91.9 | 70 - 130 |
| EtFOSAA | 75.6 | 80.0 | 94.5 | 70 - 130 |
| PFDoA | 102 | 80.0 | 127 | 70 - 130 |
| PFTrDA | 95.0 | 80.0 | 119 | 60 - 130 |
| PFTeDA | 79.0 | 80.0 | 98.8 | 70 - 130 |

| | Labeled Standard | %R | LCL-UCL |
|---|---|---|---|
| IS | 13C3-PFBS | 126 | 50 - 150 |
| IS | 13C2-PFHxA | 102 | 50 - 150 |
| IS | 13C4-PFHpA | 88.2 | 50 - 150 |
| IS | 18O2-PFHxS | 109 | 50 - 150 |
| IS | 13C2-PFOA | 104 | 50 - 150 |
| IS | 13C8-PFOS | 106 | 50 - 150 |
| IS | 13C5-PFNA | 101 | 50 - 150 |
| IS | 13C2-PFDA | 93.1 | 50 - 150 |
| IS | d3-MeFOSAA | 68.2 | 50 - 150 |
| IS | 13C2-PFUnA | 65.4 | 50 - 150 |
| IS | d5-EtFOSAA | 77.0 | 50 - 150 |
| IS | 13C2-PFDoA | 62.5 | 50 - 150 |
| IS | 13C2-PFTeDA | 77.8 | 50 - 150 |

LCL-UCL - Lower control limit - upper control limit

## Sample ID: IRPSite7-GW-07GW41-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 10:02
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.121 L

**Laboratory Data**

Lab Sample: 1700804-01 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 17:33 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 4.16 | 1.86 | 5.17 | 8.29 | J |
| PFHxA | 17.0 | 2.26 | 5.17 | 8.29 | |
| PFHpA | 9.53 | 0.613 | 5.17 | 8.29 | |
| PFHxS | 81.1 | 0.982 | 5.17 | 8.29 | |
| PFOA | 30.3 | 0.675 | 5.17 | 8.29 | |
| PFOS | 262 | 0.837 | 5.17 | 8.29 | |
| PFNA | 3.26 | 0.840 | 5.17 | 8.29 | J |
| PFDA | ND | 1.54 | 5.17 | 8.29 | |
| MeFOSAA | ND | 1.71 | 5.17 | 8.29 | |
| PFUnA | ND | 1.09 | 5.17 | 8.29 | |
| EtFOSAA | ND | 1.42 | 5.17 | 8.29 | |
| PFDoA | ND | 0.821 | 5.17 | 8.29 | |
| PFTrDA | ND | 0.512 | 5.17 | 8.29 | |
| PFTeDA | ND | 0.783 | 5.17 | 8.29 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 144 | 50 - 150 | |
| IS | 13C2-PFHxA | 109 | 50 - 150 | |
| IS | 13C4-PFHpA | 95.8 | 50 - 150 | |
| IS | 18O2-PFHxS | 115 | 50 - 150 | |
| IS | 13C2-PFOA | 84.7 | 50 - 150 | |
| IS | 13C8-PFOS | 103 | 50 - 150 | |
| IS | 13C5-PFNA | 102 | 50 - 150 | |
| IS | 13C2-PFDA | 92.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 68.4 | 50 - 150 | |
| IS | 13C2-PFUnA | 75.3 | 50 - 150 | |
| IS | d5-EtFOSAA | 79.3 | 50 - 150 | |
| IS | 13C2-PFDoA | 61.1 | 50 - 150 | |
| IS | 13C2-PFTeDA | 83.4 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite5-GW-05GW01-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 10:58
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.115 L

**Laboratory Data**

Lab Sample: 1700804-02 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 17:44 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | ND | 1.95 | 5.43 | 8.72 | |
| PFHxA | 6.98 | 2.38 | 5.43 | 8.72 | J |
| PFHpA | 3.96 | 0.644 | 5.43 | 8.72 | J |
| PFHxS | 61.1 | 1.03 | 5.43 | 8.72 | |
| PFOA | 48.8 | 0.710 | 5.43 | 8.72 | |
| PFOS | 205 | 0.880 | 5.43 | 8.72 | |
| PFNA | 3.24 | 0.883 | 5.43 | 8.72 | J |
| PFDA | ND | 1.62 | 5.43 | 8.72 | |
| MeFOSAA | ND | 1.80 | 5.43 | 8.72 | |
| PFUnA | ND | 1.14 | 5.43 | 8.72 | |
| EtFOSAA | ND | 1.49 | 5.43 | 8.72 | |
| PFDoA | ND | 0.863 | 5.43 | 8.72 | |
| PFTrDA | ND | 0.539 | 5.43 | 8.72 | |
| PFTeDA | ND | 0.823 | 5.43 | 8.72 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 131 | 50 - 150 | |
| IS | 13C2-PFHxA | 107 | 50 - 150 | |
| IS | 13C4-PFHpA | 91.5 | 50 - 150 | |
| IS | 18O2-PFHxS | 115 | 50 - 150 | |
| IS | 13C2-PFOA | 91.0 | 50 - 150 | |
| IS | 13C8-PFOS | 110 | 50 - 150 | |
| IS | 13C5-PFNA | 93.8 | 50 - 150 | |
| IS | 13C2-PFDA | 82.2 | 50 - 150 | |
| IS | d3-MeFOSAA | 107 | 50 - 150 | |
| IS | 13C2-PFUnA | 79.1 | 50 - 150 | |
| IS | d5-EtFOSAA | 87.3 | 50 - 150 | |
| IS | 13C2-PFDoA | 37.4 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 118 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite5-GW-FD01-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 11:00
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.113 L

**Laboratory Data**

Lab Sample: 1700804-03 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 17:54 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 2.30 | 1.99 | 5.53 | 8.88 | J |
| PFHxA | 6.86 | 2.42 | 5.53 | 8.88 | J |
| PFHpA | 3.17 | 0.656 | 5.53 | 8.88 | J |
| PFHxS | 64.9 | 1.05 | 5.53 | 8.88 | |
| PFOA | 51.3 | 0.723 | 5.53 | 8.88 | |
| PFOS | 199 | 0.896 | 5.53 | 8.88 | |
| PFNA | 2.82 | 0.899 | 5.53 | 8.88 | J |
| PFDA | ND | 1.65 | 5.53 | 8.88 | |
| MeFOSAA | ND | 1.83 | 5.53 | 8.88 | |
| PFUnA | ND | 1.17 | 5.53 | 8.88 | |
| EtFOSAA | ND | 1.52 | 5.53 | 8.88 | |
| PFDoA | ND | 0.879 | 5.53 | 8.88 | |
| PFTrDA | ND | 0.548 | 5.53 | 8.88 | |
| PFTeDA | ND | 0.838 | 5.53 | 8.88 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 117 | 50 - 150 | |
| IS | 13C2-PFHxA | 102 | 50 - 150 | |
| IS | 13C4-PFHpA | 92.8 | 50 - 150 | |
| IS | 18O2-PFHxS | 108 | 50 - 150 | |
| IS | 13C2-PFOA | 98.0 | 50 - 150 | |
| IS | 13C8-PFOS | 99.9 | 50 - 150 | |
| IS | 13C5-PFNA | 97.7 | 50 - 150 | |
| IS | 13C2-PFDA | 87.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 70.8 | 50 - 150 | |
| IS | 13C2-PFUnA | 82.8 | 50 - 150 | |
| IS | d5-EtFOSAA | 93.6 | 50 - 150 | |
| IS | 13C2-PFDoA | 62.3 | 50 - 150 | |
| IS | 13C2-PFTeDA | 92.3 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite33-GW-FRB01-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 11:35
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.123 L

**Laboratory Data**

Lab Sample: 1700804-04 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:05 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | ND | 1.82 | 5.08 | 8.15 | |
| PFHxA | ND | 2.22 | 5.08 | 8.15 | |
| PFHpA | ND | 0.602 | 5.08 | 8.15 | |
| PFHxS | ND | 0.965 | 5.08 | 8.15 | |
| PFOA | ND | 0.663 | 5.08 | 8.15 | |
| PFOS | ND | 0.822 | 5.08 | 8.15 | |
| PFNA | ND | 0.825 | 5.08 | 8.15 | |
| PFDA | ND | 1.52 | 5.08 | 8.15 | |
| MeFOSAA | ND | 1.68 | 5.08 | 8.15 | |
| PFUnA | ND | 1.07 | 5.08 | 8.15 | |
| EtFOSAA | ND | 1.40 | 5.08 | 8.15 | |
| PFDoA | ND | 0.807 | 5.08 | 8.15 | |
| PFTrDA | ND | 0.503 | 5.08 | 8.15 | |
| PFTeDA | ND | 0.769 | 5.08 | 8.15 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 125 | 50 - 150 | |
| IS | 13C2-PFHxA | 103 | 50 - 150 | |
| IS | 13C4-PFHpA | 96.5 | 50 - 150 | |
| IS | 18O2-PFHxS | 108 | 50 - 150 | |
| IS | 13C2-PFOA | 98.5 | 50 - 150 | |
| IS | 13C8-PFOS | 90.3 | 50 - 150 | |
| IS | 13C5-PFNA | 104 | 50 - 150 | |
| IS | 13C2-PFDA | 91.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 71.0 | 50 - 150 | |
| IS | 13C2-PFUnA | 76.2 | 50 - 150 | |
| IS | d5-EtFOSAA | 78.1 | 50 - 150 | |
| IS | 13C2-PFDoA | 44.6 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 74.4 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite33-GW-11MW204D-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 12:30
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.117 L

**Laboratory Data**

Lab Sample: 1700804-05 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:15 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 9.95 | 1.91 | 5.34 | 8.53 | |
| PFHxA | 51.0 | 2.32 | 5.34 | 8.53 | |
| PFHpA | 21.5 | 0.630 | 5.34 | 8.53 | |
| PFHxS | 62.9 | 1.01 | 5.34 | 8.53 | |
| PFOA | 95.8 | 0.694 | 5.34 | 8.53 | |
| PFOS | 38.3 | 0.860 | 5.34 | 8.53 | |
| PFNA | 1.88 | 0.863 | 5.34 | 8.53 | J |
| PFDA | 1.94 | 1.59 | 5.34 | 8.53 | J |
| MeFOSAA | ND | 1.76 | 5.34 | 8.53 | |
| PFUnA | ND | 1.12 | 5.34 | 8.53 | |
| EtFOSAA | ND | 1.46 | 5.34 | 8.53 | |
| PFDoA | ND | 0.844 | 5.34 | 8.53 | |
| PFTrDA | ND | 0.526 | 5.34 | 8.53 | |
| PFTeDA | ND | 0.805 | 5.34 | 8.53 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 117 | 50 - 150 | |
| IS | 13C2-PFHxA | 101 | 50 - 150 | |
| IS | 13C4-PFHpA | 92.5 | 50 - 150 | |
| IS | 18O2-PFHxS | 105 | 50 - 150 | |
| IS | 13C2-PFOA | 85.9 | 50 - 150 | |
| IS | 13C8-PFOS | 105 | 50 - 150 | |
| IS | 13C5-PFNA | 88.7 | 50 - 150 | |
| IS | 13C2-PFDA | 85.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 73.4 | 50 - 150 | |
| IS | 13C2-PFUnA | 78.7 | 50 - 150 | |
| IS | d5-EtFOSAA | 75.4 | 50 - 150 | |
| IS | 13C2-PFDoA | 37.4 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 63.7 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite33-GW-11MW204S-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 13:05
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.117 L

**Laboratory Data**

Lab Sample: 1700804-06 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:26 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 9.66 | 1.92 | 5.34 | 8.58 | |
| PFHxA | 52.9 | 2.34 | 5.34 | 8.58 | |
| PFHpA | 20.5 | 0.634 | 5.34 | 8.58 | |
| PFHxS | 53.6 | 1.02 | 5.34 | 8.58 | |
| PFOA | 76.0 | 0.698 | 5.34 | 8.58 | |
| PFOS | 29.6 | 0.865 | 5.34 | 8.58 | |
| PFNA | 1.14 | 0.868 | 5.34 | 8.58 | J |
| PFDA | ND | 1.60 | 5.34 | 8.58 | |
| MeFOSAA | ND | 1.77 | 5.34 | 8.58 | |
| PFUnA | ND | 1.13 | 5.34 | 8.58 | |
| EtFOSAA | ND | 1.47 | 5.34 | 8.58 | |
| PFDoA | ND | 0.849 | 5.34 | 8.58 | |
| PFTrDA | ND | 0.530 | 5.34 | 8.58 | |
| PFTeDA | ND | 0.809 | 5.34 | 8.58 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 136 | 50 - 150 | |
| IS | 13C2-PFHxA | 110 | 50 - 150 | |
| IS | 13C4-PFHpA | 102 | 50 - 150 | |
| IS | 18O2-PFHxS | 99.4 | 50 - 150 | |
| IS | 13C2-PFOA | 87.1 | 50 - 150 | |
| IS | 13C8-PFOS | 104 | 50 - 150 | |
| IS | 13C5-PFNA | 99.5 | 50 - 150 | |
| IS | 13C2-PFDA | 93.6 | 50 - 150 | |
| IS | d3-MeFOSAA | 81.9 | 50 - 150 | |
| IS | 13C2-PFUnA | 90.1 | 50 - 150 | |
| IS | d5-EtFOSAA | 80.7 | 50 - 150 | |
| IS | 13C2-PFDoA | 54.0 | 50 - 150 | |
| IS | 13C2-PFTeDA | 90.7 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

## Sample ID: Bldg 110-GW-11MW205D-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 14:51
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.117 L

**Laboratory Data**

Lab Sample: 1700804-07 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:37 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 11.3 | 1.91 | 5.34 | 8.52 | |
| PFHxA | 46.3 | 2.32 | 5.34 | 8.52 | |
| PFHpA | 11.1 | 0.629 | 5.34 | 8.52 | |
| PFHxS | 83.7 | 1.01 | 5.34 | 8.52 | |
| PFOA | 49.6 | 0.693 | 5.34 | 8.52 | |
| PFOS | 20.3 | 0.859 | 5.34 | 8.52 | |
| PFNA | ND | 0.862 | 5.34 | 8.52 | |
| PFDA | ND | 1.59 | 5.34 | 8.52 | |
| MeFOSAA | ND | 1.76 | 5.34 | 8.52 | |
| PFUnA | ND | 1.12 | 5.34 | 8.52 | |
| EtFOSAA | ND | 1.46 | 5.34 | 8.52 | |
| PFDoA | ND | 0.843 | 5.34 | 8.52 | |
| PFTrDA | ND | 0.526 | 5.34 | 8.52 | |
| PFTeDA | ND | 0.804 | 5.34 | 8.52 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 134 | 50 - 150 | |
| IS | 13C2-PFHxA | 113 | 50 - 150 | |
| IS | 13C4-PFHpA | 92.6 | 50 - 150 | |
| IS | 18O2-PFHxS | 110 | 50 - 150 | |
| IS | 13C2-PFOA | 95.4 | 50 - 150 | |
| IS | 13C8-PFOS | 99.1 | 50 - 150 | |
| IS | 13C5-PFNA | 98.8 | 50 - 150 | |
| IS | 13C2-PFDA | 76.4 | 50 - 150 | |
| IS | d3-MeFOSAA | 93.4 | 50 - 150 | |
| IS | 13C2-PFUnA | 83.4 | 50 - 150 | |
| IS | d5-EtFOSAA | 86.4 | 50 - 150 | |
| IS | 13C2-PFDoA | 41.4 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 58.9 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: Bldg 110-GW-FRB01-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 14:10
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.120 L

**Laboratory Data**

Lab Sample: 1700804-08 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:47 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | ND | 1.87 | 5.21 | 8.35 | |
| PFHxA | ND | 2.27 | 5.21 | 8.35 | |
| PFHpA | ND | 0.617 | 5.21 | 8.35 | |
| PFHxS | ND | 0.988 | 5.21 | 8.35 | |
| PFOA | ND | 0.679 | 5.21 | 8.35 | |
| PFOS | ND | 0.842 | 5.21 | 8.35 | |
| PFNA | ND | 0.845 | 5.21 | 8.35 | |
| PFDA | ND | 1.55 | 5.21 | 8.35 | |
| MeFOSAA | ND | 1.72 | 5.21 | 8.35 | |
| PFUnA | ND | 1.10 | 5.21 | 8.35 | |
| EtFOSAA | ND | 1.43 | 5.21 | 8.35 | |
| PFDoA | ND | 0.826 | 5.21 | 8.35 | |
| PFTrDA | ND | 0.515 | 5.21 | 8.35 | |
| PFTeDA | ND | 0.788 | 5.21 | 8.35 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 136 | 50 - 150 | |
| IS | 13C2-PFHxA | 109 | 50 - 150 | |
| IS | 13C4-PFHpA | 98.1 | 50 - 150 | |
| IS | 18O2-PFHxS | 111 | 50 - 150 | |
| IS | 13C2-PFOA | 89.1 | 50 - 150 | |
| IS | 13C8-PFOS | 103 | 50 - 150 | |
| IS | 13C5-PFNA | 102 | 50 - 150 | |
| IS | 13C2-PFDA | 77.2 | 50 - 150 | |
| IS | d3-MeFOSAA | 107 | 50 - 150 | |
| IS | 13C2-PFUnA | 85.9 | 50 - 150 | |
| IS | d5-EtFOSAA | 107 | 50 - 150 | |
| IS | 13C2-PFDoA | 28.2 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 6.10 | 50 - 150 | H |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: Bldg 110-GW-11MW205S-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 15:35
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.112 L

**Laboratory Data**

Lab Sample: 1700804-09 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:58 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 6.18 | 2.00 | 5.58 | 8.95 | J |
| PFHxA | 21.5 | 2.44 | 5.58 | 8.95 | |
| PFHpA | 5.44 | 0.661 | 5.58 | 8.95 | J |
| PFHxS | 53.2 | 1.06 | 5.58 | 8.95 | |
| PFOA | 14.7 | 0.729 | 5.58 | 8.95 | |
| PFOS | 36.8 | 0.903 | 5.58 | 8.95 | |
| PFNA | ND | 0.906 | 5.58 | 8.95 | |
| PFDA | 2.21 | 1.67 | 5.58 | 8.95 | J |
| MeFOSAA | ND | 1.85 | 5.58 | 8.95 | |
| PFUnA | ND | 1.18 | 5.58 | 8.95 | |
| EtFOSAA | ND | 1.53 | 5.58 | 8.95 | |
| PFDoA | ND | 0.886 | 5.58 | 8.95 | |
| PFTrDA | ND | 0.553 | 5.58 | 8.95 | |
| PFTeDA | ND | 0.845 | 5.58 | 8.95 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 129 | 50 - 150 | |
| IS | 13C2-PFHxA | 98.6 | 50 - 150 | |
| IS | 13C4-PFHpA | 89.9 | 50 - 150 | |
| IS | 18O2-PFHxS | 109 | 50 - 150 | |
| IS | 13C2-PFOA | 96.2 | 50 - 150 | |
| IS | 13C8-PFOS | 102 | 50 - 150 | |
| IS | 13C5-PFNA | 89.5 | 50 - 150 | |
| IS | 13C2-PFDA | 82.7 | 50 - 150 | |
| IS | d3-MeFOSAA | 79.6 | 50 - 150 | |
| IS | 13C2-PFUnA | 88.6 | 50 - 150 | |
| IS | d5-EtFOSAA | 89.9 | 50 - 150 | |
| IS | 13C2-PFDoA | 86.9 | 50 - 150 | |
| IS | 13C2-PFTeDA | 121 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite7-GW-07GW102-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 16:17
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.121 L

**Laboratory Data**

Lab Sample: 1700804-10
QC Batch: B7G0049
Date Analyzed: 13-Jul-17 19:09 Column: BEH C18
Date Received: 30-Jun-2017 9:54
Date Extracted: 13-Jul-2017 9:00

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 9.06 | 1.85 | 5.17 | 8.28 | |
| PFHxA | 51.7 | 2.26 | 5.17 | 8.28 | |
| PFHpA | 30.6 | 0.612 | 5.17 | 8.28 | |
| PFHxS | 309 | 0.980 | 5.17 | 8.28 | |
| PFOA | 73.9 | 0.674 | 5.17 | 8.28 | |
| PFOS | 433 | 0.835 | 5.17 | 8.28 | |
| PFNA | 3.84 | 0.838 | 5.17 | 8.28 | J |
| PFDA | ND | 1.54 | 5.17 | 8.28 | |
| MeFOSAA | ND | 1.71 | 5.17 | 8.28 | |
| PFUnA | ND | 1.09 | 5.17 | 8.28 | |
| EtFOSAA | ND | 1.42 | 5.17 | 8.28 | |
| PFDoA | ND | 0.820 | 5.17 | 8.28 | |
| PFTrDA | ND | 0.511 | 5.17 | 8.28 | |
| PFTeDA | ND | 0.781 | 5.17 | 8.28 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 123 | 50 - 150 | |
| IS | 13C2-PFHxA | 99.0 | 50 - 150 | |
| IS | 13C4-PFHpA | 88.6 | 50 - 150 | |
| IS | 18O2-PFHxS | 105 | 50 - 150 | |
| IS | 13C2-PFOA | 91.7 | 50 - 150 | |
| IS | 13C8-PFOS | 102 | 50 - 150 | |
| IS | 13C5-PFNA | 93.3 | 50 - 150 | |
| IS | 13C2-PFDA | 95.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 69.4 | 50 - 150 | |
| IS | 13C2-PFUnA | 86.2 | 50 - 150 | |
| IS | d5-EtFOSAA | 85.8 | 50 - 150 | |
| IS | 13C2-PFDoA | 52.3 | 50 - 150 | |
| IS | 13C2-PFTeDA | 98.7 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite5-GW-04GW82-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 16:35
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.117 L

**Laboratory Data**

Lab Sample: 1700804-11 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 19:51 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 2.49 | 1.92 | 5.34 | 8.58 | J |
| PFHxA | ND | 2.34 | 5.34 | 8.58 | |
| PFHpA | 0.688 | 0.634 | 5.34 | 8.58 | J |
| PFHxS | 15.4 | 1.02 | 5.34 | 8.58 | |
| PFOA | 2.17 | 0.698 | 5.34 | 8.58 | J |
| PFOS | ND | 0.865 | 5.34 | 8.58 | |
| PFNA | ND | 0.868 | 5.34 | 8.58 | |
| PFDA | ND | 1.60 | 5.34 | 8.58 | |
| MeFOSAA | ND | 1.77 | 5.34 | 8.58 | |
| PFUnA | ND | 1.13 | 5.34 | 8.58 | |
| EtFOSAA | ND | 1.47 | 5.34 | 8.58 | |
| PFDoA | ND | 0.849 | 5.34 | 8.58 | |
| PFTrDA | ND | 0.530 | 5.34 | 8.58 | |
| PFTeDA | ND | 0.809 | 5.34 | 8.58 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 123 | 50 - 150 | |
| IS | 13C2-PFHxA | 102 | 50 - 150 | |
| IS | 13C4-PFHpA | 90.2 | 50 - 150 | |
| IS | 18O2-PFHxS | 102 | 50 - 150 | |
| IS | 13C2-PFOA | 93.9 | 50 - 150 | |
| IS | 13C8-PFOS | 102 | 50 - 150 | |
| IS | 13C5-PFNA | 97.0 | 50 - 150 | |
| IS | 13C2-PFDA | 81.0 | 50 - 150 | |
| IS | d3-MeFOSAA | 129 | 50 - 150 | |
| IS | 13C2-PFUnA | 85.0 | 50 - 150 | |
| IS | d5-EtFOSAA | 91.8 | 50 - 150 | |
| IS | 13C2-PFDoA | 37.0 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 82.9 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

# DATA QUALIFIERS & ABBREVIATIONS

| | |
|---|---|
| **B** | **This compound was also detected in the method blank.** |
| **D** | **Dilution** |
| **E** | **The associated compound concentration exceeded the calibration range of the instrument.** |
| **H** | **Recovery and/or RPD was outside laboratory acceptance limits.** |
| **I** | **Chemical Interference** |
| **J** | **The amount detected is below the Reporting Limit/LOQ.** |
| **M** | **Estimated Maximum Possible Concentration. (CA Region 2 projects only)** |
| ***** | **See Cover Letter** |
| **Conc.** | **Concentration** |
| **NA** | **Not applicable** |
| **ND** | **Not Detected** |
| **TEQ** | **Toxic Equivalency** |

**Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.**

## CERTIFICATIONS

| Accrediting Authority | Certificate Number |
|---|---|
| Arkansas Department of Environmental Quality | 17-015-0 |
| California Department of Health – ELAP | 2892 |
| DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005 | 3091.01 |
| Florida Department of Health | E87777-18 |
| Hawaii Department of Health | N/A |
| Louisiana Department of Environmental Quality | 01977 |
| Maine Department of Health | 2016026 |
| Minnesota Department of Health | 1175673 |
| Nevada Division of Environmental Protection | CA004132017-1 |
| New Hampshire Environmental Accreditation Program | 207716 |
| New Jersey Department of Environmental Protection | CA003 |
| New York Department of Health | 11411 |
| Oregon Laboratory Accreditation Program | 4042-008 |
| Pennsylvania Department of Environmental Protection | 013 |
| Texas Commission on Environmental Quality | T104704189-17-8 |
| Virginia Department of General Services | 8621 |
| Washington Department of Ecology | C584 |
| Wisconsin Department of Natural Resources | 998036160 |

*Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.*

## NELAP Accredited Test Methods

| MATRIX: Air | |
|---|---|
| **Description of Test** | **Method** |
| Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans | EPA 23 |

| MATRIX: Biological Tissue | |
|---|---|
| **Description of Test** | **Method** |
| Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613B |
| Brominated Diphenyl Ethers by HRGC/HRMS | EPA 1614A |
| Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS | EPA 1668A/C |
| Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS | EPA 1699 |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |
| Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS | EPA 8280A/B |
| Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS | EPA 8290/8290A |

| MATRIX: Drinking Water | |
|---|---|
| **Description of Test** | **Method** |
| 2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS | EPA 1613 |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |

| MATRIX: Non-Potable Water | |
|---|---|
| **Description of Test** | **Method** |
| Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613B |
| Brominated Diphenyl Ethers by HRGC/HRMS | EPA 1614A |
| Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS | EPA 1668A/C |
| Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS | EPA 1699 |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |
| Dioxin by GC/HRMS | EPA 613 |
| Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS | EPA 8280A/B |
| Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS | EPA 8290/8290A |

| MATRIX: Solids | |
|---|---|
| **Description of Test** | **Method** |
| Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613 |
| Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope | EPA 1613B |

| | |
|---|---|
| Dilution GC/HRMS | |
| Brominated Diphenyl Ethers by HRGC/HRMS | EPA 1614A |
| Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS | EPA 1668A/C |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |
| Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS | EPA 8280A/B |
| Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS | EPA 8290/8290A |

**Vista Analytical**

1104 Windfield Way
El Dorado Hills, CA 95762
TEL: 916-673-1520

# CHAIN OF CUSTODY RECORD

DATE: 6/29/17

1700804 0.8°C PAGE: 2 OF 3

| | | | |
|---|---|---|---|
| LABORATORY CLIENT: AMEC Foster Wheeler E & I, Inc. | | CLIENT PROJECT NAME / NUMBER: NSWC White Oak | P.O. NO.: TO 008 |
| ADDRESS: 9210 Sky Park Court | | PROJECT CONTACT: Medora Hackler/Marie Bevier | CONTRACT NO.: N62473-16-D-2405 |
| CITY: San Diego, CA 92123 | | SAMPLER(S): (SIGNATURE) P. Nihan | LAB USE ONLY |
| TEL: 503.639.3400 | E-Mail: medora.hackler@amecfw.com | E-MAIL: marie.bevier@amecfw.com | |

TURNAROUND TIME

☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____/____/____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

| LAB USE ONLY | SAMPLE ID | SAMPLING DATE | SAMPLING TIME | Matrix | #Cont | QC Level | PFOA, PFOS, and PFBS (U.S. EPA 537 Mod.) |
|---|---|---|---|---|---|---|---|
| | IRPSite7-GW-07GW41-20170629 | 6/29/17 | 1002 | W | 2 | 4 | X |
| | IRPSite5-GW-05GW01-20170629 | 6/29/17 | 1058 | W | 2 | 2B | X |
| | IRPSite5-GW-FD01-20170629 | 6/29/17 | 1100 | W | 2 | 2B | X |
| | IRPSite33-GW-FRB01-20170629 | 6/29/17 | 1135 | W | 2 | 2B | X |
| | IRPSite33-GW-11MW204D-20170629 | 6/29/17 | 1230 | W | 2 | 2B | X |
| | IRPSite33-GW-11MW204S-20170629 | 6/29/17 | 1305 | W | 2 | 2B | X |
| | Bldg110-GW-11MW205D-20170629 | 6/29/17 | 1451 | W | 2 | 2B | X |
| | Bldg110-GW-FRB01-20170629 | 6/29/17 | 1410 | W | 2 | 2B | X |
| | Bldg110-GW-11MW205S-20170629 | 6/29/17 | 1535 | W | 2 | 2B | X |
| | IRPSite7-GW-07GW102-20170629 | 6/29/17 | 1617 | W | 2 | 2B | X |

| | | | |
|---|---|---|---|
| Relinquished by: (Signature) P. Nihan | Received by: (Signature) / Carrier Tracking Number FedEx | Date: 6/29/17 | Time: 1730 |
| Relinquished by: (Signature) FedEx | Received by: (Signature) | Date: 06/30/17 | Time: 1009 |
| Relinquished by: (Signature) | Received by: (Signature) | Date: | Time: |

**Vista Analytical**

1104 Windfield Way
El Dorado Hills, CA 95762
TEL: 916-673-1520

# CHAIN OF CUSTODY RECORD

DATE: 6/29/17

1700804

PAGE: 3 OF 3

| | | |
|---|---|---|
| LABORATORY CLIENT: AMEC Foster Wheeler E & I, Inc. | CLIENT PROJECT NAME / NUMBER: --- | P.O. NO.: TO 008 |
| ADDRESS: 9210 Sky Park Court | PROJECT CONTACT: Medora Hackler/Marie Bevier | CONTRACT NO.: N62473-16-D-2405 |
| CITY: San Diego, CA 92123 | SAMPLER(S): (SIGNATURE) P. Nihan | LAB USE ONLY |
| TEL: 503.639.3400 / E-Mail: medora.hackler@amecfw.com / E-MAIL: marie.bevier@amecfw.com | | |

TURNAROUND TIME

☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____/____/____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

| LAB USE ONLY | SAMPLE ID | SAMPLING DATE | SAMPLING TIME | Matrix | #Cont | QC Level | PFOA, PFOS, and PFBS (U.S. EPA 537 Mod.) |
|---|---|---|---|---|---|---|---|
| | IRPSite5-GW-04GW82-20170629 | 6/29/17 | 1635 | W | 2 | 2B | X |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | NN | | |

| Relinquished by: (Signature) | Received by: (Signature) / Carrier Tracking Number | Date: | Time: |
|---|---|---|---|
| P. Nihan | FedEx | 6/29/17 | 1730 |
| FedEx | Beth Bennett | 06/30/17 | 1009 |
| Relinquished by: (Signature) | Received by: (Signature) | Date: | Time: |

Vista Analytical Laboratory

# Sample Log-in Checklist

**Vista Work Order #:** 1700804 **TAT** 14

| | | | |
|---|---|---|---|
| **Samples Arrival:** | **Date/Time** 06/30/17 0954 | **Initials:** BLB | **Location:** WR-2 **Shelf/Rack:** NA |
| **Logged In:** | **Date/Time** 06/30/17 1504 | **Initials:** BLB | **Location:** WR-2 **Shelf/Rack:** E5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Delivered By:** | FedEx | UPS | On Trac | GSO | DHL | Hand Delivered | Other |
| **Preservation:** | Ice | | Blue Ice | | Dry Ice | | None |

| | | | |
|---|---|---|---|
| **Temp °C:** 1.5 (uncorrected) | **Time:** 1013 | **Thermometer ID:** DT-3 |
| **Temp °C:** 0.8 (corrected) | **Probe used: Yes** ☑ **No** ☐ | |

| | YES | NO | NA |
|---|---|---|---|
| Adequate Sample Volume Received? | ✓ | | |
| Holding Time Acceptable? | ✓ | | |
| Shipping Container(s) Intact? | ✓ | | |
| Shipping Custody Seals Intact? | ✓ | | |
| Shipping Documentation Present? | ✓ | | |
| Airbill — Trk # 8081 9079 5297 | ✓ | | |
| Sample Container Intact? | ✓ | | |
| Sample Custody Seals Intact? | | | ✓ |
| Chain of Custody / Sample Documentation Present? | ✓ | | |
| COC Anomaly/Sample Acceptance Form completed? | | ✓ | ✓ |
| If Chlorinated or Drinking Water Samples, Acceptable Preservation? | | | ✓ |

| | | | | | | |
|---|---|---|---|---|---|---|
| Preservation Documented: | $Na_2S_2O_3$ | Trizma | None | Yes | No | NA |
| Shipping Container | Vista BLB | Client | Retain BLB 6/30/17 | Return | Dispose | |

*Comments:*

July 20, 2017

**Vista Work Order No. 1700804**

Ms. Nia Nikmanesh
KMEA
2423 Hoover Avenue
National City, CA 91950

Dear Ms. Nikmanesh,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on June 30, 2017. This sample set was analyzed on a rush turn-around time, under your Project Name 'NSWC White Oak'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Karen J. Volpendesta for

Martha Maier
Laboratory Director

*Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.*

**Vista Work Order No. 1700804**
**Case Narrative**

**Sample Condition on Receipt:**

Eleven water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

**Analytical Notes:**

**Modified EPA Method 537**

Samples "IRPSite7-GW-07GW41-20170629", "IRPSite33-GW-11MW204D-20170629", "Bldg 110-GW-11MW205D-20170629", "Bldg 110-GW-11MW205S-20170629", "IRPSite7-GW-07GW102-20170629" and "IRPSite5-GW-04GW82-20170629" contained particulate and were centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of 14 PFAS using Modified EPA Method 537.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The OPR recoveries were within the method acceptance criteria.

The labeled standard recovery for 13C2-PFTeDA in sample "Bldg 110-GW-FRB01-20170629" was below the method acceptance criteria at 6.10%. This sample was re-extracted and showed similar recoveries.

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

# QC Anomalies

| LabNumber | SampleName | Analysis | Analyte | Flag | %Rec |
|---|---|---|---|---|---|
| 1700804-02 | IRPSite5-GW-05GW01-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 37.4 |
| 1700804-04 | IRPSite33-GW-FRB01-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 44.6 |
| 1700804-05 | IRPSite33-GW-11MW204D-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 37.4 |
| 1700804-07 | Bldg 110-GW-11MW205D-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 41.4 |
| 1700804-08 | Bldg 110-GW-FRB01-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 28.2 |
| 1700804-08 | Bldg 110-GW-FRB01-20170629 | Modified EPA Method 537 | 13C2-PFTeDA | H | 6.10 |
| 1700804-11 | IRPSite5-GW-04GW82-20170629 | Modified EPA Method 537 | 13C2-PFDoA | H | 37.0 |

H = Recovery was outside laboratory acceptance criteria.

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# Sample Inventory Report

| Vista Sample ID | Client Sample ID | Sampled | Received | Components/Containers |
|---|---|---|---|---|
| 1700804-01 | IRPSite7-GW-07GW41-20170629 | 29-Jun-17 10:02 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-02 | IRPSite5-GW-05GW01-20170629 | 29-Jun-17 10:58 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-03 | IRPSite5-GW-FD01-20170629 | 29-Jun-17 11:00 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-04 | IRPSite33-GW-FRB01-20170629 | 29-Jun-17 11:35 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-05 | IRPSite33-GW-11MW204D-20170629 | 29-Jun-17 12:30 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-06 | IRPSite33-GW-11MW204S-20170629 | 29-Jun-17 13:05 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-07 | Bldg 110-GW-11MW205D-20170629 | 29-Jun-17 14:51 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-08 | Bldg 110-GW-FRB01-20170629 | 29-Jun-17 14:10 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-09 | Bldg 110-GW-11MW205S-20170629 | 29-Jun-17 15:35 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-10 | IRPSite7-GW-07GW102-20170629 | 29-Jun-17 16:17 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |
| 1700804-11 | IRPSite5-GW-04GW82-20170629 | 29-Jun-17 16:35 | 30-Jun-17 09:54 | HDPE Bottle, 125 mL |
| | | | | HDPE Bottle, 125 mL |

**ANALYTICAL RESULTS**

## Sample ID: Method Blank

## Modified EPA Method 537

Matrix: Aqueous
Sample Size: 0.125 L

QC Batch: B7G0049
Date Extracted: 13-Jul-2017 9:00

Lab Sample: B7G0049-BLK1
Date Analyzed: 13-Jul-17 17:10 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | ND | 1.79 | 5.00 | 8.00 | |
| PFHxA | ND | 2.18 | 5.00 | 8.00 | |
| PFHpA | ND | 0.591 | 5.00 | 8.00 | |
| PFHxS | ND | 0.947 | 5.00 | 8.00 | |
| PFOA | ND | 0.651 | 5.00 | 8.00 | |
| PFOS | ND | 0.807 | 5.00 | 8.00 | |
| PFNA | ND | 0.810 | 5.00 | 8.00 | |
| PFDA | ND | 1.49 | 5.00 | 8.00 | |
| MeFOSAA | ND | 1.65 | 5.00 | 8.00 | |
| PFUnA | ND | 1.05 | 5.00 | 8.00 | |
| EtFOSAA | ND | 1.37 | 5.00 | 8.00 | |
| PFDoA | ND | 0.792 | 5.00 | 8.00 | |
| PFTrDA | ND | 0.494 | 5.00 | 8.00 | |
| PFTeDA | ND | 0.755 | 5.00 | 8.00 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 122 | 50 - 150 | |
| IS | 13C2-PFHxA | 107 | 50 - 150 | |
| IS | 13C4-PFHpA | 93.2 | 50 - 150 | |
| IS | 18O2-PFHxS | 118 | 50 - 150 | |
| IS | 13C2-PFOA | 91.4 | 50 - 150 | |
| IS | 13C8-PFOS | 97.0 | 50 - 150 | |
| IS | 13C5-PFNA | 100 | 50 - 150 | |
| IS | 13C2-PFDA | 96.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 96.9 | 50 - 150 | |
| IS | 13C2-PFUnA | 80.2 | 50 - 150 | |
| IS | d5-EtFOSAA | 98.5 | 50 - 150 | |
| IS | 13C2-PFDoA | 56.7 | 50 - 150 | |
| IS | 13C2-PFTeDA | 148 | 50 - 150 | |

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

## Sample ID: OPR

## Modified EPA Method 537

| | | | | | |
|---|---|---|---|---|---|
| Matrix: | Aqueous | QC Batch: | B7G0049 | Lab Sample: | B7G0049-BS1 |
| Sample Size: | 0.125 L | Date Extracted: | 13-Jul-2017 9:00 | Date Analyzed: | 13-Jul-17 16:38 Column: BEH C18 |

| Analyte | Amt Found (ng/L) | Spike Amt | %R | Limits |
|---|---|---|---|---|
| PFBS | 65.5 | 80.0 | 81.9 | 70 - 130 |
| PFHxA | 72.1 | 80.0 | 90.1 | 70 - 130 |
| PFHpA | 67.1 | 80.0 | 83.8 | 70 - 130 |
| PFHxS | 76.3 | 80.0 | 95.3 | 70 - 130 |
| PFOA | 67.8 | 80.0 | 84.8 | 70 - 130 |
| PFOS | 78.0 | 80.0 | 97.5 | 70 - 130 |
| PFNA | 68.2 | 80.0 | 85.2 | 70 - 130 |
| PFDA | 64.5 | 80.0 | 80.7 | 70 - 130 |
| MeFOSAA | 69.9 | 80.0 | 87.3 | 70 - 130 |
| PFUnA | 73.5 | 80.0 | 91.9 | 70 - 130 |
| EtFOSAA | 75.6 | 80.0 | 94.5 | 70 - 130 |
| PFDoA | 102 | 80.0 | 127 | 70 - 130 |
| PFTrDA | 95.0 | 80.0 | 119 | 60 - 130 |
| PFTeDA | 79.0 | 80.0 | 98.8 | 70 - 130 |

| | Labeled Standard | %R | LCL-UCL |
|---|---|---|---|
| IS | 13C3-PFBS | 126 | 50 - 150 |
| IS | 13C2-PFHxA | 102 | 50 - 150 |
| IS | 13C4-PFHpA | 88.2 | 50 - 150 |
| IS | 18O2-PFHxS | 109 | 50 - 150 |
| IS | 13C2-PFOA | 104 | 50 - 150 |
| IS | 13C8-PFOS | 106 | 50 - 150 |
| IS | 13C5-PFNA | 101 | 50 - 150 |
| IS | 13C2-PFDA | 93.1 | 50 - 150 |
| IS | d3-MeFOSAA | 68.2 | 50 - 150 |
| IS | 13C2-PFUnA | 65.4 | 50 - 150 |
| IS | d5-EtFOSAA | 77.0 | 50 - 150 |
| IS | 13C2-PFDoA | 62.5 | 50 - 150 |
| IS | 13C2-PFTeDA | 77.8 | 50 - 150 |

LCL-UCL - Lower control limit - upper control limit

## Sample ID: IRPSite7-GW-07GW41-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 10:02
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.121 L

**Laboratory Data**

Lab Sample: 1700804-01 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 17:33 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 4.16 | 1.86 | 5.17 | 8.29 | J |
| PFHxA | 17.0 | 2.26 | 5.17 | 8.29 | |
| PFHpA | 9.53 | 0.613 | 5.17 | 8.29 | |
| PFHxS | 81.1 | 0.982 | 5.17 | 8.29 | |
| PFOA | 30.3 | 0.675 | 5.17 | 8.29 | |
| PFOS | 262 | 0.837 | 5.17 | 8.29 | |
| PFNA | 3.26 | 0.840 | 5.17 | 8.29 | J |
| PFDA | ND | 1.54 | 5.17 | 8.29 | |
| MeFOSAA | ND | 1.71 | 5.17 | 8.29 | |
| PFUnA | ND | 1.09 | 5.17 | 8.29 | |
| EtFOSAA | ND | 1.42 | 5.17 | 8.29 | |
| PFDoA | ND | 0.821 | 5.17 | 8.29 | |
| PFTrDA | ND | 0.512 | 5.17 | 8.29 | |
| PFTeDA | ND | 0.783 | 5.17 | 8.29 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 144 | 50 - 150 | |
| IS | 13C2-PFHxA | 109 | 50 - 150 | |
| IS | 13C4-PFHpA | 95.8 | 50 - 150 | |
| IS | 18O2-PFHxS | 115 | 50 - 150 | |
| IS | 13C2-PFOA | 84.7 | 50 - 150 | |
| IS | 13C8-PFOS | 103 | 50 - 150 | |
| IS | 13C5-PFNA | 102 | 50 - 150 | |
| IS | 13C2-PFDA | 92.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 68.4 | 50 - 150 | |
| IS | 13C2-PFUnA | 75.3 | 50 - 150 | |
| IS | d5-EtFOSAA | 79.3 | 50 - 150 | |
| IS | 13C2-PFDoA | 61.1 | 50 - 150 | |
| IS | 13C2-PFTeDA | 83.4 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite5-GW-05GW01-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 10:58
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.115 L

**Laboratory Data**

Lab Sample: 1700804-02 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 17:44 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | ND | 1.95 | 5.43 | 8.72 | |
| PFHxA | 6.98 | 2.38 | 5.43 | 8.72 | J |
| PFHpA | 3.96 | 0.644 | 5.43 | 8.72 | J |
| PFHxS | 61.1 | 1.03 | 5.43 | 8.72 | |
| PFOA | 48.8 | 0.710 | 5.43 | 8.72 | |
| PFOS | 205 | 0.880 | 5.43 | 8.72 | |
| PFNA | 3.24 | 0.883 | 5.43 | 8.72 | J |
| PFDA | ND | 1.62 | 5.43 | 8.72 | |
| MeFOSAA | ND | 1.80 | 5.43 | 8.72 | |
| PFUnA | ND | 1.14 | 5.43 | 8.72 | |
| EtFOSAA | ND | 1.49 | 5.43 | 8.72 | |
| PFDoA | ND | 0.863 | 5.43 | 8.72 | |
| PFTrDA | ND | 0.539 | 5.43 | 8.72 | |
| PFTeDA | ND | 0.823 | 5.43 | 8.72 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 131 | 50 - 150 | |
| IS | 13C2-PFHxA | 107 | 50 - 150 | |
| IS | 13C4-PFHpA | 91.5 | 50 - 150 | |
| IS | 18O2-PFHxS | 115 | 50 - 150 | |
| IS | 13C2-PFOA | 91.0 | 50 - 150 | |
| IS | 13C8-PFOS | 110 | 50 - 150 | |
| IS | 13C5-PFNA | 93.8 | 50 - 150 | |
| IS | 13C2-PFDA | 82.2 | 50 - 150 | |
| IS | d3-MeFOSAA | 107 | 50 - 150 | |
| IS | 13C2-PFUnA | 79.1 | 50 - 150 | |
| IS | d5-EtFOSAA | 87.3 | 50 - 150 | |
| IS | 13C2-PFDoA | 37.4 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 118 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite5-GW-FD01-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 11:00
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.113 L

**Laboratory Data**

Lab Sample: 1700804-03 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 17:54 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 2.30 | 1.99 | 5.53 | 8.88 | J |
| PFHxA | 6.86 | 2.42 | 5.53 | 8.88 | J |
| PFHpA | 3.17 | 0.656 | 5.53 | 8.88 | J |
| PFHxS | 64.9 | 1.05 | 5.53 | 8.88 | |
| PFOA | 51.3 | 0.723 | 5.53 | 8.88 | |
| PFOS | 199 | 0.896 | 5.53 | 8.88 | |
| PFNA | 2.82 | 0.899 | 5.53 | 8.88 | J |
| PFDA | ND | 1.65 | 5.53 | 8.88 | |
| MeFOSAA | ND | 1.83 | 5.53 | 8.88 | |
| PFUnA | ND | 1.17 | 5.53 | 8.88 | |
| EtFOSAA | ND | 1.52 | 5.53 | 8.88 | |
| PFDoA | ND | 0.879 | 5.53 | 8.88 | |
| PFTrDA | ND | 0.548 | 5.53 | 8.88 | |
| PFTeDA | ND | 0.838 | 5.53 | 8.88 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 117 | 50 - 150 | |
| IS | 13C2-PFHxA | 102 | 50 - 150 | |
| IS | 13C4-PFHpA | 92.8 | 50 - 150 | |
| IS | 18O2-PFHxS | 108 | 50 - 150 | |
| IS | 13C2-PFOA | 98.0 | 50 - 150 | |
| IS | 13C8-PFOS | 99.9 | 50 - 150 | |
| IS | 13C5-PFNA | 97.7 | 50 - 150 | |
| IS | 13C2-PFDA | 87.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 70.8 | 50 - 150 | |
| IS | 13C2-PFUnA | 82.8 | 50 - 150 | |
| IS | d5-EtFOSAA | 93.6 | 50 - 150 | |
| IS | 13C2-PFDoA | 62.3 | 50 - 150 | |
| IS | 13C2-PFTeDA | 92.3 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite33-GW-FRB01-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 11:35
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.123 L

**Laboratory Data**

Lab Sample: 1700804-04 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:05 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | ND | 1.82 | 5.08 | 8.15 | |
| PFHxA | ND | 2.22 | 5.08 | 8.15 | |
| PFHpA | ND | 0.602 | 5.08 | 8.15 | |
| PFHxS | ND | 0.965 | 5.08 | 8.15 | |
| PFOA | ND | 0.663 | 5.08 | 8.15 | |
| PFOS | ND | 0.822 | 5.08 | 8.15 | |
| PFNA | ND | 0.825 | 5.08 | 8.15 | |
| PFDA | ND | 1.52 | 5.08 | 8.15 | |
| MeFOSAA | ND | 1.68 | 5.08 | 8.15 | |
| PFUnA | ND | 1.07 | 5.08 | 8.15 | |
| EtFOSAA | ND | 1.40 | 5.08 | 8.15 | |
| PFDoA | ND | 0.807 | 5.08 | 8.15 | |
| PFTrDA | ND | 0.503 | 5.08 | 8.15 | |
| PFTeDA | ND | 0.769 | 5.08 | 8.15 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 125 | 50 - 150 | |
| IS | 13C2-PFHxA | 103 | 50 - 150 | |
| IS | 13C4-PFHpA | 96.5 | 50 - 150 | |
| IS | 18O2-PFHxS | 108 | 50 - 150 | |
| IS | 13C2-PFOA | 98.5 | 50 - 150 | |
| IS | 13C8-PFOS | 90.3 | 50 - 150 | |
| IS | 13C5-PFNA | 104 | 50 - 150 | |
| IS | 13C2-PFDA | 91.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 71.0 | 50 - 150 | |
| IS | 13C2-PFUnA | 76.2 | 50 - 150 | |
| IS | d5-EtFOSAA | 78.1 | 50 - 150 | |
| IS | 13C2-PFDoA | 44.6 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 74.4 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite33-GW-11MW204D-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 12:30
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.117 L

**Laboratory Data**

Lab Sample: 1700804-05 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:15 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 9.95 | 1.91 | 5.34 | 8.53 | |
| PFHxA | 51.0 | 2.32 | 5.34 | 8.53 | |
| PFHpA | 21.5 | 0.630 | 5.34 | 8.53 | |
| PFHxS | 62.9 | 1.01 | 5.34 | 8.53 | |
| PFOA | 95.8 | 0.694 | 5.34 | 8.53 | |
| PFOS | 38.3 | 0.860 | 5.34 | 8.53 | |
| PFNA | 1.88 | 0.863 | 5.34 | 8.53 | J |
| PFDA | 1.94 | 1.59 | 5.34 | 8.53 | J |
| MeFOSAA | ND | 1.76 | 5.34 | 8.53 | |
| PFUnA | ND | 1.12 | 5.34 | 8.53 | |
| EtFOSAA | ND | 1.46 | 5.34 | 8.53 | |
| PFDoA | ND | 0.844 | 5.34 | 8.53 | |
| PFTrDA | ND | 0.526 | 5.34 | 8.53 | |
| PFTeDA | ND | 0.805 | 5.34 | 8.53 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 117 | 50 - 150 | |
| IS | 13C2-PFHxA | 101 | 50 - 150 | |
| IS | 13C4-PFHpA | 92.5 | 50 - 150 | |
| IS | 18O2-PFHxS | 105 | 50 - 150 | |
| IS | 13C2-PFOA | 85.9 | 50 - 150 | |
| IS | 13C8-PFOS | 105 | 50 - 150 | |
| IS | 13C5-PFNA | 88.7 | 50 - 150 | |
| IS | 13C2-PFDA | 85.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 73.4 | 50 - 150 | |
| IS | 13C2-PFUnA | 78.7 | 50 - 150 | |
| IS | d5-EtFOSAA | 75.4 | 50 - 150 | |
| IS | 13C2-PFDoA | 37.4 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 63.7 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite33-GW-11MW204S-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 13:05
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.117 L

**Laboratory Data**

Lab Sample: 1700804-06 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:26 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 9.66 | 1.92 | 5.34 | 8.58 | |
| PFHxA | 52.9 | 2.34 | 5.34 | 8.58 | |
| PFHpA | 20.5 | 0.634 | 5.34 | 8.58 | |
| PFHxS | 53.6 | 1.02 | 5.34 | 8.58 | |
| PFOA | 76.0 | 0.698 | 5.34 | 8.58 | |
| PFOS | 29.6 | 0.865 | 5.34 | 8.58 | |
| PFNA | 1.14 | 0.868 | 5.34 | 8.58 | J |
| PFDA | ND | 1.60 | 5.34 | 8.58 | |
| MeFOSAA | ND | 1.77 | 5.34 | 8.58 | |
| PFUnA | ND | 1.13 | 5.34 | 8.58 | |
| EtFOSAA | ND | 1.47 | 5.34 | 8.58 | |
| PFDoA | ND | 0.849 | 5.34 | 8.58 | |
| PFTrDA | ND | 0.530 | 5.34 | 8.58 | |
| PFTeDA | ND | 0.809 | 5.34 | 8.58 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 136 | 50 - 150 | |
| IS | 13C2-PFHxA | 110 | 50 - 150 | |
| IS | 13C4-PFHpA | 102 | 50 - 150 | |
| IS | 18O2-PFHxS | 99.4 | 50 - 150 | |
| IS | 13C2-PFOA | 87.1 | 50 - 150 | |
| IS | 13C8-PFOS | 104 | 50 - 150 | |
| IS | 13C5-PFNA | 99.5 | 50 - 150 | |
| IS | 13C2-PFDA | 93.6 | 50 - 150 | |
| IS | d3-MeFOSAA | 81.9 | 50 - 150 | |
| IS | 13C2-PFUnA | 90.1 | 50 - 150 | |
| IS | d5-EtFOSAA | 80.7 | 50 - 150 | |
| IS | 13C2-PFDoA | 54.0 | 50 - 150 | |
| IS | 13C2-PFTeDA | 90.7 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: Bldg 110-GW-11MW205D-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 14:51
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.117 L

**Laboratory Data**

Lab Sample: 1700804-07 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:37 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 11.3 | 1.91 | 5.34 | 8.52 | |
| PFHxA | 46.3 | 2.32 | 5.34 | 8.52 | |
| PFHpA | 11.1 | 0.629 | 5.34 | 8.52 | |
| PFHxS | 83.7 | 1.01 | 5.34 | 8.52 | |
| PFOA | 49.6 | 0.693 | 5.34 | 8.52 | |
| PFOS | 20.3 | 0.859 | 5.34 | 8.52 | |
| PFNA | ND | 0.862 | 5.34 | 8.52 | |
| PFDA | ND | 1.59 | 5.34 | 8.52 | |
| MeFOSAA | ND | 1.76 | 5.34 | 8.52 | |
| PFUnA | ND | 1.12 | 5.34 | 8.52 | |
| EtFOSAA | ND | 1.46 | 5.34 | 8.52 | |
| PFDoA | ND | 0.843 | 5.34 | 8.52 | |
| PFTrDA | ND | 0.526 | 5.34 | 8.52 | |
| PFTeDA | ND | 0.804 | 5.34 | 8.52 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 134 | 50 - 150 | |
| IS | 13C2-PFHxA | 113 | 50 - 150 | |
| IS | 13C4-PFHpA | 92.6 | 50 - 150 | |
| IS | 18O2-PFHxS | 110 | 50 - 150 | |
| IS | 13C2-PFOA | 95.4 | 50 - 150 | |
| IS | 13C8-PFOS | 99.1 | 50 - 150 | |
| IS | 13C5-PFNA | 98.8 | 50 - 150 | |
| IS | 13C2-PFDA | 76.4 | 50 - 150 | |
| IS | d3-MeFOSAA | 93.4 | 50 - 150 | |
| IS | 13C2-PFUnA | 83.4 | 50 - 150 | |
| IS | d5-EtFOSAA | 86.4 | 50 - 150 | |
| IS | 13C2-PFDoA | 41.4 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 58.9 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: Bldg 110-GW-FRB01-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 14:10
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.120 L

**Laboratory Data**

Lab Sample: 1700804-08 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:47 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | ND | 1.87 | 5.21 | 8.35 | |
| PFHxA | ND | 2.27 | 5.21 | 8.35 | |
| PFHpA | ND | 0.617 | 5.21 | 8.35 | |
| PFHxS | ND | 0.988 | 5.21 | 8.35 | |
| PFOA | ND | 0.679 | 5.21 | 8.35 | |
| PFOS | ND | 0.842 | 5.21 | 8.35 | |
| PFNA | ND | 0.845 | 5.21 | 8.35 | |
| PFDA | ND | 1.55 | 5.21 | 8.35 | |
| MeFOSAA | ND | 1.72 | 5.21 | 8.35 | |
| PFUnA | ND | 1.10 | 5.21 | 8.35 | |
| EtFOSAA | ND | 1.43 | 5.21 | 8.35 | |
| PFDoA | ND | 0.826 | 5.21 | 8.35 | |
| PFTrDA | ND | 0.515 | 5.21 | 8.35 | |
| PFTeDA | ND | 0.788 | 5.21 | 8.35 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 136 | 50 - 150 | |
| IS | 13C2-PFHxA | 109 | 50 - 150 | |
| IS | 13C4-PFHpA | 98.1 | 50 - 150 | |
| IS | 18O2-PFHxS | 111 | 50 - 150 | |
| IS | 13C2-PFOA | 89.1 | 50 - 150 | |
| IS | 13C8-PFOS | 103 | 50 - 150 | |
| IS | 13C5-PFNA | 102 | 50 - 150 | |
| IS | 13C2-PFDA | 77.2 | 50 - 150 | |
| IS | d3-MeFOSAA | 107 | 50 - 150 | |
| IS | 13C2-PFUnA | 85.9 | 50 - 150 | |
| IS | d5-EtFOSAA | 107 | 50 - 150 | |
| IS | 13C2-PFDoA | 28.2 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 6.10 | 50 - 150 | H |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: Bldg 110-GW-11MW205S-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 15:35
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.112 L

**Laboratory Data**

Lab Sample: 1700804-09 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 18:58 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 6.18 | 2.00 | 5.58 | 8.95 | J |
| PFHxA | 21.5 | 2.44 | 5.58 | 8.95 | |
| PFHpA | 5.44 | 0.661 | 5.58 | 8.95 | J |
| PFHxS | 53.2 | 1.06 | 5.58 | 8.95 | |
| PFOA | 14.7 | 0.729 | 5.58 | 8.95 | |
| PFOS | 36.8 | 0.903 | 5.58 | 8.95 | |
| PFNA | ND | 0.906 | 5.58 | 8.95 | |
| PFDA | 2.21 | 1.67 | 5.58 | 8.95 | J |
| MeFOSAA | ND | 1.85 | 5.58 | 8.95 | |
| PFUnA | ND | 1.18 | 5.58 | 8.95 | |
| EtFOSAA | ND | 1.53 | 5.58 | 8.95 | |
| PFDoA | ND | 0.886 | 5.58 | 8.95 | |
| PFTrDA | ND | 0.553 | 5.58 | 8.95 | |
| PFTeDA | ND | 0.845 | 5.58 | 8.95 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 129 | 50 - 150 | |
| IS | 13C2-PFHxA | 98.6 | 50 - 150 | |
| IS | 13C4-PFHpA | 89.9 | 50 - 150 | |
| IS | 18O2-PFHxS | 109 | 50 - 150 | |
| IS | 13C2-PFOA | 96.2 | 50 - 150 | |
| IS | 13C8-PFOS | 102 | 50 - 150 | |
| IS | 13C5-PFNA | 89.5 | 50 - 150 | |
| IS | 13C2-PFDA | 82.7 | 50 - 150 | |
| IS | d3-MeFOSAA | 79.6 | 50 - 150 | |
| IS | 13C2-PFUnA | 88.6 | 50 - 150 | |
| IS | d5-EtFOSAA | 89.9 | 50 - 150 | |
| IS | 13C2-PFDoA | 86.9 | 50 - 150 | |
| IS | 13C2-PFTeDA | 121 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite7-GW-07GW102-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 16:17
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.121 L

**Laboratory Data**

Lab Sample: 1700804-10
QC Batch: B7G0049
Date Analyzed: 13-Jul-17 19:09 Column: BEH C18
Date Received: 30-Jun-2017 9:54
Date Extracted: 13-Jul-2017 9:00

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 9.06 | 1.85 | 5.17 | 8.28 | |
| PFHxA | 51.7 | 2.26 | 5.17 | 8.28 | |
| PFHpA | 30.6 | 0.612 | 5.17 | 8.28 | |
| PFHxS | 309 | 0.980 | 5.17 | 8.28 | |
| PFOA | 73.9 | 0.674 | 5.17 | 8.28 | |
| PFOS | 433 | 0.835 | 5.17 | 8.28 | |
| PFNA | 3.84 | 0.838 | 5.17 | 8.28 | J |
| PFDA | ND | 1.54 | 5.17 | 8.28 | |
| MeFOSAA | ND | 1.71 | 5.17 | 8.28 | |
| PFUnA | ND | 1.09 | 5.17 | 8.28 | |
| EtFOSAA | ND | 1.42 | 5.17 | 8.28 | |
| PFDoA | ND | 0.820 | 5.17 | 8.28 | |
| PFTrDA | ND | 0.511 | 5.17 | 8.28 | |
| PFTeDA | ND | 0.781 | 5.17 | 8.28 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 123 | 50 - 150 | |
| IS | 13C2-PFHxA | 99.0 | 50 - 150 | |
| IS | 13C4-PFHpA | 88.6 | 50 - 150 | |
| IS | 18O2-PFHxS | 105 | 50 - 150 | |
| IS | 13C2-PFOA | 91.7 | 50 - 150 | |
| IS | 13C8-PFOS | 102 | 50 - 150 | |
| IS | 13C5-PFNA | 93.3 | 50 - 150 | |
| IS | 13C2-PFDA | 95.5 | 50 - 150 | |
| IS | d3-MeFOSAA | 69.4 | 50 - 150 | |
| IS | 13C2-PFUnA | 86.2 | 50 - 150 | |
| IS | d5-EtFOSAA | 85.8 | 50 - 150 | |
| IS | 13C2-PFDoA | 52.3 | 50 - 150 | |
| IS | 13C2-PFTeDA | 98.7 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

## Sample ID: IRPSite5-GW-04GW82-20170629

## Modified EPA Method 537

**Client Data**

Name: KMEA
Project: NSWC White Oak
Date Collected: 29-Jun-2017 16:35
Location:

**Sample Data**

Matrix: Water
Sample Size: 0.117 L

**Laboratory Data**

Lab Sample: 1700804-11 Date Received: 30-Jun-2017 9:54
QC Batch: B7G0049 Date Extracted: 13-Jul-2017 9:00
Date Analyzed: 13-Jul-17 19:51 Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers |
|---|---|---|---|---|---|
| PFBS | 2.49 | 1.92 | 5.34 | 8.58 | J |
| PFHxA | ND | 2.34 | 5.34 | 8.58 | |
| PFHpA | 0.688 | 0.634 | 5.34 | 8.58 | J |
| PFHxS | 15.4 | 1.02 | 5.34 | 8.58 | |
| PFOA | 2.17 | 0.698 | 5.34 | 8.58 | J |
| PFOS | ND | 0.865 | 5.34 | 8.58 | |
| PFNA | ND | 0.868 | 5.34 | 8.58 | |
| PFDA | ND | 1.60 | 5.34 | 8.58 | |
| MeFOSAA | ND | 1.77 | 5.34 | 8.58 | |
| PFUnA | ND | 1.13 | 5.34 | 8.58 | |
| EtFOSAA | ND | 1.47 | 5.34 | 8.58 | |
| PFDoA | ND | 0.849 | 5.34 | 8.58 | |
| PFTrDA | ND | 0.530 | 5.34 | 8.58 | |
| PFTeDA | ND | 0.809 | 5.34 | 8.58 | |

| | Labeled Standard | %R | LCL-UCL | Qualifiers |
|---|---|---|---|---|
| IS | 13C3-PFBS | 123 | 50 - 150 | |
| IS | 13C2-PFHxA | 102 | 50 - 150 | |
| IS | 13C4-PFHpA | 90.2 | 50 - 150 | |
| IS | 18O2-PFHxS | 102 | 50 - 150 | |
| IS | 13C2-PFOA | 93.9 | 50 - 150 | |
| IS | 13C8-PFOS | 102 | 50 - 150 | |
| IS | 13C5-PFNA | 97.0 | 50 - 150 | |
| IS | 13C2-PFDA | 81.0 | 50 - 150 | |
| IS | d3-MeFOSAA | 129 | 50 - 150 | |
| IS | 13C2-PFUnA | 85.0 | 50 - 150 | |
| IS | d5-EtFOSAA | 91.8 | 50 - 150 | |
| IS | 13C2-PFDoA | 37.0 | 50 - 150 | H |
| IS | 13C2-PFTeDA | 82.9 | 50 - 150 | |

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

# DATA QUALIFIERS & ABBREVIATIONS

| | |
|---|---|
| **B** | **This compound was also detected in the method blank.** |
| **D** | **Dilution** |
| **E** | **The associated compound concentration exceeded the calibration range of the instrument.** |
| **H** | **Recovery and/or RPD was outside laboratory acceptance limits.** |
| **I** | **Chemical Interference** |
| **J** | **The amount detected is below the Reporting Limit/LOQ.** |
| **M** | **Estimated Maximum Possible Concentration. (CA Region 2 projects only)** |
| ***** | **See Cover Letter** |
| **Conc.** | **Concentration** |
| **NA** | **Not applicable** |
| **ND** | **Not Detected** |
| **TEQ** | **Toxic Equivalency** |

**Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.**

## CERTIFICATIONS

| Accrediting Authority | Certificate Number |
|---|---|
| Arkansas Department of Environmental Quality | 17-015-0 |
| California Department of Health – ELAP | 2892 |
| DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005 | 3091.01 |
| Florida Department of Health | E87777-18 |
| Hawaii Department of Health | N/A |
| Louisiana Department of Environmental Quality | 01977 |
| Maine Department of Health | 2016026 |
| Minnesota Department of Health | 1175673 |
| Nevada Division of Environmental Protection | CA004132017-1 |
| New Hampshire Environmental Accreditation Program | 207716 |
| New Jersey Department of Environmental Protection | CA003 |
| New York Department of Health | 11411 |
| Oregon Laboratory Accreditation Program | 4042-008 |
| Pennsylvania Department of Environmental Protection | 013 |
| Texas Commission on Environmental Quality | T104704189-17-8 |
| Virginia Department of General Services | 8621 |
| Washington Department of Ecology | C584 |
| Wisconsin Department of Natural Resources | 998036160 |

*Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.*

## NELAP Accredited Test Methods

| MATRIX: Air | |
|---|---|
| **Description of Test** | **Method** |
| Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans | EPA 23 |

| MATRIX: Biological Tissue | |
|---|---|
| **Description of Test** | **Method** |
| Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613B |
| Brominated Diphenyl Ethers by HRGC/HRMS | EPA 1614A |
| Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS | EPA 1668A/C |
| Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS | EPA 1699 |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |
| Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS | EPA 8280A/B |
| Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS | EPA 8290/8290A |

| MATRIX: Drinking Water | |
|---|---|
| **Description of Test** | **Method** |
| 2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS | EPA 1613 |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |

| MATRIX: Non-Potable Water | |
|---|---|
| **Description of Test** | **Method** |
| Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613B |
| Brominated Diphenyl Ethers by HRGC/HRMS | EPA 1614A |
| Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS | EPA 1668A/C |
| Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS | EPA 1699 |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |
| Dioxin by GC/HRMS | EPA 613 |
| Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS | EPA 8280A/B |
| Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS | EPA 8290/8290A |

| MATRIX: Solids | |
|---|---|
| **Description of Test** | **Method** |
| Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613 |
| Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope | EPA 1613B |

| | |
|---|---|
| Dilution GC/HRMS | |
| Brominated Diphenyl Ethers by HRGC/HRMS | EPA 1614A |
| Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS | EPA 1668A/C |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |
| Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS | EPA 8280A/B |
| Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS | EPA 8290/8290A |

**Vista Analytical**

1104 Windfield Way
El Dorado Hills, CA 95762
TEL: 916-673-1520

# CHAIN OF CUSTODY RECORD

DATE: 6/29/17

1700804 0.8°C PAGE: 2 OF 3

| | | | |
|---|---|---|---|
| LABORATORY CLIENT: AMEC Foster Wheeler E & I, Inc. | | CLIENT PROJECT NAME / NUMBER: NSWC White Oak | P.O. NO.: TO 008 |
| ADDRESS: 9210 Sky Park Court | | PROJECT CONTACT: Medora Hackler/Marie Bevier | CONTRACT NO.: N62473-16-D-2405 |
| CITY: San Diego, CA 92123 | | SAMPLER(S): (SIGNATURE) P. Nihm | LAB USE ONLY |
| TEL: 503.639.3400 | E-Mail: medora.hackler@amecfw.com | E-MAIL: marie.bevier@amecfw.com | |

TURNAROUND TIME

☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____/____/____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

| LAB USE ONLY | SAMPLE ID | SAMPLING DATE | SAMPLING TIME | Matrix | #Cont | QC Level | PFOA, PFOS, and PFBS (U.S. EPA 537 Mod.) |
|---|---|---|---|---|---|---|---|
| | IRPSite7-GW-07GW41-20170629 | 6/29/17 | 1002 | W | 2 | 4 | X |
| | IRPSite5-GW-05GW01-20170629 | 6/29/17 | 1058 | W | 2 | 2B | X |
| | IRPSite5-GW-FD01-20170629 | 6/29/17 | 1100 | W | 2 | 2B | X |
| | IRPSite33-GW-FRB01-20170629 | 6/29/17 | 1135 | W | 2 | 2B | X |
| | IRPSite33-GW-11MW204D-20170629 | 6/29/17 | 1230 | W | 2 | 2B | X |
| | IRPSite33-GW-11MW204S-20170629 | 6/29/17 | 1305 | W | 2 | 2B | X |
| | Bldg110-GW-11MW205D-20170629 | 6/29/17 | 1451 | W | 2 | 2B | X |
| | Bldg110-GW-FRB01-20170629 | 6/29/17 | 1410 | W | 2 | 2B | X |
| | Bldg110-GW-11MW205S-20170629 | 6/29/17 | 1535 | W | 2 | 2B | X |
| | IRPSite7-GW-07GW102-20170629 | 6/29/17 | 1617 | W | 2 | 2B | X |

| | | | |
|---|---|---|---|
| Relinquished by: (Signature) P. Nihm | Received by: (Signature) / Carrier Tracking Number FedEx | Date: 6/29/17 | Time: 1730 |
| Relinquished by: (Signature) FedEx | Received by: (Signature) | Date: 06/30/17 | Time: 1009 |
| Relinquished by: (Signature) | Received by: (Signature) | Date: | Time: |

**Vista Analytical**

1104 Windfield Way
El Dorado Hills, CA 95762
TEL: 916-673-1520

# CHAIN OF CUSTODY RECORD

DATE: 6/29/17

1700804

PAGE: 3 OF 3

| | | | |
|---|---|---|---|
| LABORATORY CLIENT: AMEC Foster Wheeler E & I, Inc. | | CLIENT PROJECT NAME / NUMBER: --- | P.O. NO.: TO 008 |
| ADDRESS: 9210 Sky Park Court | | PROJECT CONTACT: Medora Hackler/Marie Bevier | CONTRACT NO.: N62473-16-D-2405 |
| CITY: San Diego, CA 92123 | | SAMPLER(S): (SIGNATURE) P. Nihan | LAB USE ONLY |
| TEL: 503.639.3400 | E-Mail: medora.hackler@amecfw.com | E-MAIL: marie.bevier@amecfw.com | |

TURNAROUND TIME

☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____/____/____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

| LAB USE ONLY | SAMPLE ID | SAMPLING DATE | SAMPLING TIME | Matrix | #Cont | QC Level | PFOA, PFOS, and PFBS (U.S. EPA 537 Mod.) |
|---|---|---|---|---|---|---|---|
| | IRPSite5-GW-04GW82-20170629 | 6/29/17 | 1635 | W | 2 | 2B | X |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | NN | | |

| Relinquished by: (Signature) | Received by: (Signature) / Carrier Tracking Number | Date: | Time: |
|---|---|---|---|
| P. Nihan | FedEx | 6/29/17 | 1730 |
| FedEx | Beth Bennett | 06/30/17 | 1009 |
| Relinquished by: (Signature) | Received by: (Signature) | Date: | Time: |

Vista Analytical Laboratory

# Sample Log-in Checklist

**Vista Work Order #:** 1700804 **TAT** 14

| | | | |
|---|---|---|---|
| **Samples Arrival:** | **Date/Time** 06/30/17 0954 | **Initials:** BLB | **Location:** WR-2 **Shelf/Rack:** NA |
| **Logged In:** | **Date/Time** 06/30/17 1504 | **Initials:** BLB | **Location:** WR-2 **Shelf/Rack:** E5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Delivered By:** | FedEx | UPS | On Trac | GSO | DHL | Hand Delivered | Other |
| **Preservation:** | Ice | | Blue Ice | | Dry Ice | | None |

| | | | |
|---|---|---|---|
| **Temp °C:** 1.5 (uncorrected) | **Time:** 1013 | **Thermometer ID:** DT-3 |
| **Temp °C:** 0.8 (corrected) | **Probe used:** Yes ☑ No ☐ | |

| | YES | NO | NA |
|---|---|---|---|
| Adequate Sample Volume Received? | ✓ | | |
| Holding Time Acceptable? | ✓ | | |
| Shipping Container(s) Intact? | ✓ | | |
| Shipping Custody Seals Intact? | ✓ | | |
| Shipping Documentation Present? | ✓ | | |
| Airbill — Trk # 8081 9079 5297 | ✓ | | |
| Sample Container Intact? | ✓ | | |
| Sample Custody Seals Intact? | | | ✓ |
| Chain of Custody / Sample Documentation Present? | ✓ | | |
| COC Anomaly/Sample Acceptance Form completed? | | ✓ | ✓ |
| If Chlorinated or Drinking Water Samples, Acceptable Preservation? | | | ✓ |

| | | | | | | |
|---|---|---|---|---|---|---|
| Preservation Documented: | $Na_2S_2O_3$ | Trizma | None | Yes | No | NA |
| Shipping Container | Vista BLB | Client | Retain BLB 6/30/17 | Return | Dispose | |

*Comments:*

## EXTRACTION INFORMATION

Process Sheet

**Workorder: 1700804**

RX

Prep Expiration: 2017-Jul-13
Client: KMEA

**Workorder Due: 17-Jul-17 00:00**

TAT: 17

Method: **537M PFAS DOD (LOQ as mRL)**
Matrix: **Aqueous**

Prep Batch: B760049

Prep Data Entered: HB 7/14/17
Date and Initials

Version: 537 (14 Analyte)

Initial Sequence: _____

| LabSampleID | Recon | ClientSampleID | Date Received | Location | Comments |
|---|---|---|---|---|---|
| 1700804-01 | ☑ | IRPSite7-GW-07GW41-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-02 | ☑ | IRPSite5-GW-05GW01-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-03 | ☑ | IRPSite5-GW-FD01-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-04 | ☑ | IRPSite33-GW-FRB01-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-05 | ☑ | IRPSite33-GW-11MW204D-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-06 | ☑ | IRPSite33-GW-11MW204S-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-07 | ☑ | Bldg 110-GW-11MW205D-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-08 | ☑ | Bldg 110-GW-FRB01-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-09 | ☑ | Bldg 110-GW-11MW205S-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-10 | ☑ | IRPSite7-GW-07GW102-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |
| 1700804-11 | ☑ | IRPSite5-GW-04GW82-20170629 | 30-Jun-17 09:54 | WR-2 E-5 | |

- samples prepped, HC 7/11/17
Not able to do MS/MSD because insufficient samples HC 7/11/17

Vista PM:Martha Maier

**Vial Box ID:** egg-Static

Sample Reconciled By: _____ 7/11/17

# Batch: B7G0049

# Matrix: Aqueous

| LabNumber | WetWeight (Initial) | % Solids (Extraction Solids) | DryWeight | Final | Extracted | Ext By | Spike | SpikeAmount | ClientMatrix | Analysis |
|---|---|---|---|---|---|---|---|---|---|---|
| **1700804-01RE1** | 0.12057 ✓ | NA | NA | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-02RE1** | 0.11467 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-03RE1** | 0.11258 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-04RE1** | 0.12271 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-05RE1** | 0.1173 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-06RE1** | 0.1166 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-07RE1** | 0.11741 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-08RE1** | 0.11979 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-09RE1** | 0.1117 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-10RE1** | 0.12078 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **1700804-11RE1** | 0.11659 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | Water | 537M PFAS DOD (LOQ as |
| **B7G0049-BLK1** | 0.125 ✓ | | | 1000 | 13-Jul-17 09:00 | HAC | | | | QC |
| **B7G0049-BS1** | 0.125 ✓ | ✓ | ✓ | 1000 | 13-Jul-17 09:00 | HAC | 17D2705 ✓ | 10 ✓ | | QC |

HB 7/14 7/14/17

HB 7/14/17

## PREPARATION BENCH SHEET

**Matrix: Aqueous**

**Method: 537M PFAS DOD (LOO as mRL)**

B7G0049

Chemist: BP

Prep Date/Time: 11-Jul-17 14:24 7/13/17 0900 HC

**Prepared using: LCMS - SPE Extraction-LCMS**

C7G005

| C | VISTA Sample ID | pH Before | pH After | Chlorine (Cl) | Drops HCl Added | Bottle + Sample (g) | Bottle Only (g) | Sample Amt. (L) | IS/NS CHEM/WIT DATE | SPE | RS CHEM/WIT DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ☒ | B7G0049-BLK1 | 5 | 2 | 0 | 2 | NA | NA | (0.125) | BP HC 7.13.17 | HC 7.13.17 | BP HC 7.13.17 |
| ☒ | B7G0049-BS1 | 5 | 2 | 0 | 2 | NA | NA | ↓ | | | |
| ☒ | 1700804-01RE1 (A) | 6 | 2 | 0 | 3 | 147.56 | 26.99 | 0.12057 | ✓ | | |
| ☒ | 1700804-02RE1 | 5 | 2 | 0 | 2 | 141.92 | 27.25 | 0.11467 | ✓ | | |
| ☒ | 1700804-03RE1 | 5 | 2 | 0 | 2 | 140.00 | 27.42 | 0.11258 | ✓ | | |
| ☒ | 1700804-04RE1 | 4 | 2 | 0 | 2 | 150.12 | 27.41 | 0.12271 | ✓ | | |
| ☒ | 1700804-05RE1 (A) | 5 | 2 | 0 | 2 | ~~HC 7/11/17 143.97~~ 144.64 | 27.39 | 0.11730 | ✓ | | |
| ☒ | 1700804-06RE1 | 5 | 2 | 0 | 2 | 143.99 | 27.39 | 0.11660 | ✓ | | |
| ☒ | 1700804-07RE1 (A) | 6 | 2 | 0 | 3 | 144.84 | 27.43 | 0.11741 | ✓ | | |
| ☒ | 1700804-08RE1 | 5 | 2 | 0 | 2 | 147.23 | 27.44 | 0.11979 | ✓ | | |
| ☒ | 1700804-09RE1 (A) | 7 | 2 | 0 | 3 | 139.09 | 27.39 | 0.11170 | ✓ | | |
| ☒ | 1700804-10RE1 (A) | 5 | 2 | 0 | 2 | 148.30 | 27.52 | 0.12078 | ✓ | | |
| ☒ | 1700804-11RE1 (A) | 5 | 2 | 0 | 2 | 144.01 | 27.42 | 0.11659 | ✓ | | |

(A) Samples centrifuged to remove particulate matter HC 7/11/17

| IS Name | NS Name | RS Name | | |
|---|---|---|---|---|
| 17E2617, 10µL (V1) | 17D2705, 10µL (V2) | 17F3058, 10µL (V3) | SPE Chem: Strata X-AW 33µm 200mg/6mL<br>Ele SOLV: 0.5% Hydroxide in MeOH/MeOH<br>Final Volume(s): 1 mL | Check Out: Chemist/Date: HC 7/13/17<br>Check In: Chemist/Date: NA<br>Balance ID: HRMS-8<br>pH Adjusted: Chemist/Date: HC 7/11/17 |

Comments: Assume 1 g = 1 mL

## SAMPLE DATA – MODIFIED EPA METHOD 537

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-7.qld

Last Altered: Monday, July 17, 2017 16:11:13 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:11:29 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_7, Date: 13-Jul-2017, Time: 17:10:36, ID: B7G0049-BLK1 Method Blank 0.125, Description: Method Blank**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | | 4.04e3 | 0.1250 | | 2.92 | | | | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | | 1.30e4 | 0.1250 | | 3.16 | | | | |
| 3 | 3 | PFHpA | 363 > 318.9 | | 2.85e4 | 0.1250 | | 3.43 | | | | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 1.65e1 | 3.24e3 | 0.1250 | | 3.55 | 3.45 | 0.0638 | 0.682 | |
| 5 | 5 | PFOA | 413 > 368.7 | | 3.23e4 | 0.1250 | | 3.63 | | | | |
| 6 | 6 | PFNA | 462.9 > 418.8 | | 2.04e4 | 0.1250 | | 3.82 | | | | |
| 7 | 7 | PFOS | 499 > 79.9 | | 2.69e3 | 0.1250 | | 3.86 | | | | |
| 8 | 8 | PFDA | 513 > 468.8 | | 7.26e3 | 0.1250 | | 4.00 | | | | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 3.42e3 | 0.1250 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 8.58e2 | 0.1250 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 8.93e2 | 0.1250 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 2.90e2 | 0.1250 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 2.90e2 | 0.1250 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 5.94e3 | 0.1250 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.66e3 | 1.70e3 | 0.1250 | 0.918 | 1.43 | 1.36 | 12.2 | 106 | 106.4 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.71e4 | 3.99e4 | 0.1250 | 0.275 | 2.72 | 2.65 | 4.65 | 135 | 135.3 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 4.04e3 | 3.99e4 | 0.1250 | 0.033 | 2.92 | 2.89 | 0.507 | 122 | 122.3 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.30e4 | 3.99e4 | 0.1250 | 0.304 | 3.16 | 3.12 | 1.63 | 43.0 | 107.4 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.85e4 | 3.99e4 | 0.1250 | 0.306 | 3.43 | 3.38 | 3.56 | 93.2 | 93.2 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 3.24e3 | 6.29e3 | 0.1250 | 0.437 | 3.55 | 3.45 | 6.44 | 118 | 117.9 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.23e4 | 2.73e4 | 0.1250 | 1.292 | 3.63 | 3.58 | 14.8 | 91.4 | 91.4 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.04e4 | 2.08e4 | 0.1250 | 0.980 | 3.82 | 3.76 | 12.3 | 100 | 100.3 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 2.69e3 | 2.52e3 | 0.1250 | 1.098 | 3.86 | 3.81 | 13.3 | 97.0 | 97.0 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 7.26e3 | 8.10e3 | 0.1250 | 0.928 | 4.00 | 3.92 | 11.2 | 96.5 | 96.5 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 3.42e3 | 3.94e3 | 0.1250 | 1.083 | 4.16 | 4.08 | 10.8 | 80.2 | 80.2 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 8.58e2 | 3.94e3 | 0.1250 | 0.224 | 4.00 | 3.95 | 2.72 | 96.9 | 96.9 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 8.93e2 | 3.94e3 | 0.1250 | 0.230 | 4.08 | 4.02 | 2.83 | 98.5 | 98.5 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 2.90e2 | 3.94e3 | 0.1250 | 0.130 | 4.32 | 4.23 | 0.920 | 56.7 | 56.7 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 5.94e3 | 3.94e3 | 0.1250 | 1.018 | 4.66 | 4.57 | 18.8 | 148 | 147.8 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.70e3 | 1.70e3 | 0.1250 | 1.000 | 1.43 | 1.36 | 12.5 | 100 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 3.99e4 | 3.99e4 | 0.1250 | 1.000 | 3.18 | 3.12 | 5.00 | 40.0 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 6.29e3 | 6.29e3 | 0.1250 | 1.000 | 3.55 | 3.45 | 12.5 | 100 | 100.0 |

AC 7/17/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-7.qld

Last Altered: Monday, July 17, 2017 16:11:13 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:11:29 Pacific Daylight Time

**Name: 170713M1_7, Date: 13-Jul-2017, Time: 17:10:36, ID: B7G0049-BLK1 Method Blank 0.125, Description: Method Blank**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.73e4 | 2.73e4 | 0.1250 | 1.000 | 3.63 | 3.58 | 12.5 | 100 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.08e4 | 2.08e4 | 0.1250 | 1.000 | 3.82 | 3.76 | 12.5 | 100 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 2.52e3 | 2.52e3 | 0.1250 | 1.000 | 3.86 | 3.81 | 12.5 | 100 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 8.10e3 | 8.10e3 | 0.1250 | 1.000 | 4.00 | 3.93 | 12.5 | 100 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 3.94e3 | 3.94e3 | 0.1250 | 1.000 | 4.16 | 4.08 | 12.5 | 100 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 0.00e0 | 4.04e3 | 0.1250 | | 2.92 | | 0.000 | | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 1.65e1 | 3.24e3 | 0.1250 | | 3.55 | | 0.0638 | 0.682 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 0.00e0 | 3.23e4 | 0.1250 | | 3.63 | | 0.000 | | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 0.00e0 | 2.69e3 | 0.1250 | | 3.86 | | 0.000 | | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 8.58e2 | 0.1250 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 8.93e2 | 0.1250 | | 4.30 | | 0.000 | | |

AC 7/17/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-7.qld

Last Altered: Monday, July 17, 2017 16:11:13 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:11:29 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_7, Date: 13-Jul-2017, Time: 17:10:36, ID: B7G0049-BLK1 Method Blank 0.125, Description: Method Blank**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.45 | 16.543 | 3242.886 | 0.064 | MM | 0.7 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

AC 7/17/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

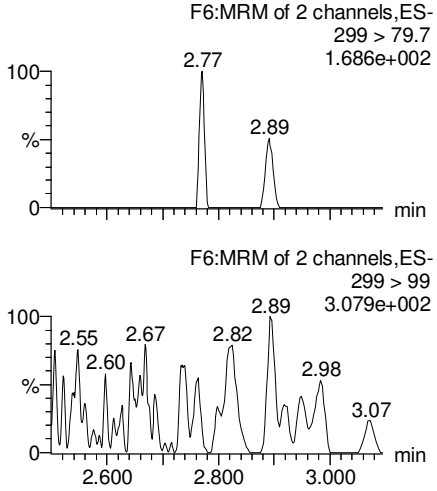
Dataset: U:\Q4.PRO\results\170713M1\170713M1-7.qld

Last Altered: Monday, July 17, 2017 16:11:13 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:11:29 Pacific Daylight Time

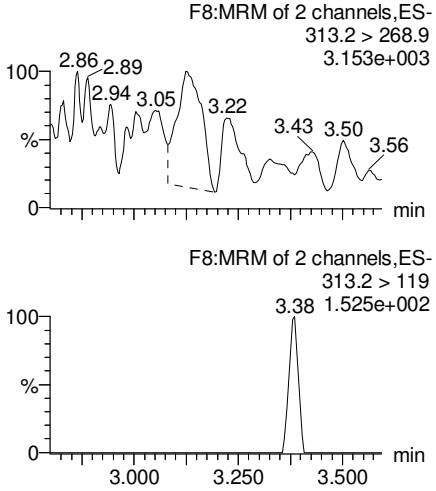
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_7, Date: 13-Jul-2017, Time: 17:10:36, ID: B7G0049-BLK1 Method Blank 0.125, Description: Method Blank**

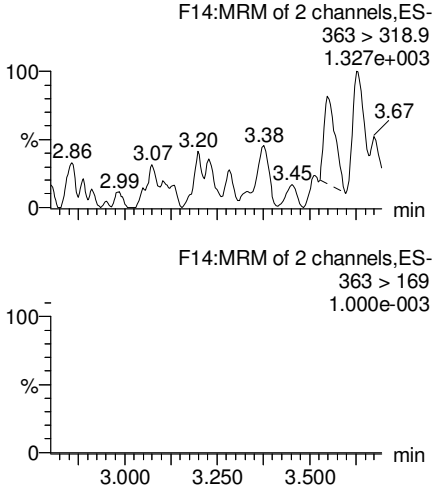
**Total PFBS**



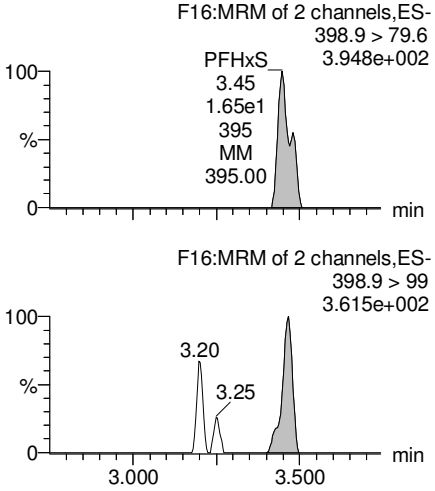

**PFHxA**



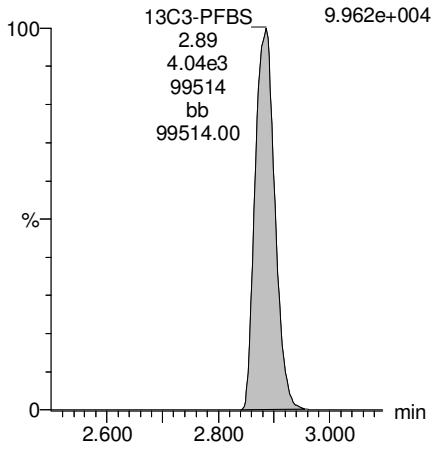

**PFHpA**



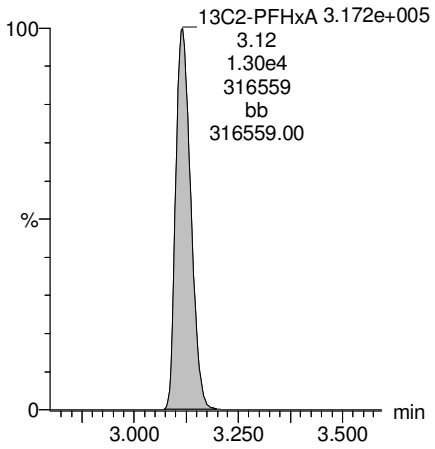

**Total PFHxS**



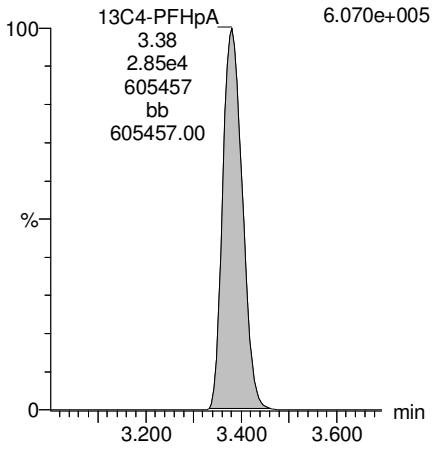

**13C3-PFBS**



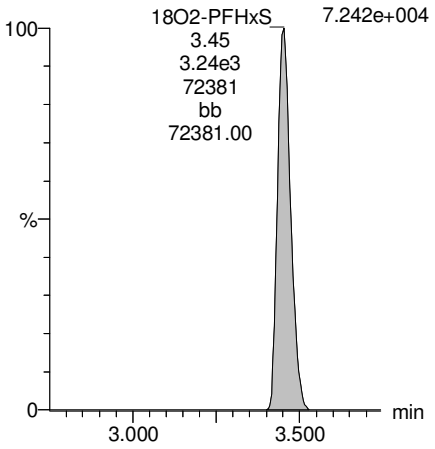

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

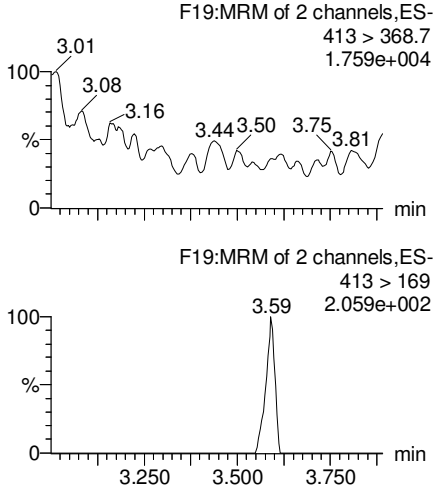
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-7.qld

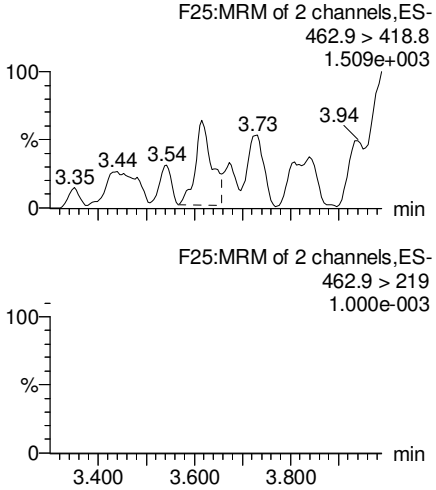
Last Altered: Monday, July 17, 2017 16:11:13 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:11:29 Pacific Daylight Time

**Name: 170713M1_7, Date: 13-Jul-2017, Time: 17:10:36, ID: B7G0049-BLK1 Method Blank 0.125, Description: Method Blank**

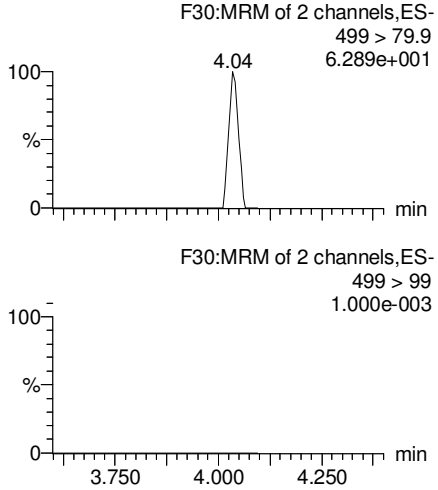
**Total PFOA**



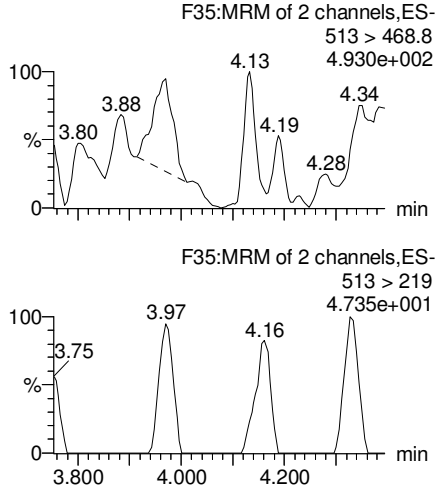

**PFNA**



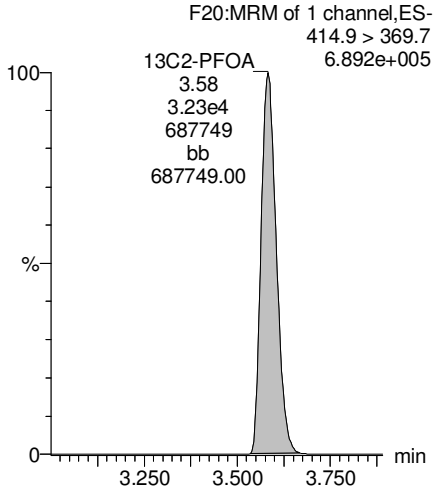

**Total PFOS**



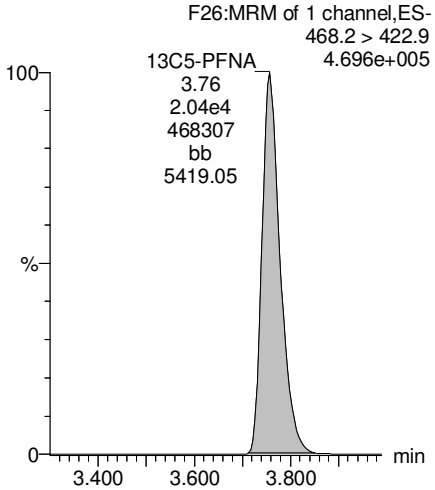

**PFDA**



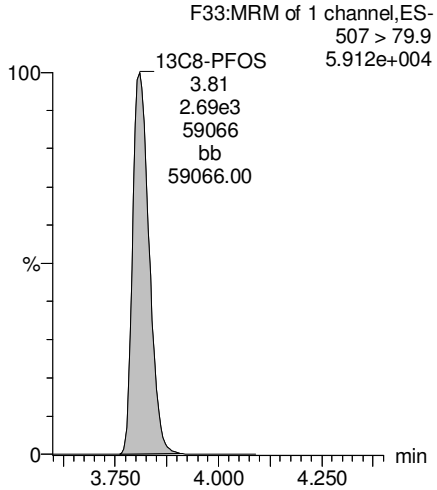

**13C2-PFOA**



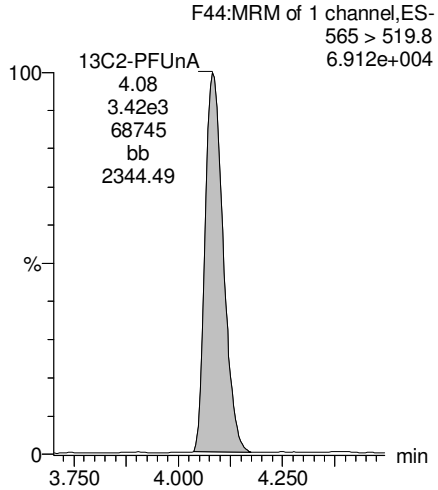

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**

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Vista Analytical Laboratory

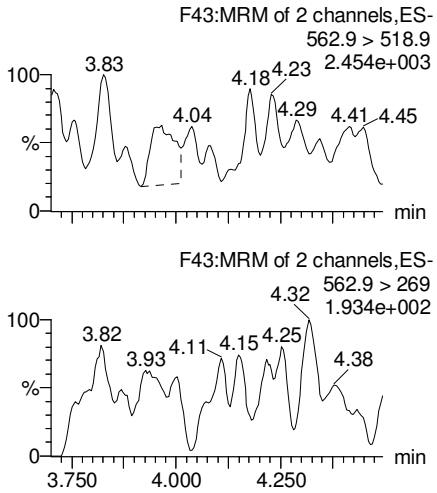
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-7.qld

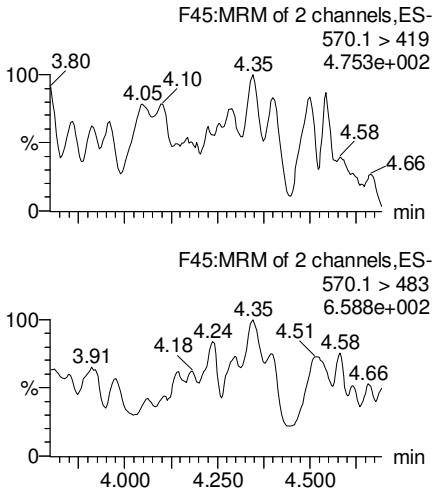
Last Altered: Monday, July 17, 2017 16:11:13 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:11:29 Pacific Daylight Time

**Name: 170713M1_7, Date: 13-Jul-2017, Time: 17:10:36, ID: B7G0049-BLK1 Method Blank 0.125, Description: Method Blank**

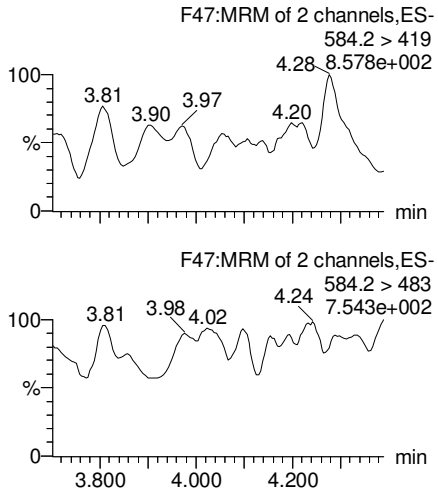
**PFUnA**



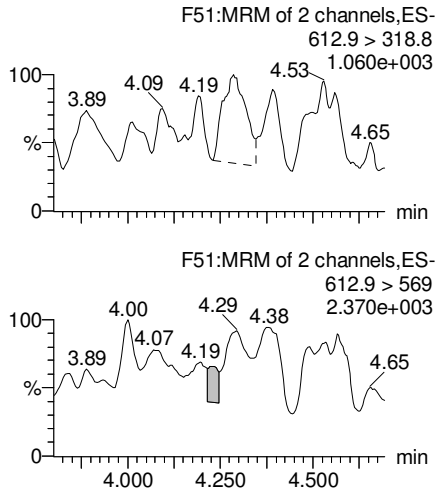

**N-MeFOSAA**



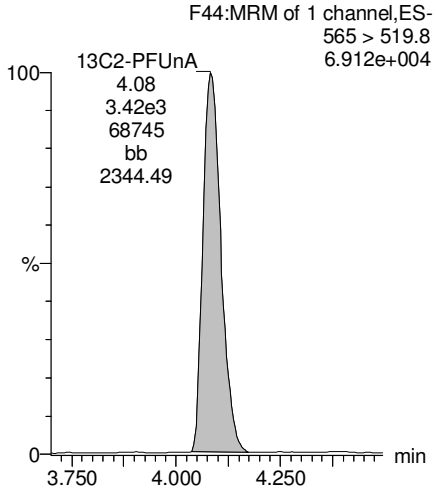

**N-EtFOSAA**



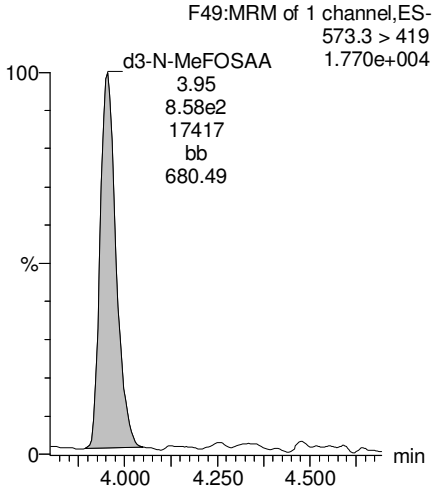

**PFDoA**



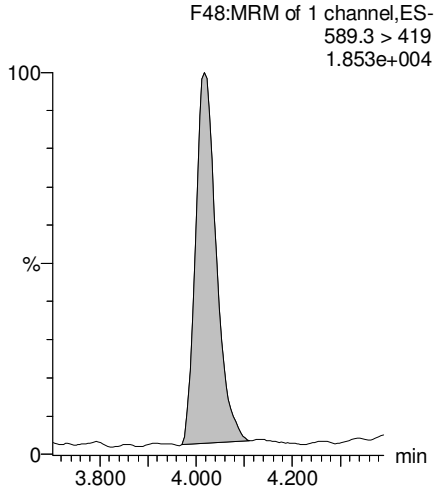

**13C2-PFUnA**



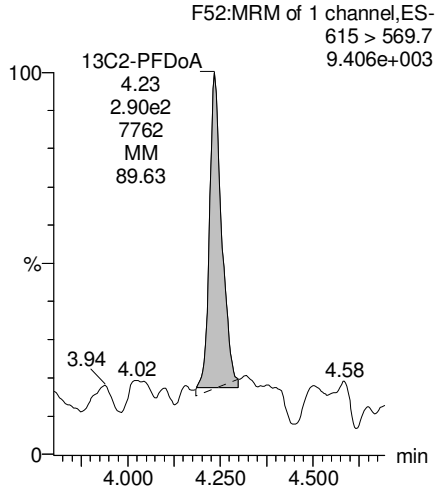

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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Vista Analytical Laboratory

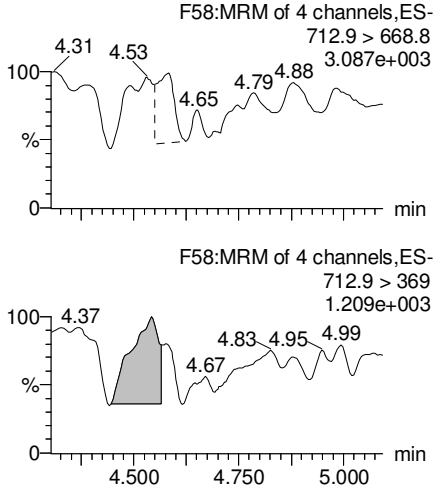
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-7.qld

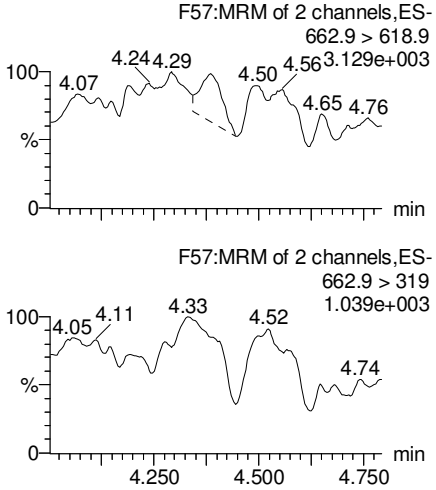
Last Altered: Monday, July 17, 2017 16:11:13 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:11:29 Pacific Daylight Time

**Name: 170713M1_7, Date: 13-Jul-2017, Time: 17:10:36, ID: B7G0049-BLK1 Method Blank 0.125, Description: Method Blank**

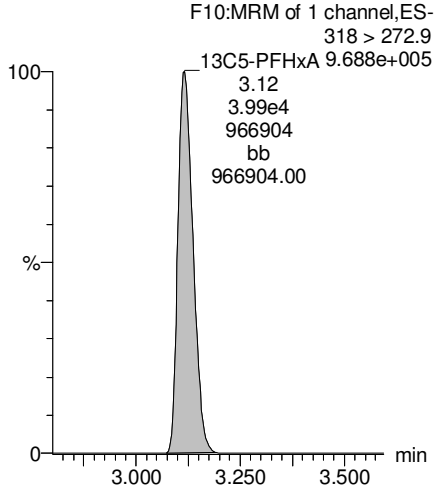
**PFTeDA**



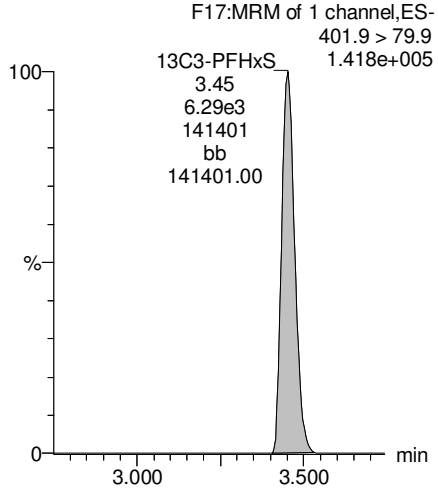

**PFTrDA**



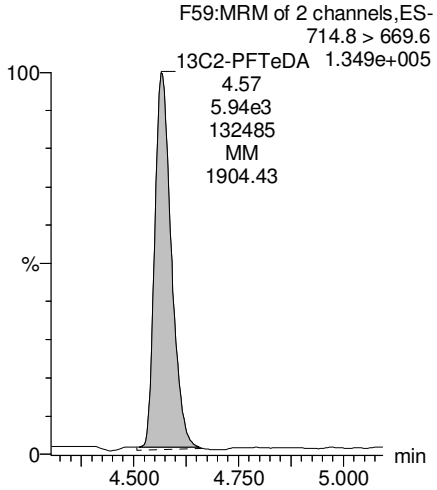

**13C5-PFHxA**



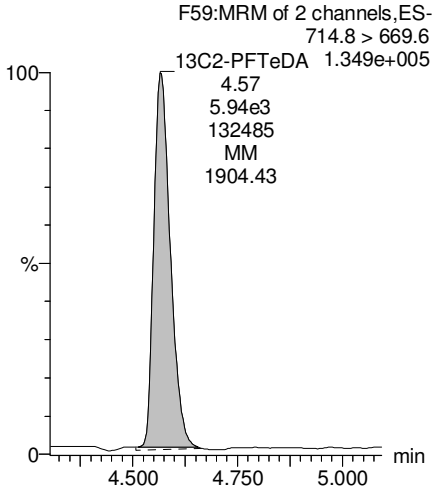

**13C3-PFHxS**



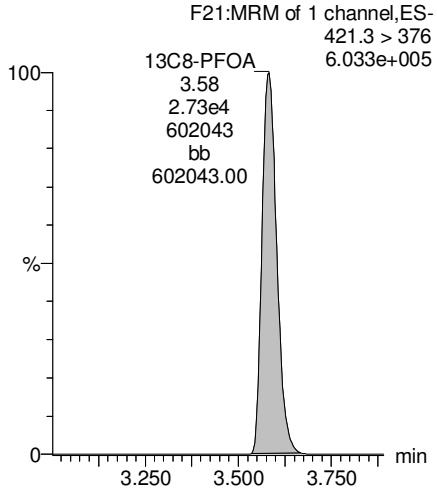

**13C2-PFTeDA**



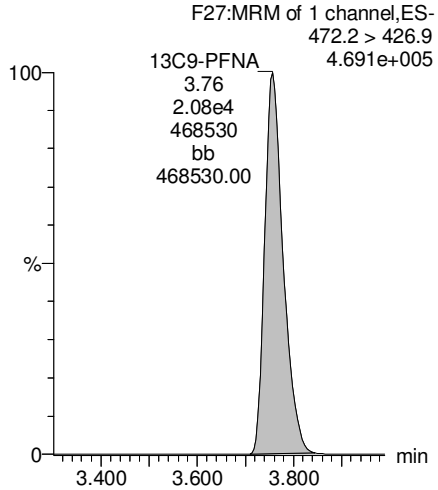

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

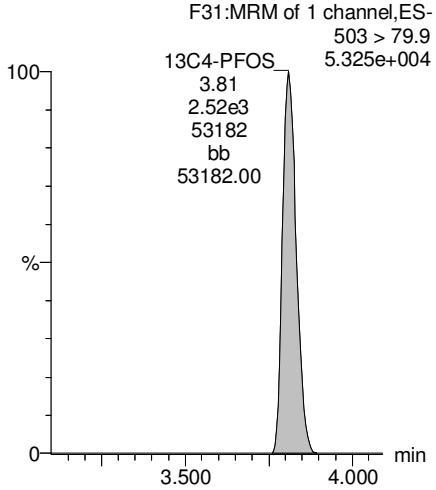
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-7.qld

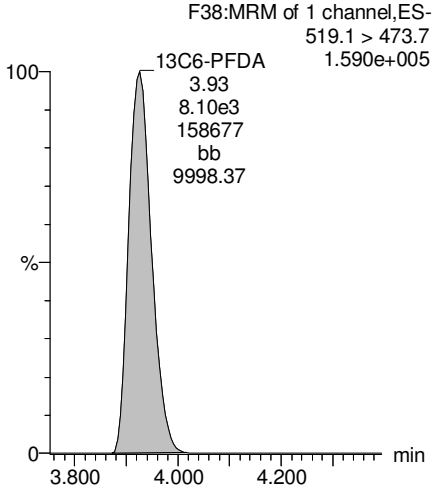
Last Altered: Monday, July 17, 2017 16:11:13 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:11:29 Pacific Daylight Time

**Name: 170713M1_7, Date: 13-Jul-2017, Time: 17:10:36, ID: B7G0049-BLK1 Method Blank 0.125, Description: Method Blank**

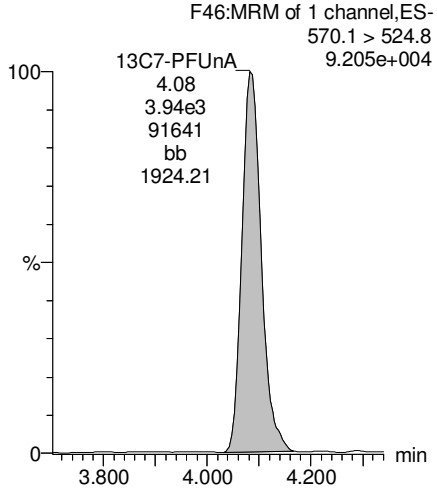
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-4.qld

Last Altered: Monday, July 17, 2017 16:06:48 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:06:54 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_4, Date: 13-Jul-2017, Time: 16:38:24, ID: B7G0049-BS1 OPR 0.125, Description: OPR**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 5.94e3 | 4.00e3 | 0.1250 | | 2.92 | 2.87 | 18.5 | 65.5 | 81.9 |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 3.51e4 | 1.18e4 | 0.1250 | | 3.16 | 3.10 | 14.8 | 72.1 | 90.1 |
| 3 | 3 | PFHpA | 363 > 318.9 | 2.49e4 | 2.58e4 | 0.1250 | | 3.43 | 3.37 | 12.1 | 67.1 | 83.8 |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 3.99e3 | 2.85e3 | 0.1250 | | 3.55 | 3.44 | 17.5 | 76.3 | 95.3 |
| 5 | 5 | PFOA | 413 > 368.7 | 2.36e4 | 3.03e4 | 0.1250 | | 3.63 | 3.57 | 9.76 | 67.8 | 84.8 |
| 6 | 6 | PFNA | 462.9 > 418.8 | 1.64e4 | 1.76e4 | 0.1250 | | 3.82 | 3.75 | 11.7 | 68.2 | 85.2 |
| 7 | 7 | PFOS | 499 > 79.9 | 3.05e3 | 3.48e3 | 0.1250 | | 3.86 | 3.80 | 11.0 | 78.0 | 97.5 |
| 8 | 8 | PFDA | 513 > 468.8 | 9.81e3 | 1.01e4 | 0.1250 | | 4.00 | 3.91 | 12.1 | 64.5 | 80.7 |
| 9 | 9 | PFUnA | 562.9 > 518.9 | 4.58e3 | 5.92e3 | 0.1250 | | 4.16 | 4.08 | 9.67 | 73.5 | 91.9 |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | 1.67e3 | 1.28e3 | 0.1250 | | 4.00 | 3.95 | 16.3 | 69.9 | 87.3 |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | 1.52e3 | 1.48e3 | 0.1250 | | 4.08 | 4.01 | 12.8 | 75.6 | 94.5 |
| 12 | 12 | PFDoA | 612.9 > 318.8 | 5.78e2 | 6.79e2 | 0.1250 | | 4.32 | 4.23 | 10.6 | 102 | 127.4 |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | 8.67e3 | 6.79e2 | 0.1250 | | 4.50 | 4.39 | 160 | 95.0 | 118.8 |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | 6.62e3 | 6.63e3 | 0.1250 | | 4.66 | 4.55 | 12.5 | 79.0 | 98.8 |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.54e3 | 1.61e3 | 0.1250 | 0.918 | 1.43 | 1.38 | 12.0 | 104 | 104.2 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.40e4 | 3.82e4 | 0.1250 | 0.275 | 2.72 | 2.64 | 4.44 | 129 | 129.3 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 4.00e3 | 3.82e4 | 0.1250 | 0.033 | 2.92 | 2.87 | 0.524 | 126 | 126.4 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.18e4 | 3.82e4 | 0.1250 | 0.304 | 3.16 | 3.10 | 1.55 | 40.7 | 101.8 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.58e4 | 3.82e4 | 0.1250 | 0.306 | 3.43 | 3.37 | 3.37 | 88.2 | 88.2 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.85e3 | 5.96e3 | 0.1250 | 0.437 | 3.55 | 3.44 | 5.97 | 109 | 109.2 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.03e4 | 2.25e4 | 0.1250 | 1.292 | 3.63 | 3.57 | 16.8 | 104 | 104.1 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 1.76e4 | 1.78e4 | 0.1250 | 0.980 | 3.82 | 3.75 | 12.4 | 101 | 100.8 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 3.48e3 | 3.00e3 | 0.1250 | 1.098 | 3.86 | 3.80 | 14.5 | 106 | 105.6 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 1.01e4 | 1.17e4 | 0.1250 | 0.928 | 4.00 | 3.91 | 10.8 | 93.1 | 93.1 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 5.92e3 | 8.37e3 | 0.1250 | 1.083 | 4.16 | 4.08 | 8.84 | 65.4 | 65.4 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 1.28e3 | 8.37e3 | 0.1250 | 0.224 | 4.00 | 3.95 | 1.91 | 68.2 | 68.2 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.48e3 | 8.37e3 | 0.1250 | 0.230 | 4.08 | 4.01 | 2.21 | 77.0 | 77.0 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 6.79e2 | 8.37e3 | 0.1250 | 0.130 | 4.32 | 4.24 | 1.01 | 62.5 | 62.5 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 6.63e3 | 8.37e3 | 0.1250 | 1.018 | 4.66 | 4.56 | 9.90 | 77.8 | 77.8 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.61e3 | 1.61e3 | 0.1250 | 1.000 | 1.43 | 1.39 | 12.5 | 100 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 3.82e4 | 3.82e4 | 0.1250 | 1.000 | 3.18 | 3.10 | 5.00 | 40.0 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 5.96e3 | 5.96e3 | 0.1250 | 1.000 | 3.55 | 3.44 | 12.5 | 100 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-4.qld

Last Altered: Monday, July 17, 2017 16:06:48 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:06:54 Pacific Daylight Time

**Name: 170713M1_4, Date: 13-Jul-2017, Time: 16:38:24, ID: B7G0049-BS1 OPR 0.125, Description: OPR**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.25e4 | 2.25e4 | 0.1250 | 1.000 | 3.63 | 3.57 | 12.5 | 100 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 1.78e4 | 1.78e4 | 0.1250 | 1.000 | 3.82 | 3.75 | 12.5 | 100 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 3.00e3 | 3.00e3 | 0.1250 | 1.000 | 3.86 | 3.80 | 12.5 | 100 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.17e4 | 1.17e4 | 0.1250 | 1.000 | 4.00 | 3.91 | 12.5 | 100 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 8.37e3 | 8.37e3 | 0.1250 | 1.000 | 4.16 | 4.08 | 12.5 | 100 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 5.94e3 | 4.00e3 | 0.1250 | | 2.92 | | 18.5 | 65.5 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 3.99e3 | 2.85e3 | 0.1250 | | 3.55 | | 17.5 | 76.3 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 2.36e4 | 3.03e4 | 0.1250 | | 3.63 | | 9.76 | 67.8 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 3.05e3 | 3.48e3 | 0.1250 | | 3.86 | | 11.0 | 78.0 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 1.67e3 | 1.28e3 | 0.1250 | | 4.20 | | 16.3 | 69.9 | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 1.52e3 | 1.48e3 | 0.1250 | | 4.30 | | 12.8 | 75.6 | |

AC 7/17/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-4.qld

Last Altered: Monday, July 17, 2017 16:06:48 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:06:54 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_4, Date: 13-Jul-2017, Time: 16:38:24, ID: B7G0049-BS1 OPR 0.125, Description: OPR**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.87 | 5936.681 | 4003.364 | 18.537 | bb | 65.5 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.44 | 3993.775 | 2848.447 | 17.526 | MM | 76.3 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | 3.57 | 23643.381 | 30281.287 | 9.760 | bb | 67.8 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.80 | 3052.613 | 3476.254 | 10.977 | MM | 78.0 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | N-MeFOSAA | 570.1 > 419 | 3.95 | 1670.274 | 1281.585 | 16.291 | bb | 69.9 |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | N-EtFOSAA | 584.2 > 419 | 4.01 | 1522.363 | 1481.698 | 12.843 | bb | 75.6 |

AC 7/17/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

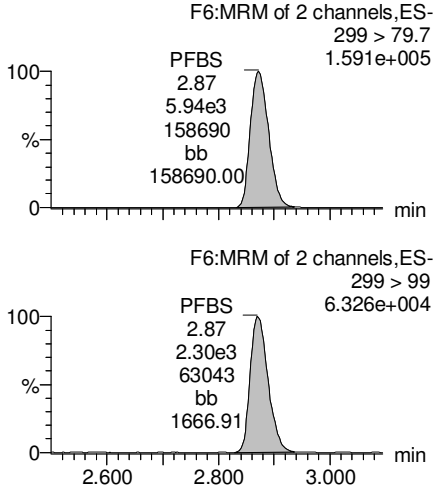
Dataset: U:\Q4.PRO\results\170713M1\170713M1-4.qld

Last Altered: Monday, July 17, 2017 16:06:48 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:06:54 Pacific Daylight Time

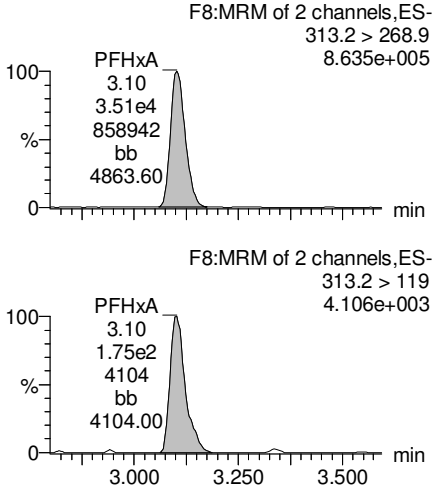
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_4, Date: 13-Jul-2017, Time: 16:38:24, ID: B7G0049-BS1 OPR 0.125, Description: OPR**

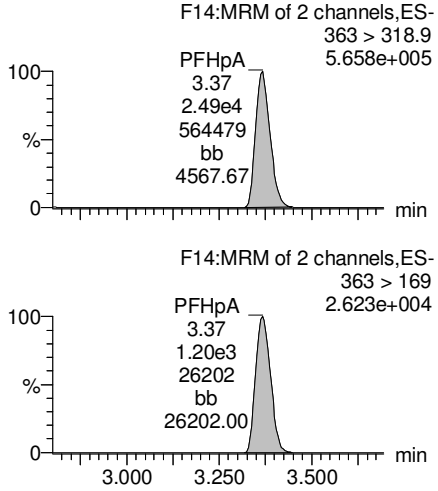
**Total PFBS**



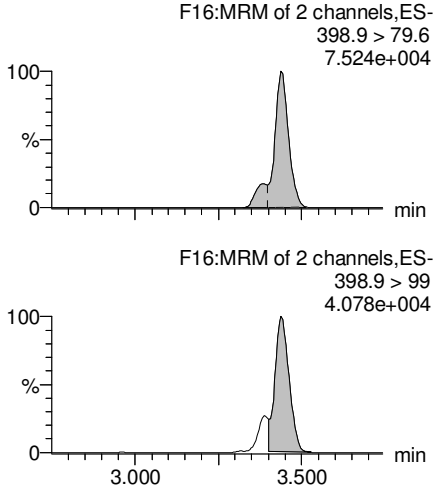

**PFHxA**



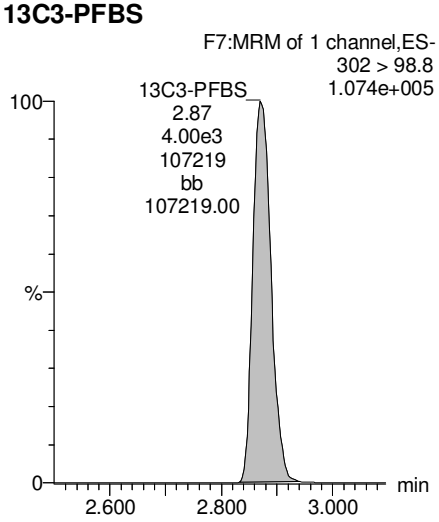

**PFHpA**



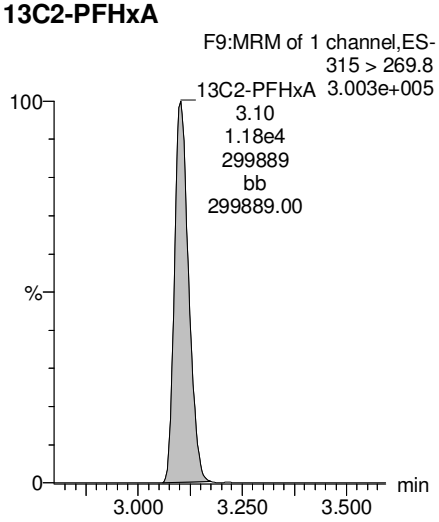

**Total PFHxS**



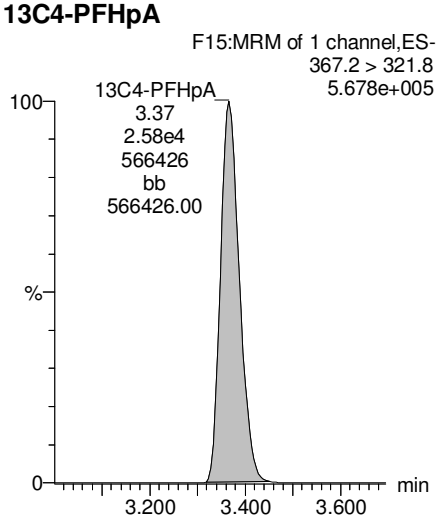

**13C3-PFBS**



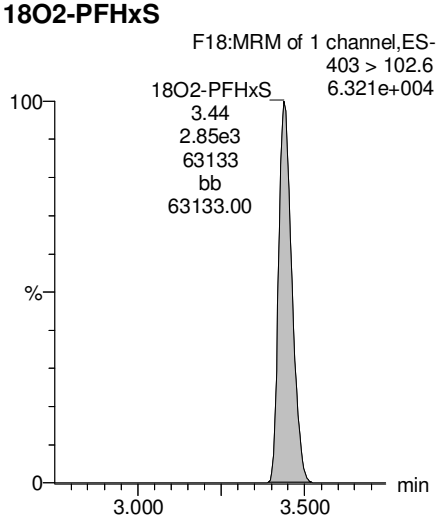

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**




AC 7/17/17

Vista Analytical Laboratory

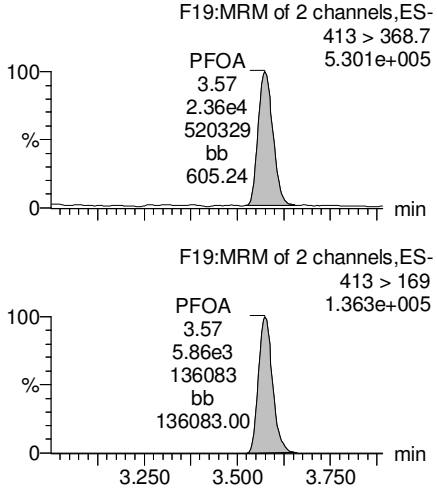
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-4.qld

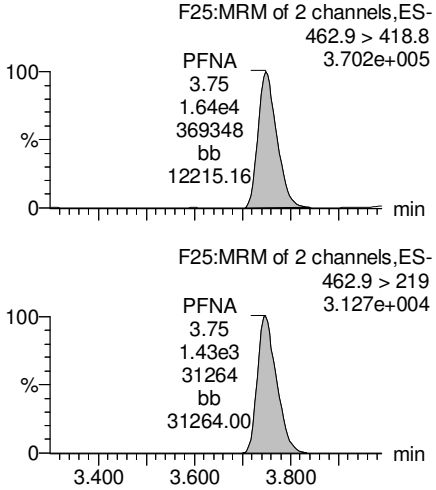
Last Altered: Monday, July 17, 2017 16:06:48 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:06:54 Pacific Daylight Time

**Name: 170713M1_4, Date: 13-Jul-2017, Time: 16:38:24, ID: B7G0049-BS1 OPR 0.125, Description: OPR**

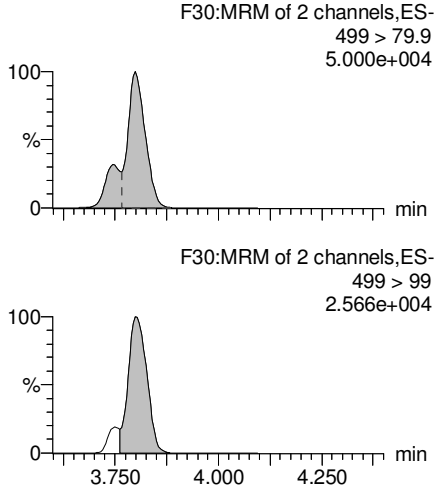
**Total PFOA**



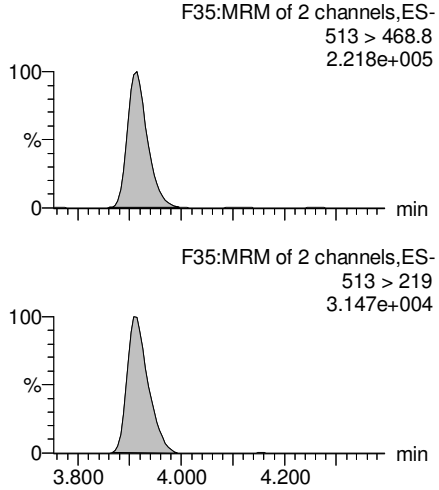

**PFNA**



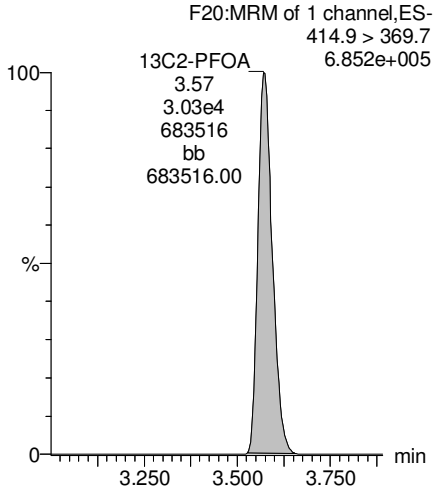

**Total PFOS**



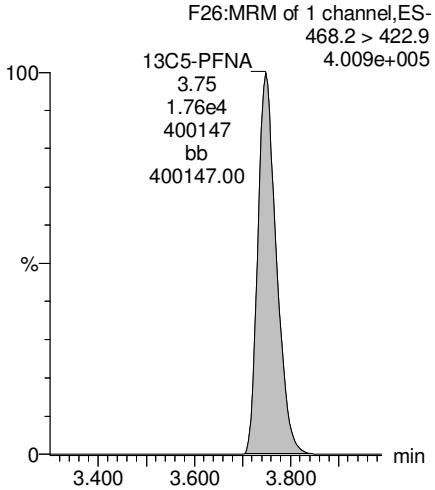

**PFDA**



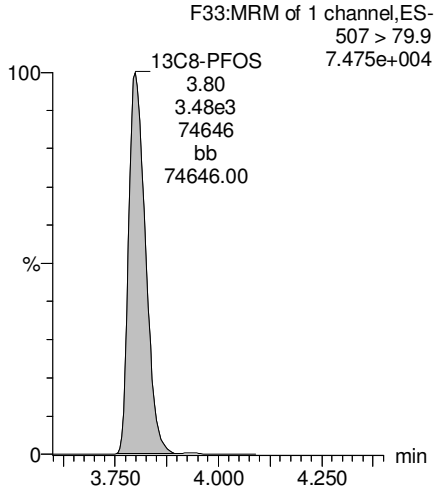

**13C2-PFOA**



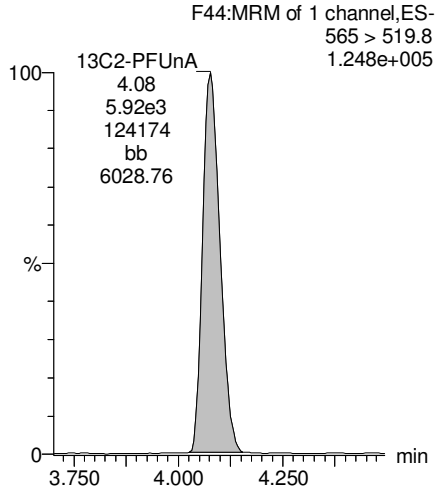

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**




AC 7/17/17

Vista Analytical Laboratory

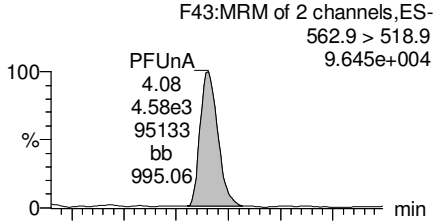
Reviewed: WJL 7/19/2017

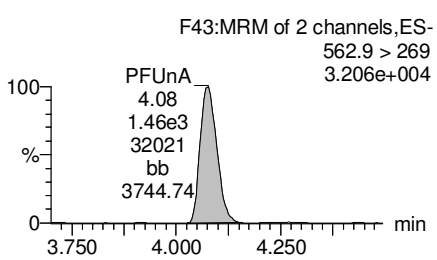
Dataset: U:\Q4.PRO\results\170713M1\170713M1-4.qld

Last Altered: Monday, July 17, 2017 16:06:48 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:06:54 Pacific Daylight Time

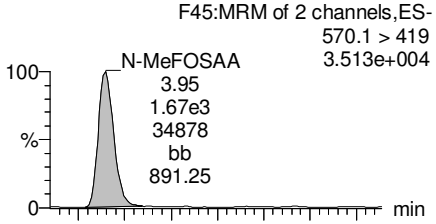
**Name: 170713M1_4, Date: 13-Jul-2017, Time: 16:38:24, ID: B7G0049-BS1 OPR 0.125, Description: OPR**

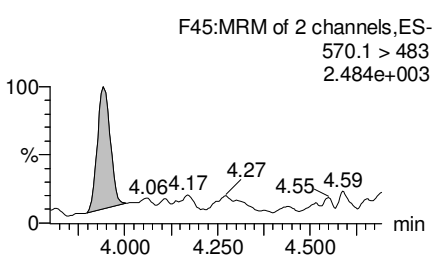
**PFUnA**



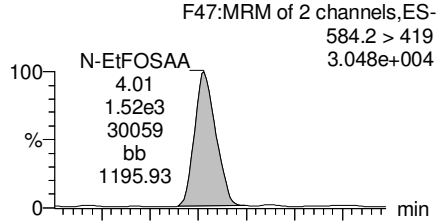



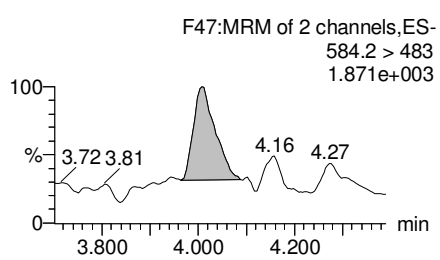

**N-MeFOSAA**



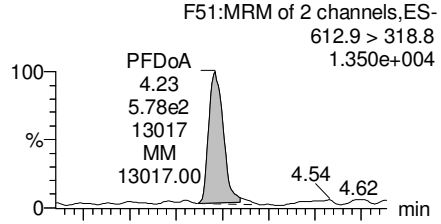



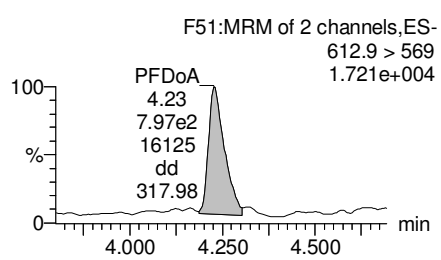

**N-EtFOSAA**



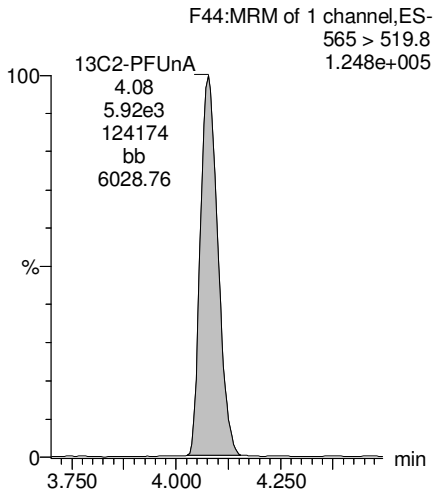




**PFDoA**

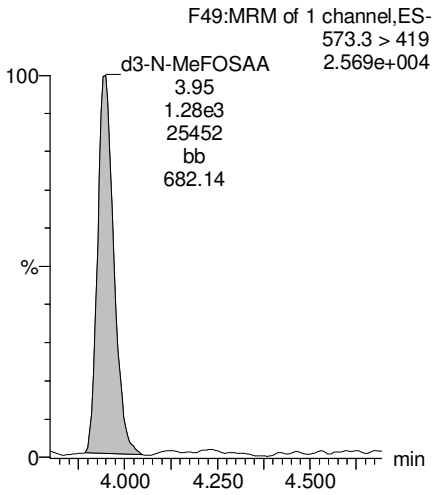


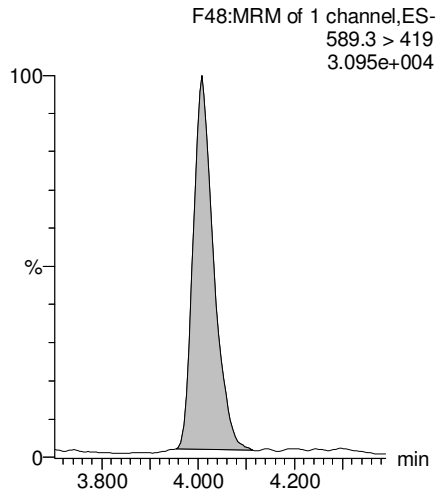

**13C2-PFUnA**



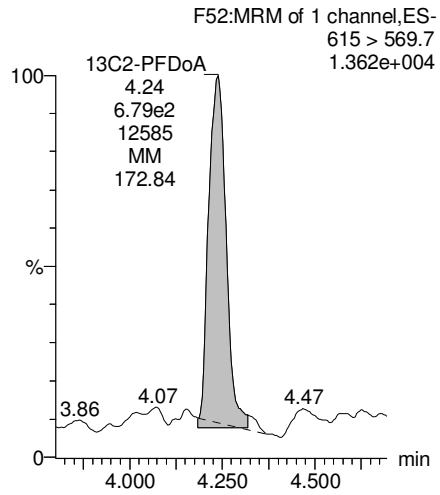

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**




AC 7/17/17

Vista Analytical Laboratory

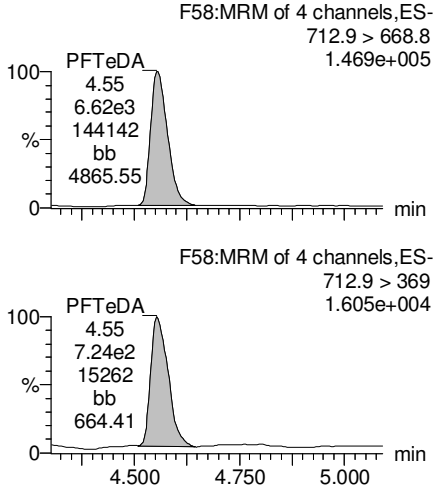
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-4.qld

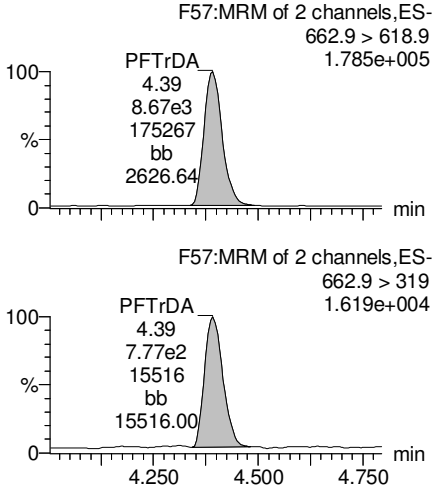
Last Altered: Monday, July 17, 2017 16:06:48 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:06:54 Pacific Daylight Time

**Name: 170713M1_4, Date: 13-Jul-2017, Time: 16:38:24, ID: B7G0049-BS1 OPR 0.125, Description: OPR**

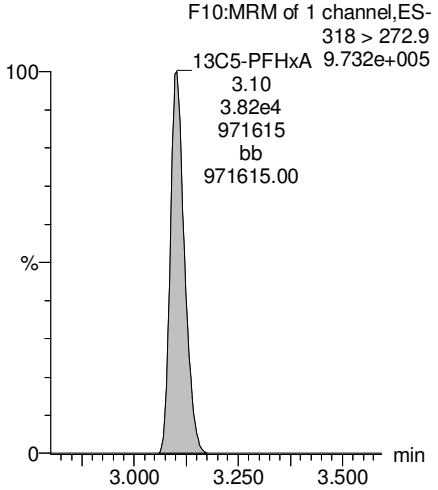
**PFTeDA**



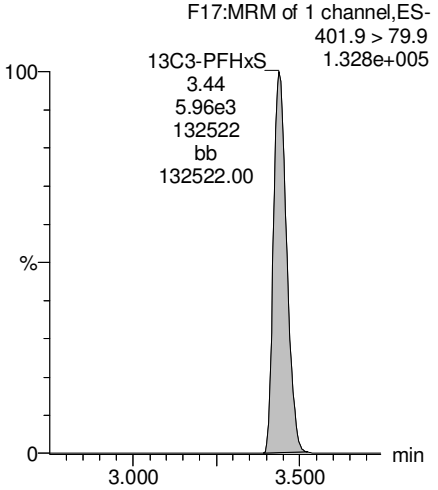

**PFTrDA**



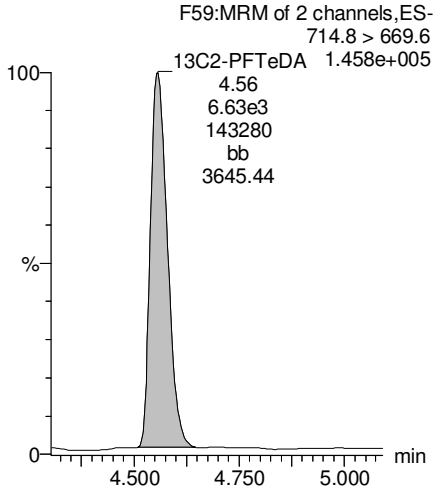

**13C5-PFHxA**



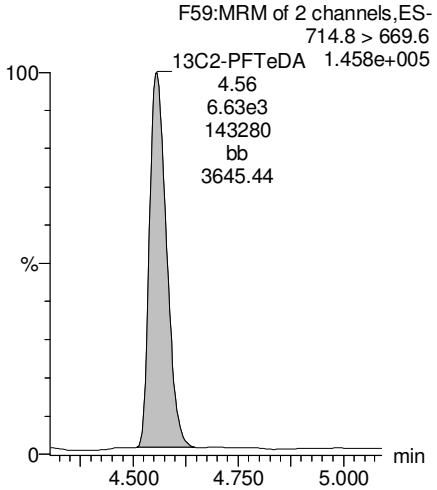

**13C3-PFHxS**



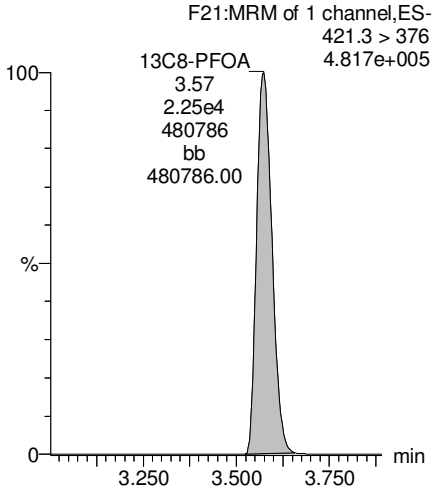

**13C2-PFTeDA**



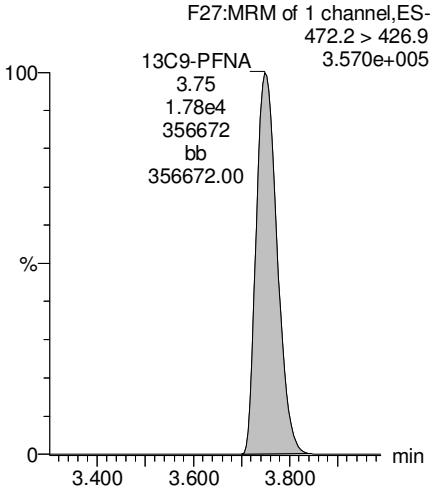

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**




AC 7/17/17

Vista Analytical Laboratory

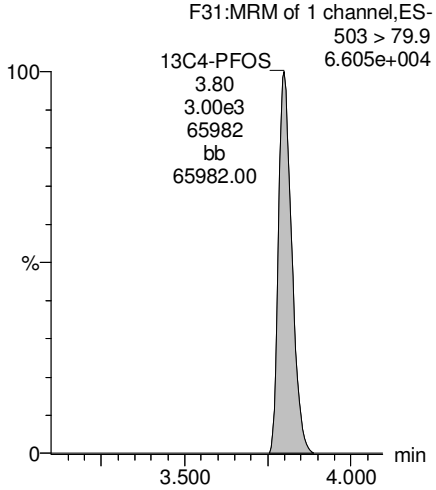
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-4.qld

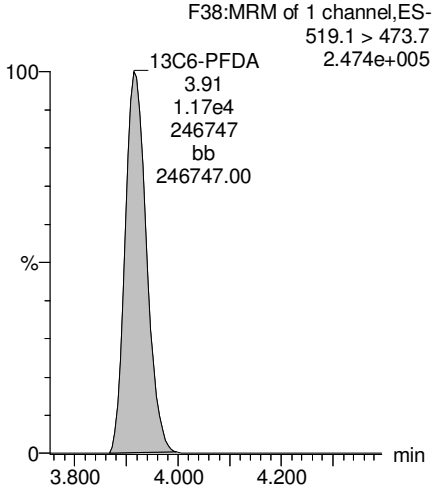
Last Altered: Monday, July 17, 2017 16:06:48 Pacific Daylight Time
Printed: Monday, July 17, 2017 16:06:54 Pacific Daylight Time

**Name: 170713M1_4, Date: 13-Jul-2017, Time: 16:38:24, ID: B7G0049-BS1 OPR 0.125, Description: OPR**

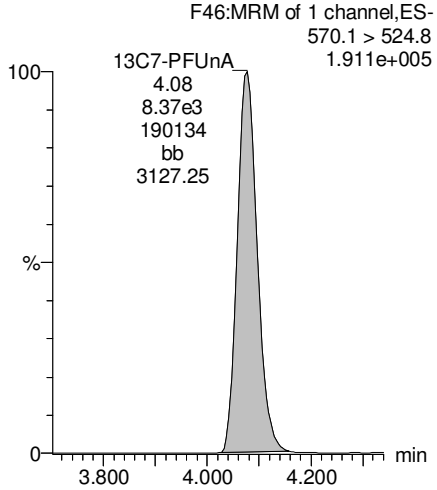
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-9.qld

Last Altered: Tuesday, July 18, 2017 14:37:09 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:37:40 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_9, Date: 13-Jul-2017, Time: 17:33:22, ID: 1700804-01RE1 IRPSite7-GW-07GW41-20170629 0.12511, Description: IRPSite7-GW-07GW41-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 3.49e2 | 4.36e3 | 0.121 | | 2.92 | 2.89 | 1.00 | 4.16 | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 8.19e3 | 1.20e4 | 0.121 | | 3.16 | 3.12 | 3.41 | 17.0 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 3.59e3 | 2.67e4 | 0.121 | | 3.43 | 3.38 | 1.68 | 9.53 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 4.40e3 | 3.06e3 | 0.121 | | 3.55 | 3.45 | 18.0 | 81.1 | |
| 5 | 5 | PFOA | 413 > 368.7 | 1.12e4 | 3.31e4 | 0.121 | | 3.63 | 3.58 | 4.21 | 29.8 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | 1.12e3 | 2.36e4 | 0.121 | | 3.82 | 3.76 | 0.595 | 3.26 | |
| 7 | 7 | PFOS | 499 > 79.9 | 1.26e4 | 4.30e3 | 0.121 | | 3.86 | 3.75 | 36.7 | 262 | |
| 8 | 8 | PFDA | 513 > 468.8 | 1.09e2 | 1.39e4 | 0.121 | | 4.00 | 3.94 | 0.0982 | 0.916 | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 8.28e3 | 0.121 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 1.56e3 | 0.121 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 1.85e3 | 0.121 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 8.06e2 | 0.121 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 8.06e2 | 0.121 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 8.62e3 | 0.121 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.53e3 | 1.54e3 | 0.121 | 0.918 | 1.43 | 1.36 | 12.4 | 112 | 108.3 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.44e4 | 3.64e4 | 0.121 | 0.275 | 2.72 | 2.65 | 4.72 | 142 | 137.3 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 4.36e3 | 3.64e4 | 0.121 | 0.033 | 2.92 | 2.88 | 0.598 | 150 | 144.4 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.20e4 | 3.64e4 | 0.121 | 0.304 | 3.16 | 3.12 | 1.65 | 45.0 | 108.5 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.67e4 | 3.64e4 | 0.121 | 0.306 | 3.43 | 3.38 | 3.66 | 99.3 | 95.8 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 3.06e3 | 6.08e3 | 0.121 | 0.437 | 3.55 | 3.45 | 6.29 | 119 | 115.0 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.31e4 | 3.03e4 | 0.121 | 1.292 | 3.63 | 3.58 | 13.7 | 87.8 | 84.7 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.36e4 | 2.37e4 | 0.121 | 0.980 | 3.82 | 3.76 | 12.5 | 105 | 101.7 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 4.30e3 | 3.79e3 | 0.121 | 1.098 | 3.86 | 3.81 | 14.2 | 107 | 103.3 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 1.39e4 | 1.62e4 | 0.121 | 0.928 | 4.00 | 3.93 | 10.7 | 95.9 | 92.5 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 8.28e3 | 1.02e4 | 0.121 | 1.083 | 4.16 | 4.09 | 10.2 | 78.1 | 75.3 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 1.56e3 | 1.02e4 | 0.121 | 0.224 | 4.00 | 3.95 | 1.92 | 70.9 | 68.4 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.85e3 | 1.02e4 | 0.121 | 0.230 | 4.08 | 4.02 | 2.28 | 82.2 | 79.3 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 8.06e2 | 1.02e4 | 0.121 | 0.130 | 4.32 | 4.24 | 0.992 | 63.4 | 61.1 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 8.62e3 | 1.02e4 | 0.121 | 1.018 | 4.66 | 4.57 | 10.6 | 86.4 | 83.4 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.54e3 | 1.54e3 | 0.121 | 1.000 | 1.43 | 1.36 | 12.5 | 104 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 3.64e4 | 3.64e4 | 0.121 | 1.000 | 3.18 | 3.12 | 5.00 | 41.5 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 6.08e3 | 6.08e3 | 0.121 | 1.000 | 3.55 | 3.45 | 12.5 | 104 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-9.qld

Last Altered: Tuesday, July 18, 2017 14:37:09 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:37:40 Pacific Daylight Time

**Name: 170713M1_9, Date: 13-Jul-2017, Time: 17:33:22, ID: 1700804-01RE1 IRPSite7-GW-07GW41-20170629 0.12511, Description: IRPSite7-GW-07GW41-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 3.03e4 | 3.03e4 | 0.121 | 1.000 | 3.63 | 3.58 | 12.5 | 104 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.37e4 | 2.37e4 | 0.121 | 1.000 | 3.82 | 3.76 | 12.5 | 104 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 3.79e3 | 3.79e3 | 0.121 | 1.000 | 3.86 | 3.81 | 12.5 | 104 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.62e4 | 1.62e4 | 0.121 | 1.000 | 4.00 | 3.93 | 12.5 | 104 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 1.02e4 | 1.02e4 | 0.121 | 1.000 | 4.16 | 4.09 | 12.5 | 104 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 3.49e2 | 4.36e3 | 0.121 | | 2.92 | | 1.00 | 4.16 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 4.40e3 | 3.06e3 | 0.121 | | 3.55 | | 18.0 | 81.1 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 1.16e4 | 3.31e4 | 0.121 | | 3.63 | | 4.39 | 30.3 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 1.26e4 | 4.30e3 | 0.121 | | 3.86 | | 36.7 | 262 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 1.56e3 | 0.121 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 1.85e3 | 0.121 | | 4.30 | | 0.000 | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-9.qld

Last Altered: Tuesday, July 18, 2017 14:37:09 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:37:40 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_9, Date: 13-Jul-2017, Time: 17:33:22, ID: 1700804-01RE1 IRPSite7-GW-07GW41-20170629 0.12511, Description: IRPSite7-GW-07GW41-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.89 | 348.639 | 4356.175 | 1.000 | bb | 4.2 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.45 | 4404.005 | 3058.917 | 17.997 | MM | 81.1 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | 3.58 | 11153.563 | 33128.895 | 4.208 | MM | 29.8 |
| 2 | 40 | Total PFOA | 413 > 368.7 | 3.53 | 472.074 | 33128.895 | 0.178 | MM | 0.4 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.75 | 12647.016 | 4301.883 | 36.748 | MM | 261.8 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

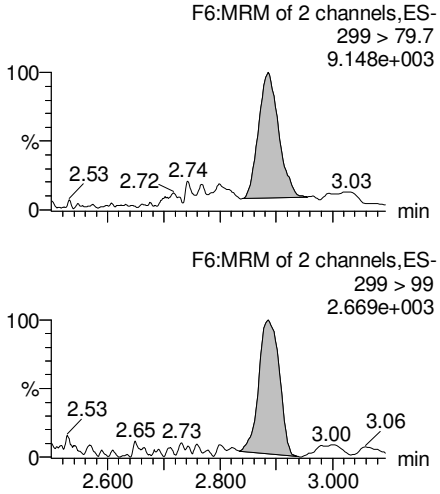
Dataset: U:\Q4.PRO\results\170713M1\170713M1-9.qld

Last Altered: Tuesday, July 18, 2017 14:37:09 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:37:40 Pacific Daylight Time

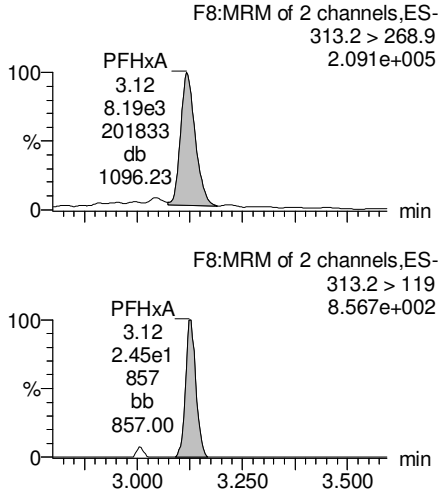
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_9, Date: 13-Jul-2017, Time: 17:33:22, ID: 1700804-01RE1 IRPSite7-GW-07GW41-20170629 0.12511, Description: IRPSite7-GW-07GW41-20170629**

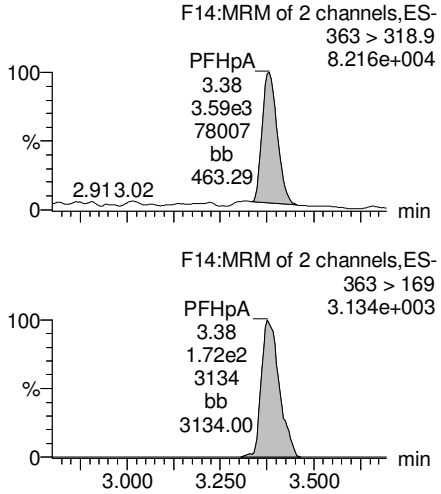
**Total PFBS**



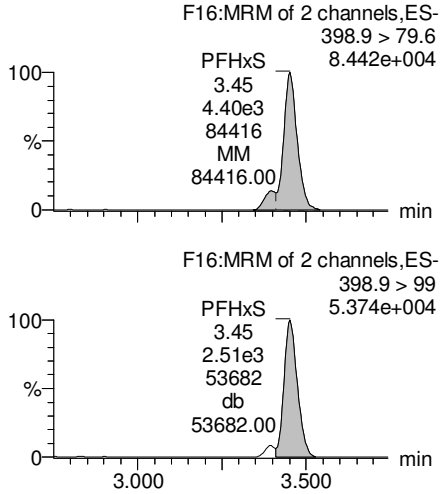

**PFHxA**



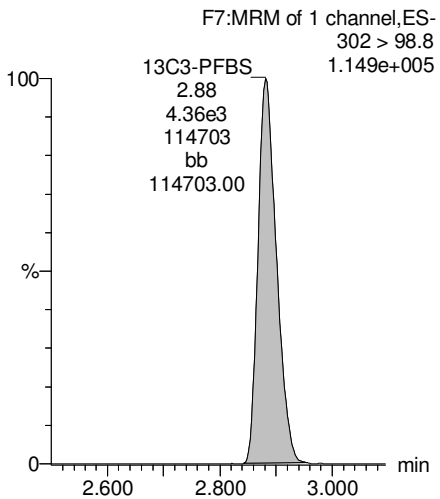

**PFHpA**



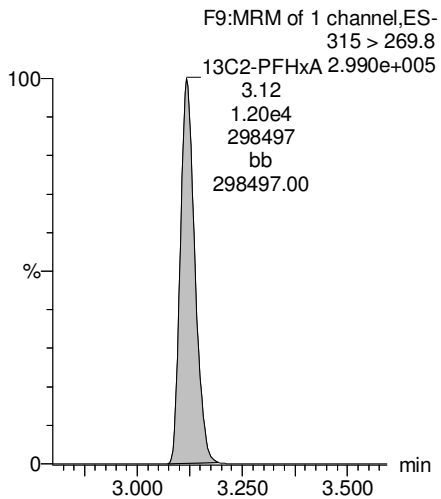

**Total PFHxS**



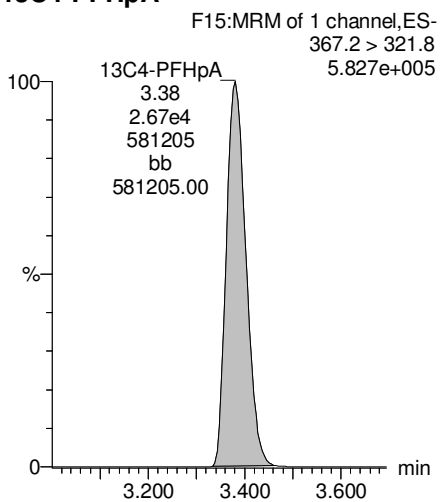

**13C3-PFBS**



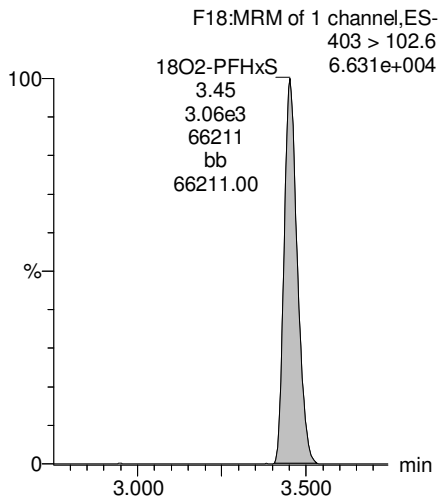

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

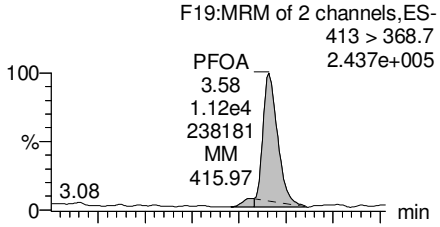
Reviewed: WJL 7/19/2017

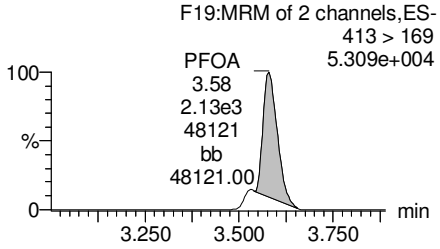
Dataset: U:\Q4.PRO\results\170713M1\170713M1-9.qld

Last Altered: Tuesday, July 18, 2017 14:37:09 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:37:40 Pacific Daylight Time

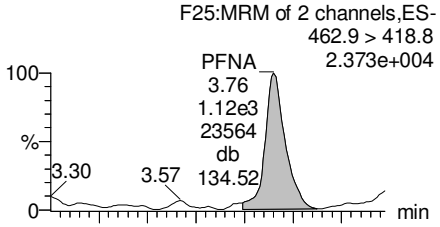
**Name: 170713M1_9, Date: 13-Jul-2017, Time: 17:33:22, ID: 1700804-01RE1 IRPSite7-GW-07GW41-20170629 0.12511, Description: IRPSite7-GW-07GW41-20170629**

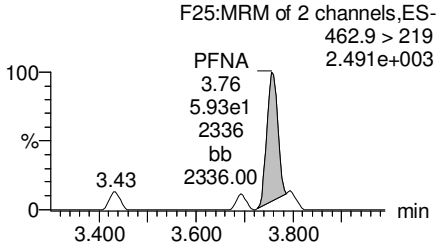
**Total PFOA**



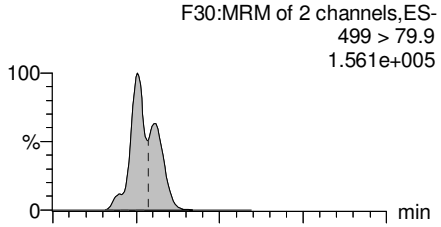



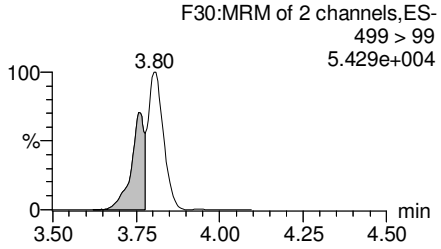

**PFNA**



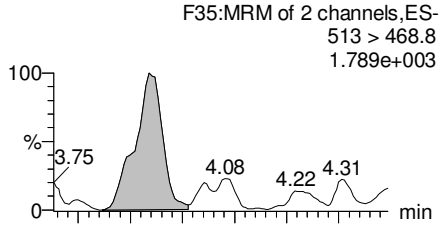



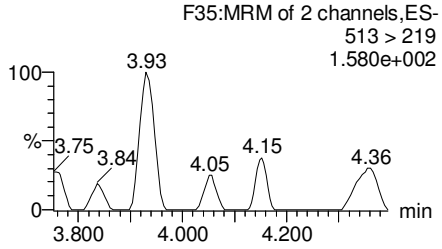

**Total PFOS**



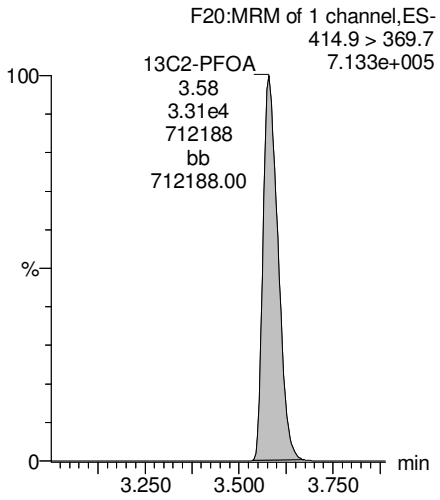




**PFDA**

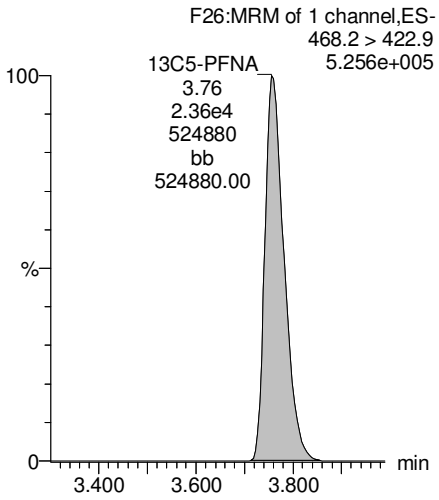


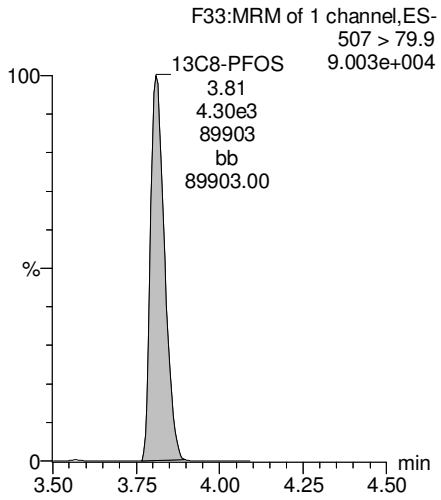

**13C2-PFOA**



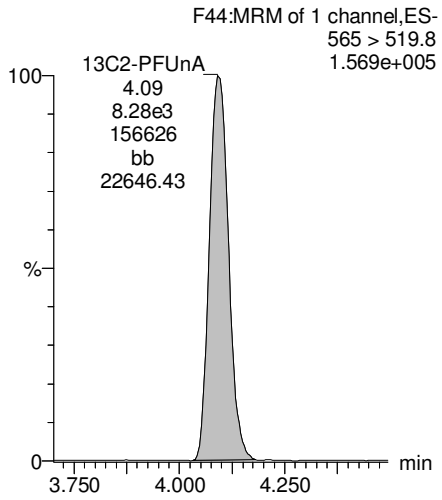

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-9.qld

Last Altered: Tuesday, July 18, 2017 14:37:09 Pacific Daylight Time
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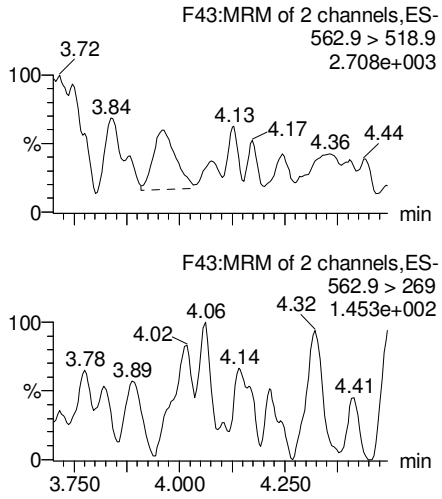
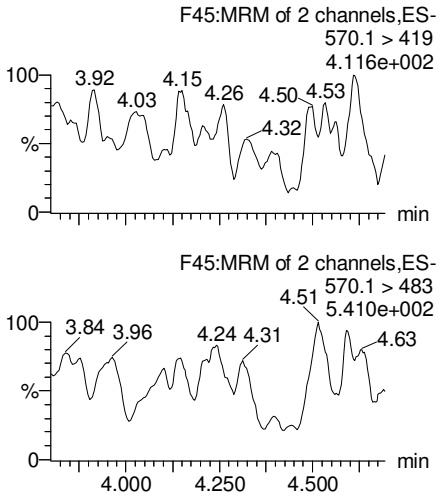
**Name: 170713M1_9, Date: 13-Jul-2017, Time: 17:33:22, ID: 1700804-01RE1 IRPSite7-GW-07GW41-20170629 0.12511, Description: IRPSite7-GW-07GW41-20170629**

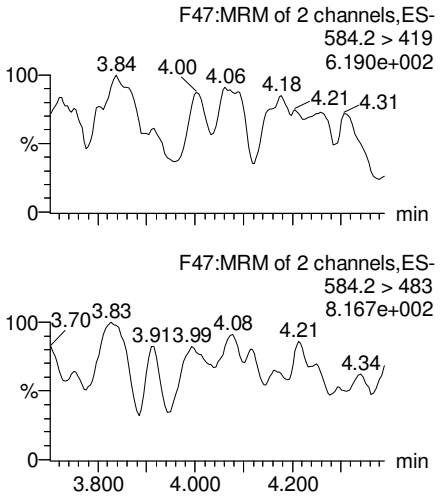
**PFUnA**



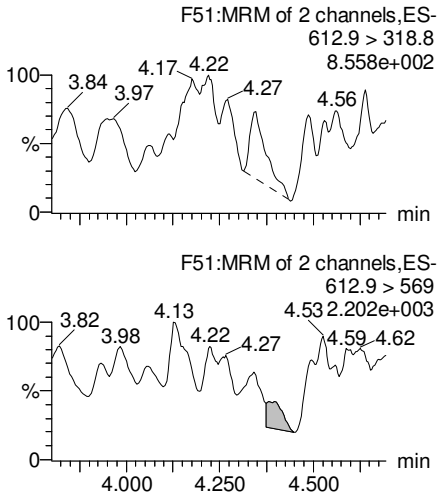

**N-MeFOSAA**



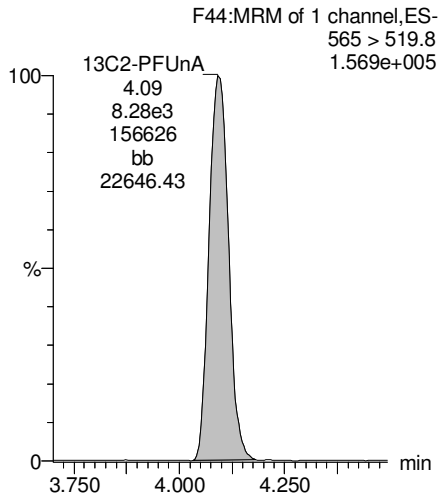

**N-EtFOSAA**



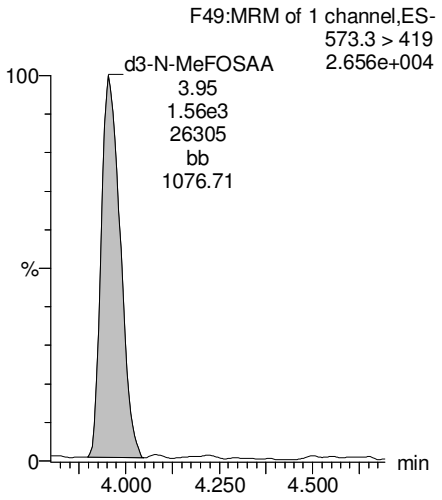

**PFDoA**



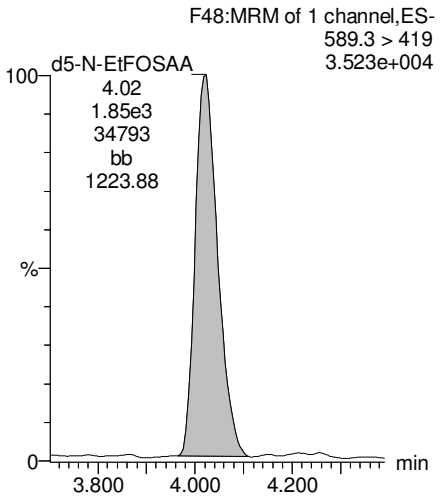

**13C2-PFUnA**



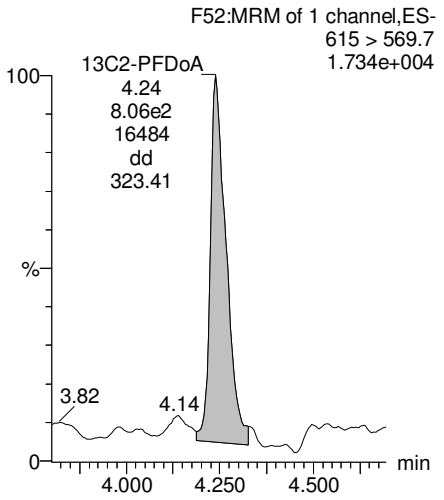

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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Vista Analytical Laboratory

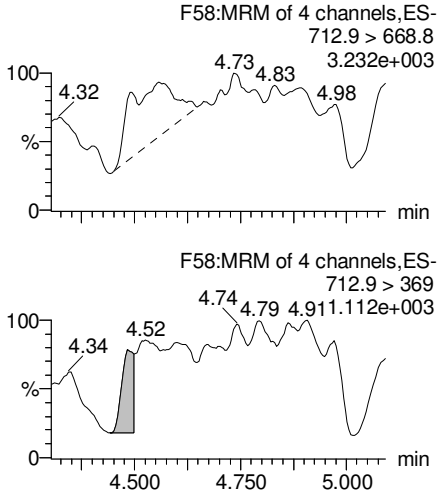
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-9.qld

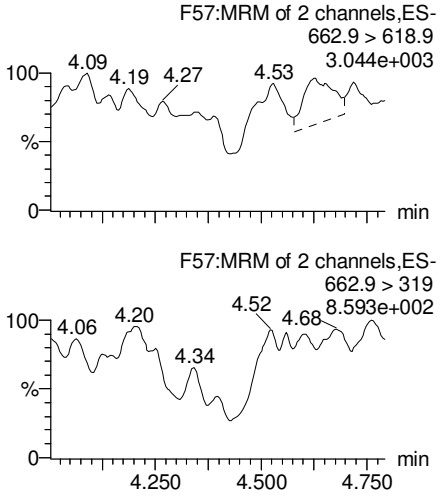
Last Altered: Tuesday, July 18, 2017 14:37:09 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:37:40 Pacific Daylight Time

**Name: 170713M1_9, Date: 13-Jul-2017, Time: 17:33:22, ID: 1700804-01RE1 IRPSite7-GW-07GW41-20170629 0.12511, Description: IRPSite7-GW-07GW41-20170629**

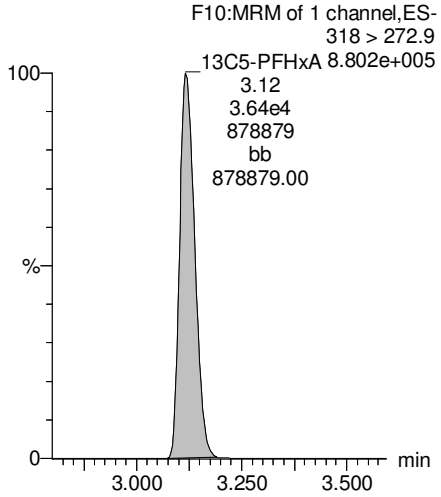
**PFTeDA**



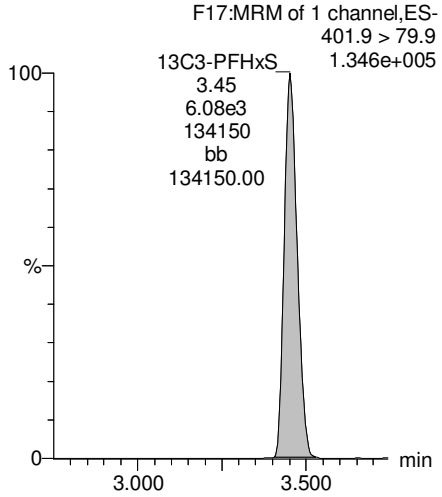

**PFTrDA**



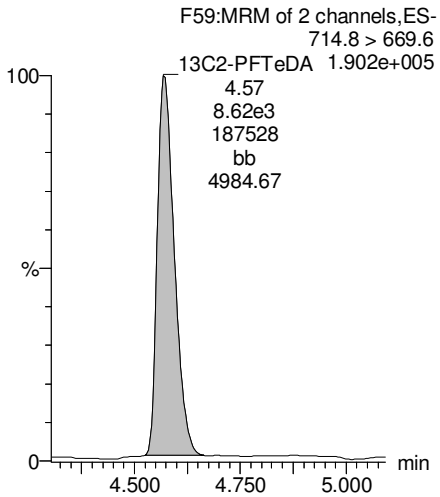

**13C5-PFHxA**



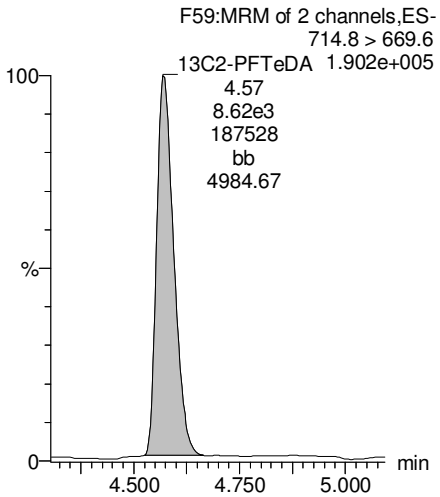

**13C3-PFHxS**



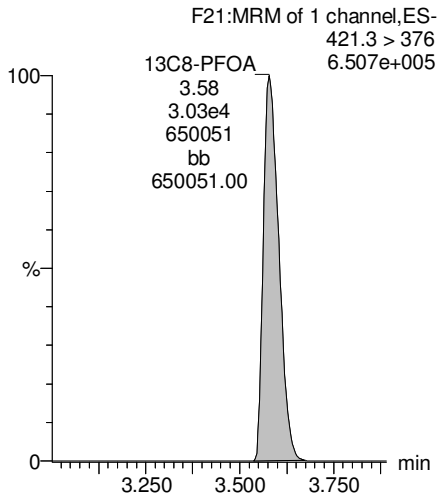

**13C2-PFTeDA**



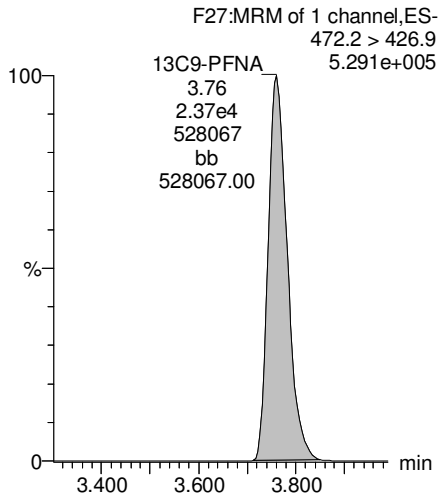

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

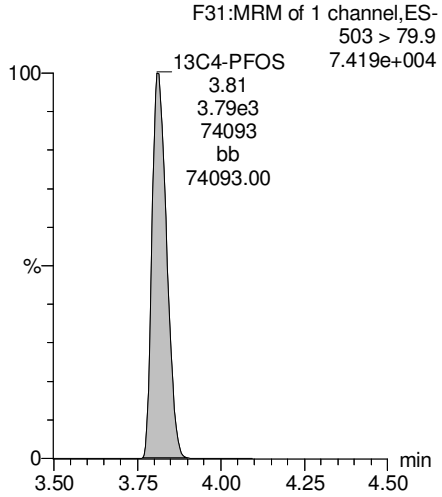
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-9.qld

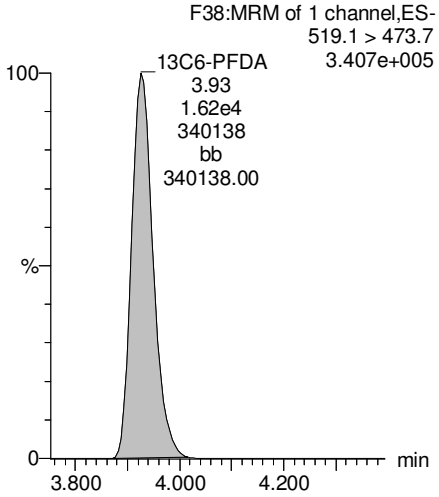
Last Altered: Tuesday, July 18, 2017 14:37:09 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:37:40 Pacific Daylight Time

**Name: 170713M1_9, Date: 13-Jul-2017, Time: 17:33:22, ID: 1700804-01RE1 IRPSite7-GW-07GW41-20170629 0.12511, Description: IRPSite7-GW-07GW41-20170629**

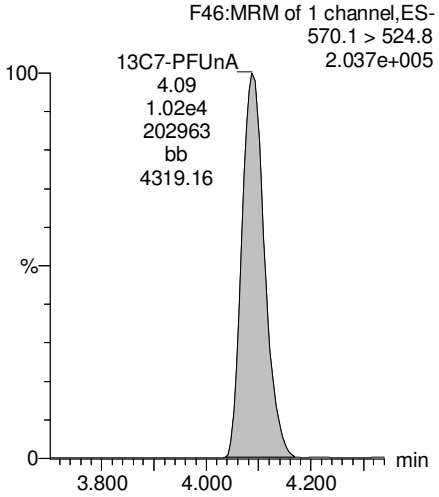
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-10.qld

Last Altered: Tuesday, July 18, 2017 14:40:38 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:40:52 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_10, Date: 13-Jul-2017, Time: 17:44:00, ID: 1700804-02RE1 IRPSite5-GW-05GW01-20170629 0.11699, Description: IRPSite5-GW-05GW01-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 1.26e2 | 4.73e3 | 0.115 | | 2.92 | 2.89 | 0.334 | 1.83 | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 3.85e3 | 1.41e4 | 0.115 | | 3.16 | 3.12 | 1.36 | 6.98 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 1.67e3 | 3.05e4 | 0.115 | | 3.43 | 3.38 | 0.685 | 3.96 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 3.60e3 | 3.51e3 | 0.115 | | 3.55 | 3.46 | 12.8 | 61.1 | |
| 5 | 5 | PFOA | 413 > 368.7 | 1.88e4 | 3.89e4 | 0.115 | | 3.63 | 3.58 | 6.03 | 45.4 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | 1.06e3 | 2.35e4 | 0.115 | | 3.82 | 3.76 | 0.566 | 3.24 | |
| 7 | 7 | PFOS | 499 > 79.9 | 7.96e3 | 3.69e3 | 0.115 | | 3.86 | 3.81 | 27.0 | 205 | |
| 8 | 8 | PFDA | 513 > 468.8 | | 8.57e3 | 0.115 | | 4.00 | | | | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 3.98e3 | 0.115 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 1.12e3 | 0.115 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 9.33e2 | 0.115 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 2.26e2 | 0.115 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 2.26e2 | 0.115 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 5.58e3 | 0.115 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.74e3 | 1.77e3 | 0.115 | 0.918 | 1.43 | 1.37 | 12.3 | 117 | 107.2 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.93e4 | 4.36e4 | 0.115 | 0.275 | 2.72 | 2.66 | 4.51 | 143 | 131.2 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 4.73e3 | 4.36e4 | 0.115 | 0.033 | 2.92 | 2.89 | 0.542 | 143 | 130.9 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.41e4 | 4.36e4 | 0.115 | 0.304 | 3.16 | 3.12 | 1.62 | 46.5 | 106.6 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 3.05e4 | 4.36e4 | 0.115 | 0.306 | 3.43 | 3.39 | 3.50 | 99.7 | 91.5 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 3.51e3 | 7.00e3 | 0.115 | 0.437 | 3.55 | 3.45 | 6.26 | 125 | 114.6 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.89e4 | 3.31e4 | 0.115 | 1.292 | 3.63 | 3.59 | 14.7 | 99.1 | 91.0 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.35e4 | 2.55e4 | 0.115 | 0.980 | 3.82 | 3.76 | 11.5 | 102 | 93.8 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 3.69e3 | 3.04e3 | 0.115 | 1.098 | 3.86 | 3.81 | 15.1 | 120 | 110.3 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 8.57e3 | 1.12e4 | 0.115 | 0.928 | 4.00 | 3.93 | 9.53 | 89.6 | 82.2 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 3.98e3 | 4.65e3 | 0.115 | 1.083 | 4.16 | 4.09 | 10.7 | 86.2 | 79.1 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 1.12e3 | 4.65e3 | 0.115 | 0.224 | 4.00 | 3.95 | 3.01 | 117 | 107.3 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 9.33e2 | 4.65e3 | 0.115 | 0.230 | 4.08 | 4.02 | 2.51 | 95.2 | 87.3 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 2.26e2 | 4.65e3 | 0.115 | 0.130 | 4.32 | 4.24 | 0.607 | 40.8 | 37.4 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 5.58e3 | 4.65e3 | 0.115 | 1.018 | 4.66 | 4.57 | 15.0 | 129 | 117.9 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.77e3 | 1.77e3 | 0.115 | 1.000 | 1.43 | 1.37 | 12.5 | 109 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 4.36e4 | 4.36e4 | 0.115 | 1.000 | 3.18 | 3.12 | 5.00 | 43.6 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 7.00e3 | 7.00e3 | 0.115 | 1.000 | 3.55 | 3.45 | 12.5 | 109 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-10.qld

Last Altered: Tuesday, July 18, 2017 14:40:38 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:40:52 Pacific Daylight Time

**Name: 170713M1_10, Date: 13-Jul-2017, Time: 17:44:00, ID: 1700804-02RE1 IRPSite5-GW-05GW01-20170629 0.11699, Description: IRPSite5-GW-05GW01-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 3.31e4 | 3.31e4 | 0.115 | 1.000 | 3.63 | 3.59 | 12.5 | 109 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.55e4 | 2.55e4 | 0.115 | 1.000 | 3.82 | 3.76 | 12.5 | 109 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 3.04e3 | 3.04e3 | 0.115 | 1.000 | 3.86 | 3.81 | 12.5 | 109 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.12e4 | 1.12e4 | 0.115 | 1.000 | 4.00 | 3.92 | 12.5 | 109 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 4.65e3 | 4.65e3 | 0.115 | 1.000 | 4.16 | 4.09 | 12.5 | 109 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 1.26e2 | 4.73e3 | 0.115 | | 2.92 | | 0.334 | 1.83 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 3.60e3 | 3.51e3 | 0.115 | | 3.55 | | 12.8 | 61.1 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 2.05e4 | 3.89e4 | 0.115 | | 3.63 | | 6.59 | 48.8 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 7.96e3 | 3.69e3 | 0.115 | | 3.86 | | 27.0 | 205 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 1.12e3 | 0.115 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 9.33e2 | 0.115 | | 4.30 | | 0.000 | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-10.qld

Last Altered: Tuesday, July 18, 2017 14:40:38 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:40:52 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_10, Date: 13-Jul-2017, Time: 17:44:00, ID: 1700804-02RE1 IRPSite5-GW-05GW01-20170629 0.11699, Description: IRPSite5-GW-05GW01-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.89 | 126.444 | 4730.890 | 0.334 | bb | 1.8 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.46 | 3600.520 | 3509.114 | 12.826 | MM | 61.1 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | 3.58 | 18792.818 | 38947.934 | 6.031 | db | 45.4 |
| 2 | 40 | Total PFOA | 413 > 368.7 | 3.53 | 1746.103 | 38947.934 | 0.560 | bd | 3.4 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.81 | 7955.253 | 3687.014 | 26.971 | MM | 204.6 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

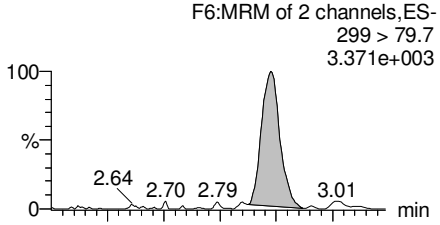
Dataset: U:\Q4.PRO\results\170713M1\170713M1-10.qld

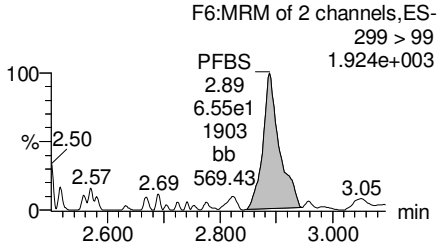
Last Altered: Tuesday, July 18, 2017 14:40:38 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:40:52 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

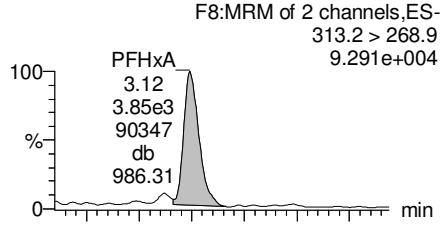
**Name: 170713M1_10, Date: 13-Jul-2017, Time: 17:44:00, ID: 1700804-02RE1 IRPSite5-GW-05GW01-20170629 0.11699, Description: IRPSite5-GW-05GW01-20170629**

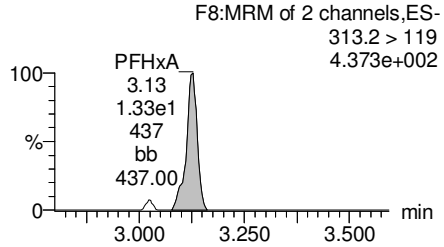
**Total PFBS**



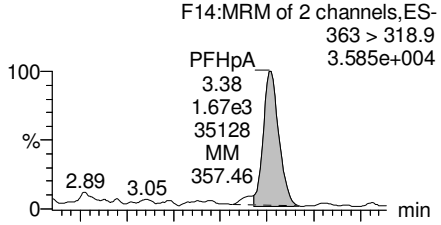



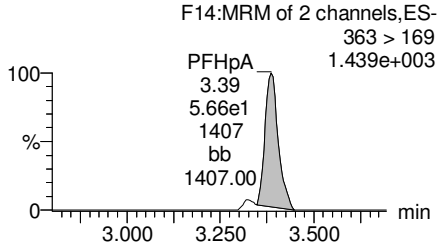

**PFHxA**



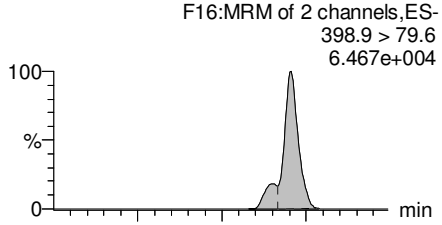



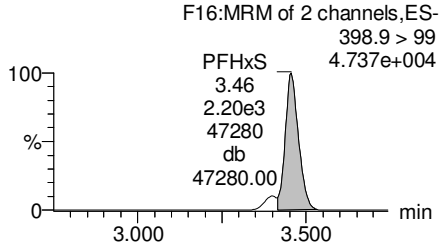

**PFHpA**



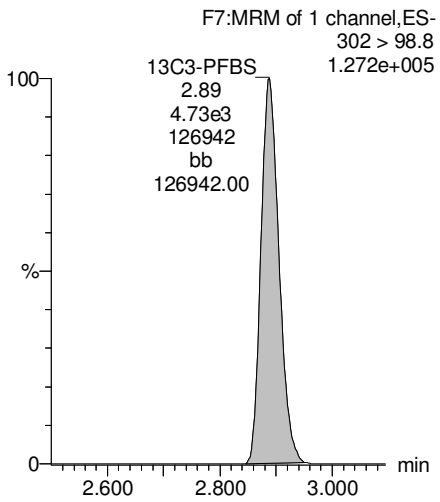




**Total PFHxS**

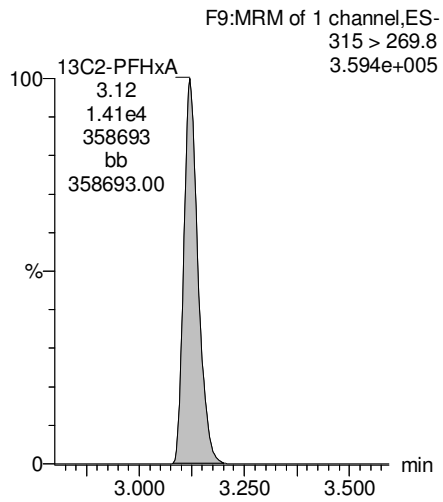


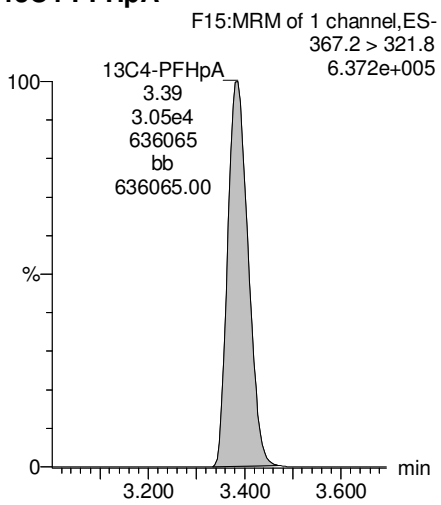

**13C3-PFBS**



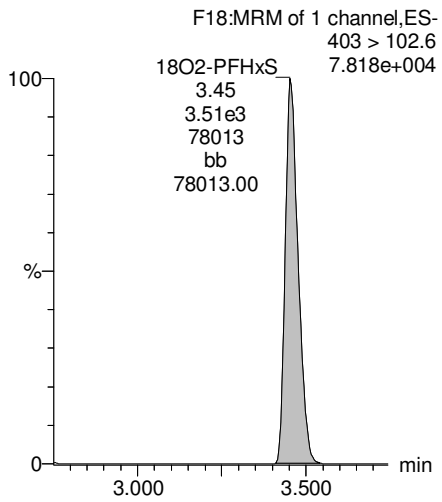

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

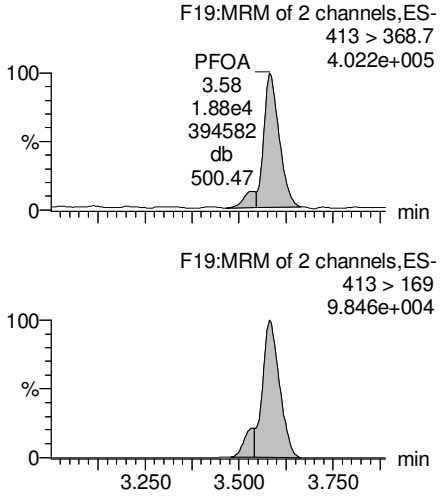
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-10.qld

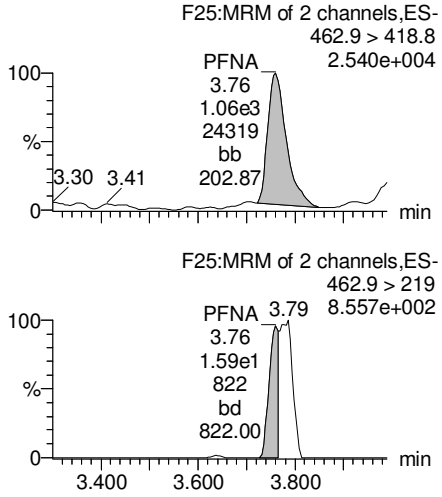
Last Altered: Tuesday, July 18, 2017 14:40:38 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:40:52 Pacific Daylight Time

**Name: 170713M1_10, Date: 13-Jul-2017, Time: 17:44:00, ID: 1700804-02RE1 IRPSite5-GW-05GW01-20170629 0.11699, Description: IRPSite5-GW-05GW01-20170629**

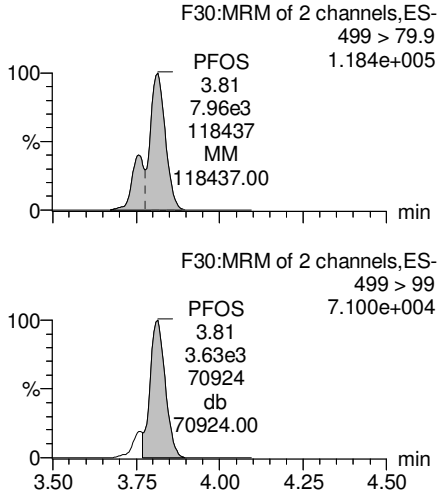
**Total PFOA**



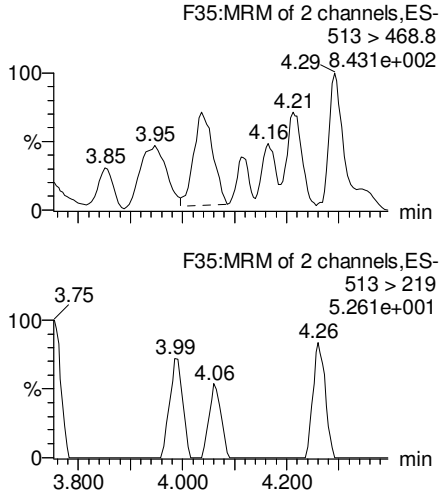

**PFNA**



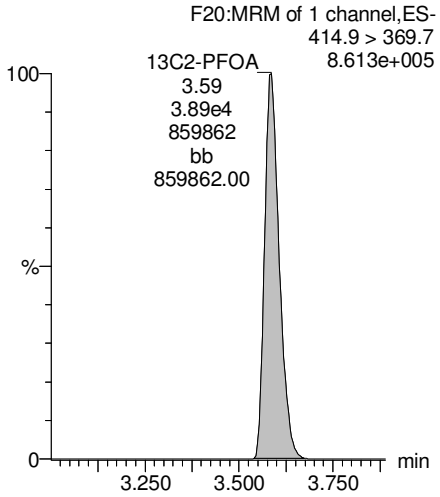

**Total PFOS**



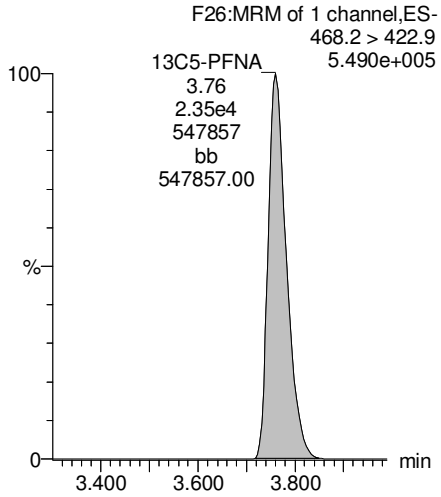

**PFDA**



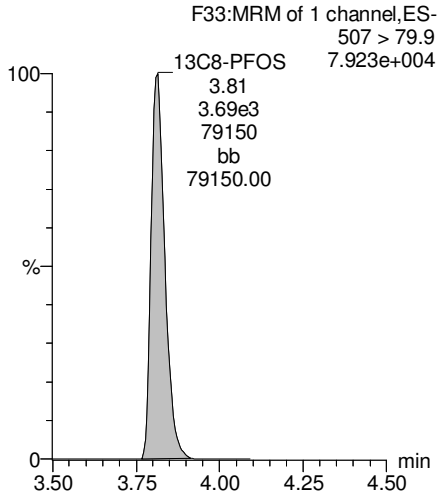

**13C2-PFOA**



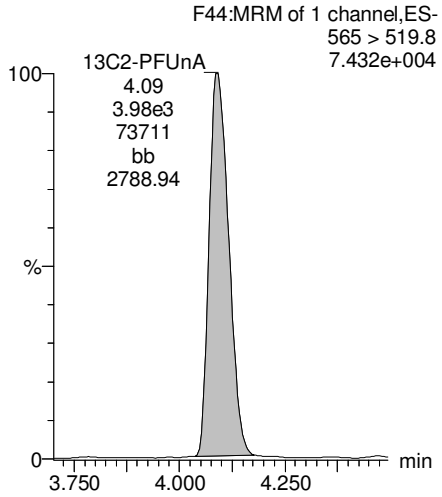

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

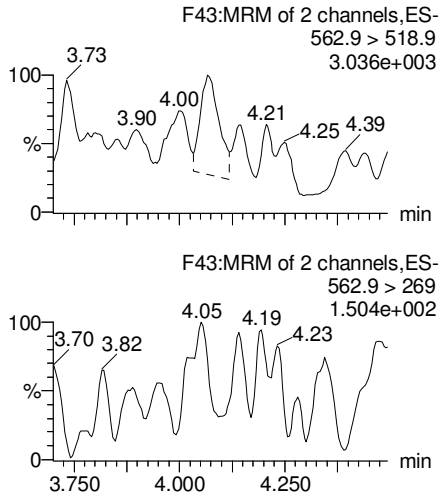
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-10.qld

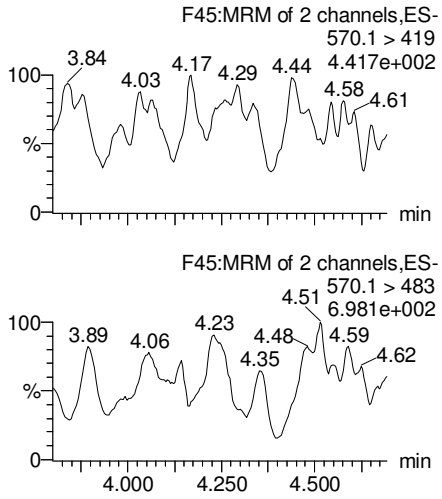
Last Altered: Tuesday, July 18, 2017 14:40:38 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:40:52 Pacific Daylight Time

**Name: 170713M1_10, Date: 13-Jul-2017, Time: 17:44:00, ID: 1700804-02RE1 IRPSite5-GW-05GW01-20170629 0.11699, Description: IRPSite5-GW-05GW01-20170629**

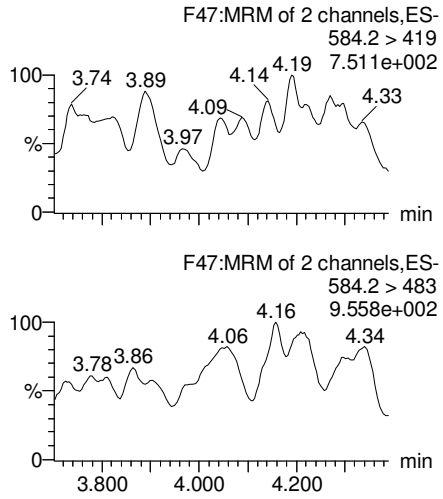
**PFUnA**



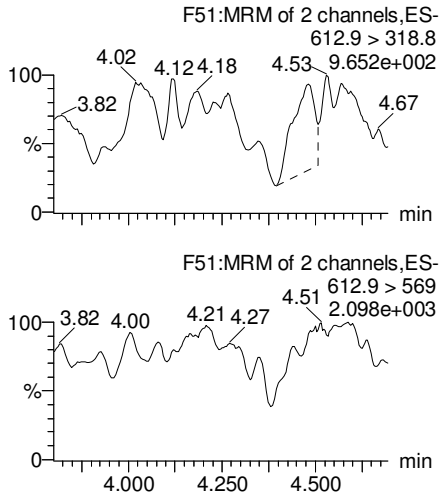

**N-MeFOSAA**



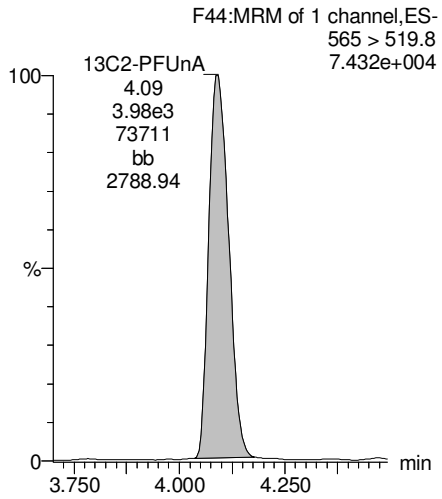

**N-EtFOSAA**



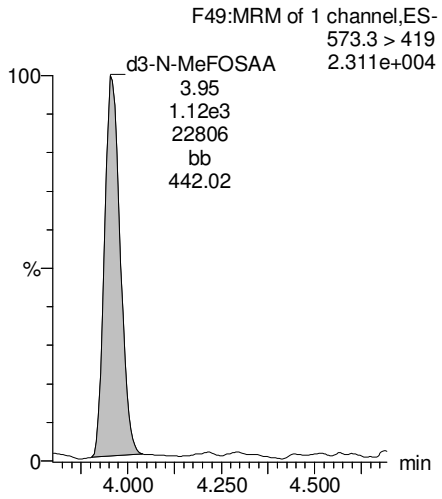

**PFDoA**



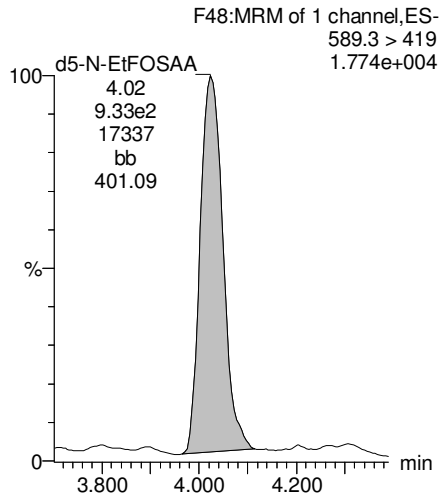

**13C2-PFUnA**



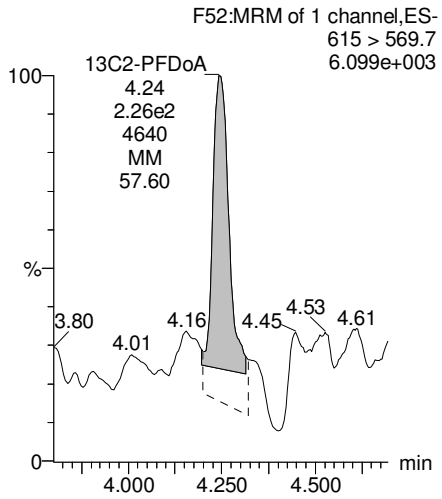

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**




AC 7/18/17

Vista Analytical Laboratory

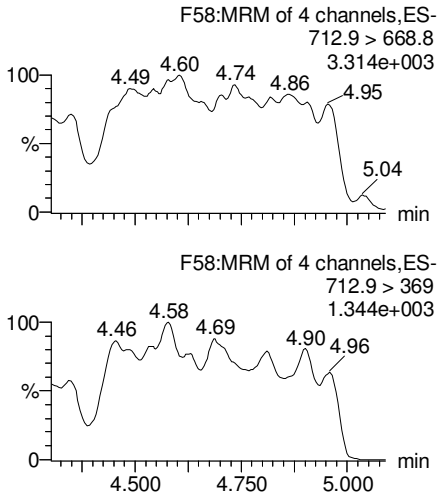
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-10.qld

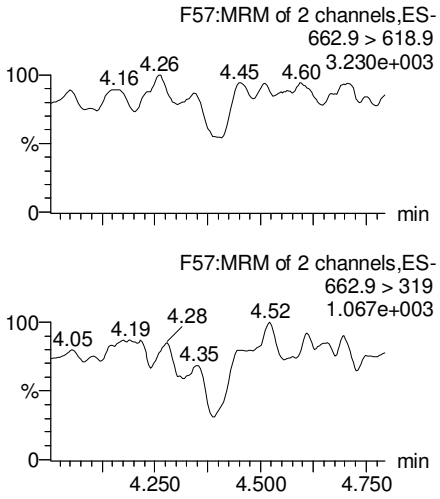
Last Altered: Tuesday, July 18, 2017 14:40:38 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:40:52 Pacific Daylight Time

**Name: 170713M1_10, Date: 13-Jul-2017, Time: 17:44:00, ID: 1700804-02RE1 IRPSite5-GW-05GW01-20170629 0.11699, Description: IRPSite5-GW-05GW01-20170629**

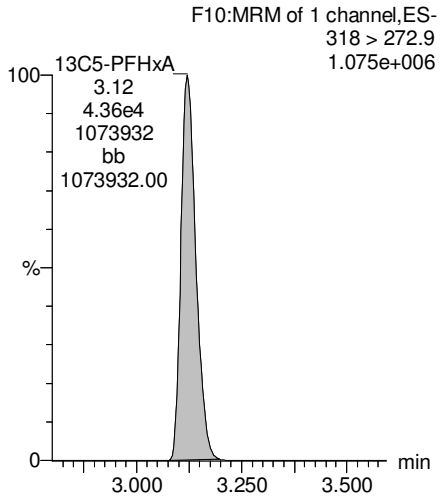
**PFTeDA**



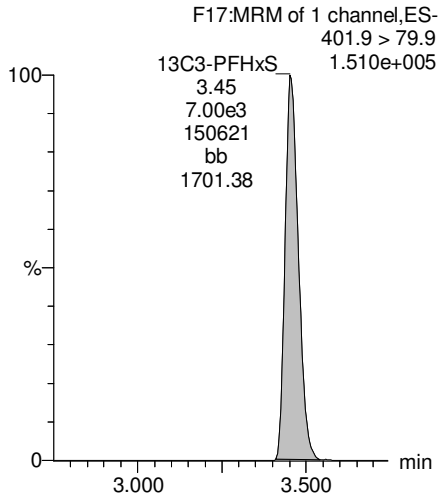

**PFTrDA**



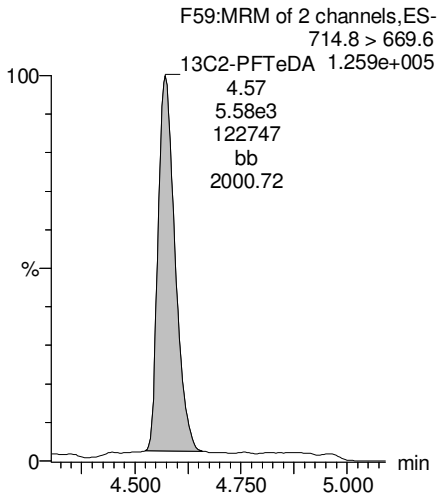

**13C5-PFHxA**



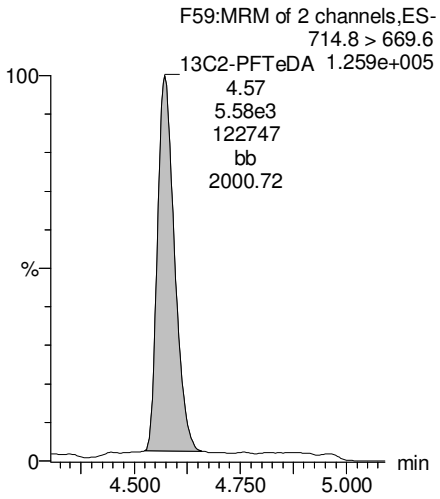

**13C3-PFHxS**



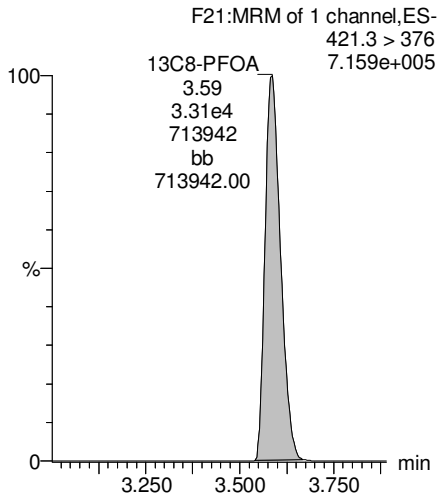

**13C2-PFTeDA**



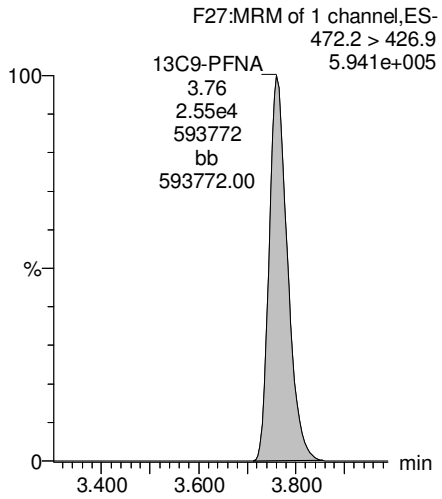

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**




AC 7/18/17

Vista Analytical Laboratory

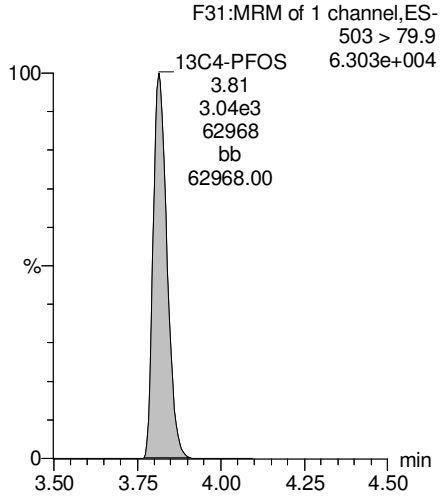
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-10.qld

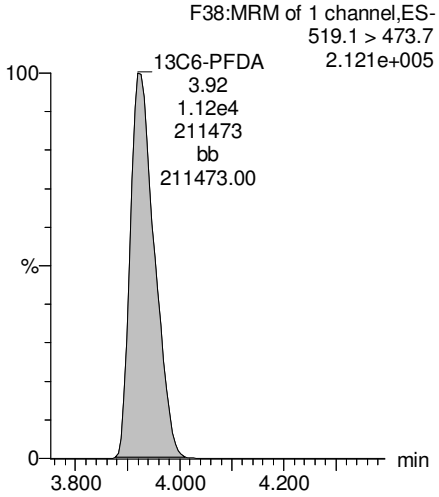
Last Altered: Tuesday, July 18, 2017 14:40:38 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:40:52 Pacific Daylight Time

**Name: 170713M1_10, Date: 13-Jul-2017, Time: 17:44:00, ID: 1700804-02RE1 IRPSite5-GW-05GW01-20170629 0.11699, Description: IRPSite5-GW-05GW01-20170629**

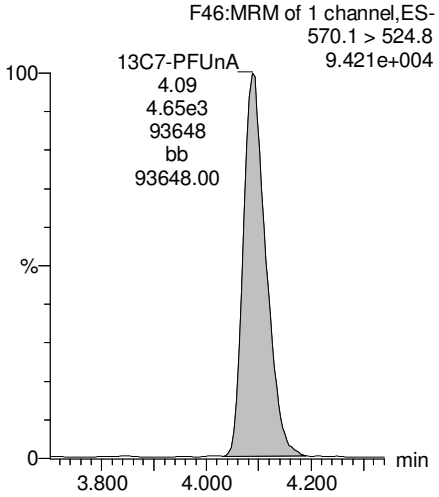
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-11.qld

Last Altered: Tuesday, July 18, 2017 14:42:41 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:42:55 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_11, Date: 13-Jul-2017, Time: 17:54:39, ID: 1700804-03RE1 IRPSite5-GW-FD01-20170629 0.11447, Description: IRPSite5-GW-FD01-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 1.27e2 | 3.55e3 | 0.113 | | 2.92 | 2.89 | 0.448 | 2.30 | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 2.99e3 | 1.13e4 | 0.113 | | 3.16 | 3.12 | 1.32 | 6.86 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 1.13e3 | 2.60e4 | 0.113 | | 3.43 | 3.38 | 0.546 | 3.17 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 3.11e3 | 2.90e3 | 0.113 | | 3.55 | 3.45 | 13.4 | 64.9 | |
| 5 | 5 | PFOA | 413 > 368.7 | 1.53e4 | 3.04e4 | 0.113 | | 3.63 | 3.58 | 6.30 | 48.3 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | 8.30e2 | 2.11e4 | 0.113 | | 3.82 | 3.76 | 0.491 | 2.82 | |
| 7 | 7 | PFOS | 499 > 79.9 | 7.17e3 | 3.49e3 | 0.113 | | 3.86 | 3.81 | 25.7 | 199 | |
| 8 | 8 | PFDA | 513 > 468.8 | | 1.04e4 | 0.113 | | 4.00 | | | | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 5.62e3 | 0.113 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 9.97e2 | 0.113 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 1.35e3 | 0.113 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 5.08e2 | 0.113 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 5.08e2 | 0.113 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 5.90e3 | 0.113 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.31e3 | 1.38e3 | 0.113 | 0.918 | 1.43 | 1.38 | 11.9 | 116 | 104.1 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.08e4 | 3.66e4 | 0.113 | 0.275 | 2.72 | 2.65 | 4.20 | 136 | 122.4 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 3.55e3 | 3.66e4 | 0.113 | 0.033 | 2.92 | 2.89 | 0.484 | 130 | 116.9 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.13e4 | 3.66e4 | 0.113 | 0.304 | 3.16 | 3.12 | 1.55 | 45.3 | 102.0 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.60e4 | 3.66e4 | 0.113 | 0.306 | 3.43 | 3.38 | 3.55 | 103 | 92.8 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.90e3 | 6.12e3 | 0.113 | 0.437 | 3.55 | 3.45 | 5.92 | 120 | 108.4 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.04e4 | 2.40e4 | 0.113 | 1.292 | 3.63 | 3.58 | 15.8 | 109 | 98.0 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.11e4 | 2.20e4 | 0.113 | 0.980 | 3.82 | 3.76 | 12.0 | 108 | 97.7 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 3.49e3 | 3.18e3 | 0.113 | 1.098 | 3.86 | 3.81 | 13.7 | 111 | 99.9 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 1.04e4 | 1.28e4 | 0.113 | 0.928 | 4.00 | 3.93 | 10.2 | 97.2 | 87.5 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 5.62e3 | 6.28e3 | 0.113 | 1.083 | 4.16 | 4.09 | 11.2 | 91.9 | 82.8 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 9.97e2 | 6.28e3 | 0.113 | 0.224 | 4.00 | 3.95 | 1.99 | 78.6 | 70.8 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.35e3 | 6.28e3 | 0.113 | 0.230 | 4.08 | 4.02 | 2.69 | 104 | 93.6 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 5.08e2 | 6.28e3 | 0.113 | 0.130 | 4.32 | 4.25 | 1.01 | 69.1 | 62.3 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 5.90e3 | 6.28e3 | 0.113 | 1.018 | 4.66 | 4.57 | 11.8 | 103 | 92.3 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.38e3 | 1.38e3 | 0.113 | 1.000 | 1.43 | 1.38 | 12.5 | 111 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 3.66e4 | 3.66e4 | 0.113 | 1.000 | 3.18 | 3.12 | 5.00 | 44.4 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 6.12e3 | 6.12e3 | 0.113 | 1.000 | 3.55 | 3.45 | 12.5 | 111 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-11.qld

Last Altered: Tuesday, July 18, 2017 14:42:41 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:42:55 Pacific Daylight Time

**Name: 170713M1_11, Date: 13-Jul-2017, Time: 17:54:39, ID: 1700804-03RE1 IRPSite5-GW-FD01-20170629 0.11447, Description: IRPSite5-GW-FD01-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.40e4 | 2.40e4 | 0.113 | 1.000 | 3.63 | 3.58 | 12.5 | 111 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.20e4 | 2.20e4 | 0.113 | 1.000 | 3.82 | 3.76 | 12.5 | 111 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 3.18e3 | 3.18e3 | 0.113 | 1.000 | 3.86 | 3.81 | 12.5 | 111 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.28e4 | 1.28e4 | 0.113 | 1.000 | 4.00 | 3.93 | 12.5 | 111 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 6.28e3 | 6.28e3 | 0.113 | 1.000 | 4.16 | 4.09 | 12.5 | 111 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 1.27e2 | 3.55e3 | 0.113 | | 2.92 | | 0.448 | 2.30 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 3.11e3 | 2.90e3 | 0.113 | | 3.55 | | 13.4 | 64.9 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 1.66e4 | 3.04e4 | 0.113 | | 3.63 | | 6.80 | 51.3 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 7.17e3 | 3.49e3 | 0.113 | | 3.86 | | 25.7 | 199 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 9.97e2 | 0.113 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 1.35e3 | 0.113 | | 4.30 | | 0.000 | | |

AC 7/18/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-11.qld

Last Altered: Tuesday, July 18, 2017 14:42:41 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:42:55 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_11, Date: 13-Jul-2017, Time: 17:54:39, ID: 1700804-03RE1 IRPSite5-GW-FD01-20170629 0.11447, Description: IRPSite5-GW-FD01-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.89 | 127.004 | 3545.718 | 0.448 | bb | 2.3 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.45 | 3106.354 | 2899.493 | 13.392 | MM | 64.9 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | 3.58 | 15339.841 | 30448.734 | 6.297 | db | 48.3 |
| 2 | 40 | Total PFOA | 413 > 368.7 | 3.53 | 1224.984 | 30448.734 | 0.503 | bd | 3.0 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.81 | 7171.273 | 3486.604 | 25.710 | MM | 199.0 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

AC 7/18/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

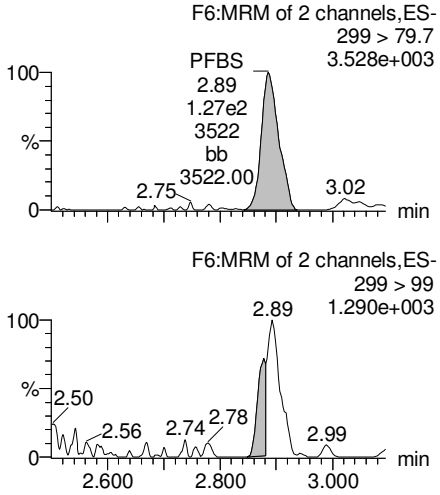
Dataset: U:\Q4.PRO\results\170713M1\170713M1-11.qld

Last Altered: Tuesday, July 18, 2017 14:42:41 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:42:55 Pacific Daylight Time

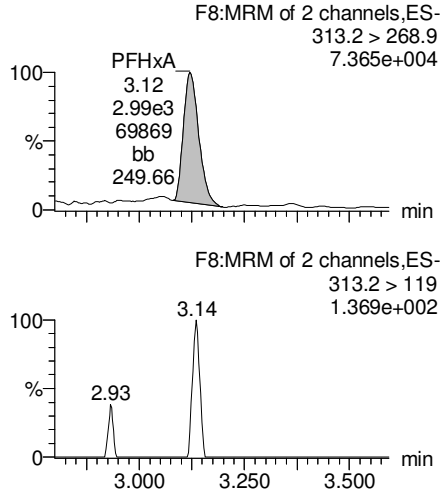
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_11, Date: 13-Jul-2017, Time: 17:54:39, ID: 1700804-03RE1 IRPSite5-GW-FD01-20170629 0.11447, Description: IRPSite5-GW-FD01-20170629**

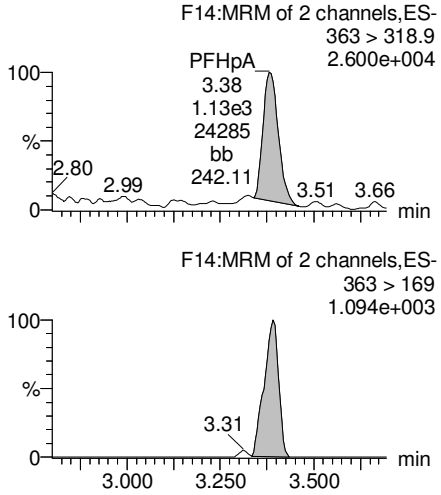
**Total PFBS**



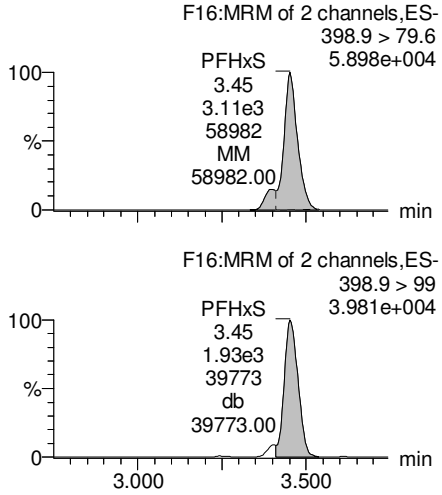

**PFHxA**



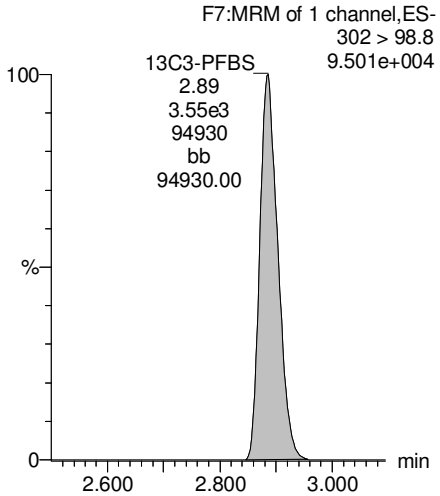

**PFHpA**



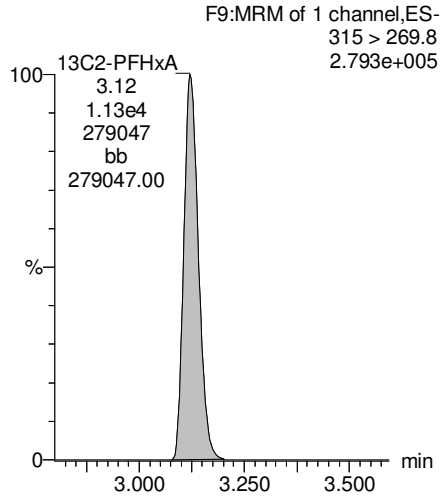

**Total PFHxS**



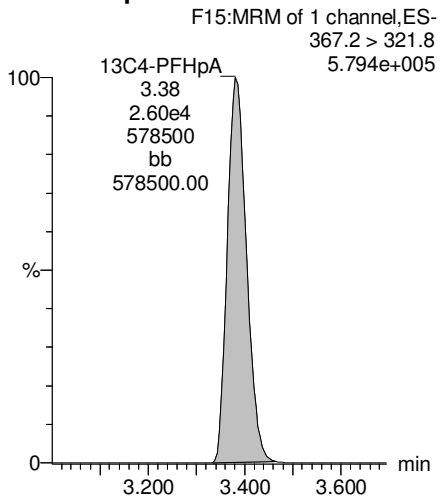

**13C3-PFBS**



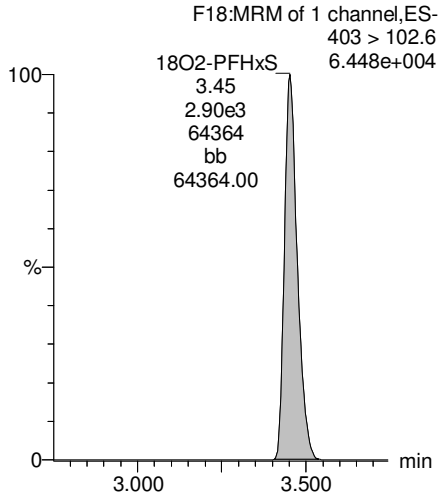

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**




AC 7/18/17

Vista Analytical Laboratory

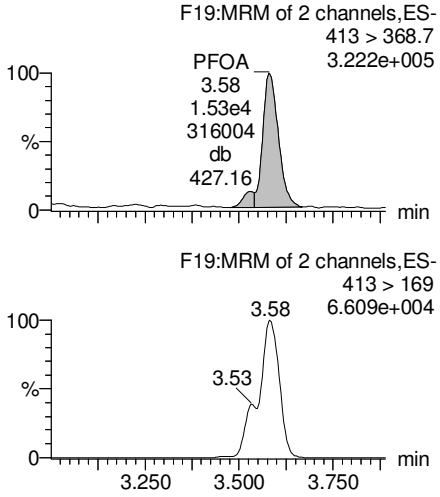
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-11.qld

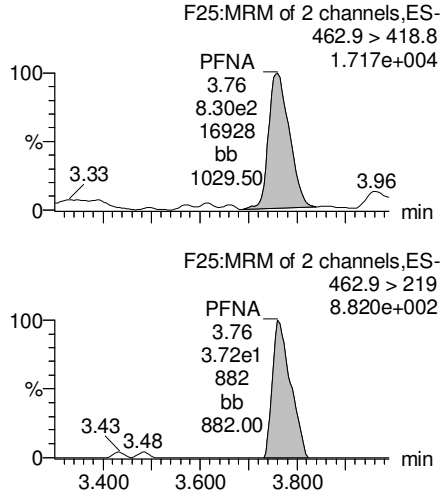
Last Altered: Tuesday, July 18, 2017 14:42:41 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:42:55 Pacific Daylight Time

**Name: 170713M1_11, Date: 13-Jul-2017, Time: 17:54:39, ID: 1700804-03RE1 IRPSite5-GW-FD01-20170629 0.11447, Description: IRPSite5-GW-FD01-20170629**

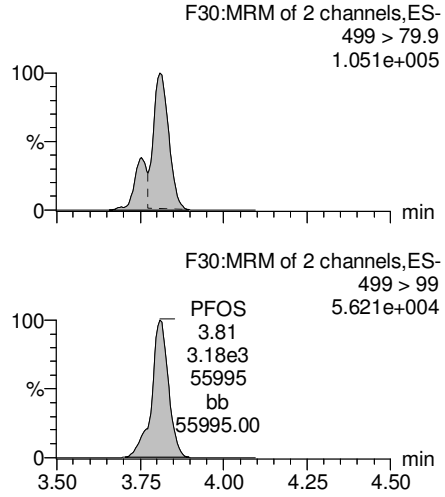
**Total PFOA**



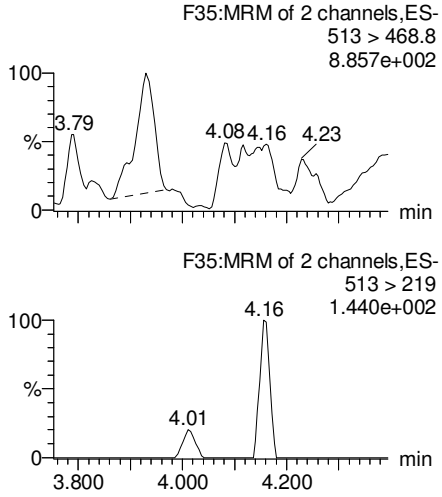

**PFNA**



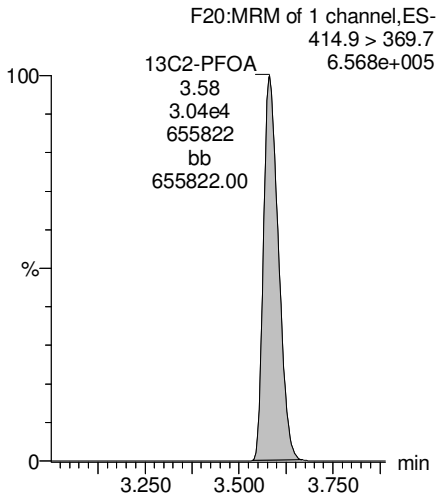

**Total PFOS**



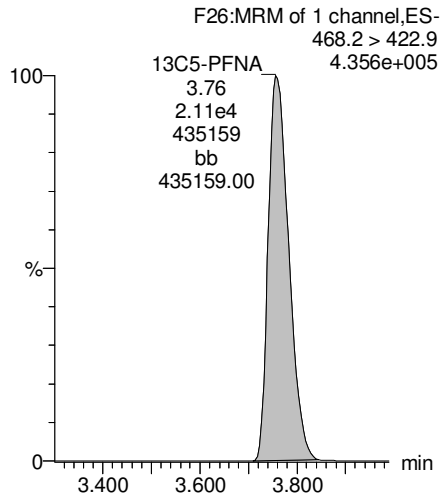

**PFDA**



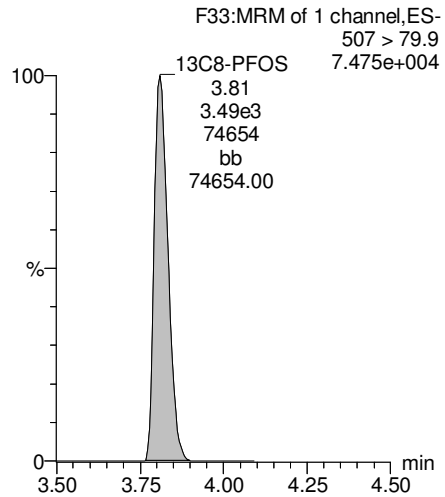

**13C2-PFOA**



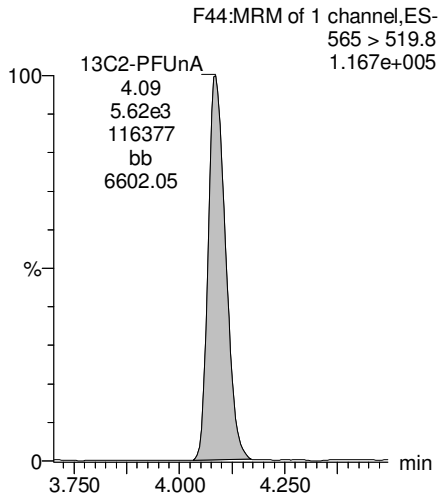

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

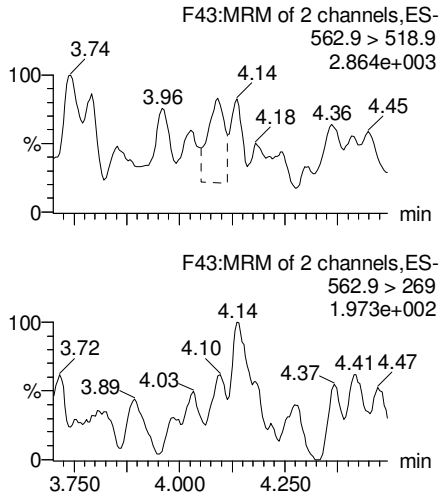
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-11.qld

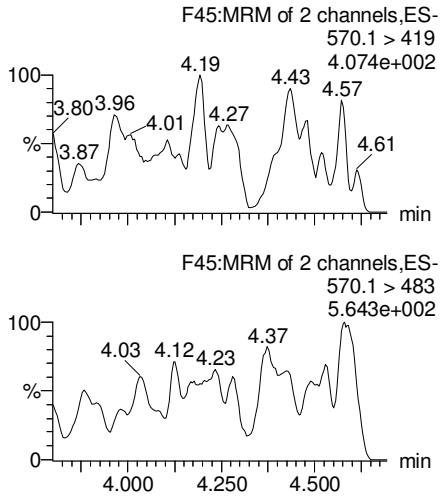
Last Altered: Tuesday, July 18, 2017 14:42:41 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:42:55 Pacific Daylight Time

**Name: 170713M1_11, Date: 13-Jul-2017, Time: 17:54:39, ID: 1700804-03RE1 IRPSite5-GW-FD01-20170629 0.11447, Description: IRPSite5-GW-FD01-20170629**

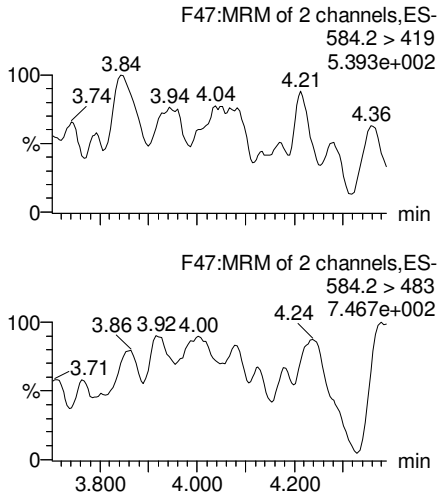
**PFUnA**



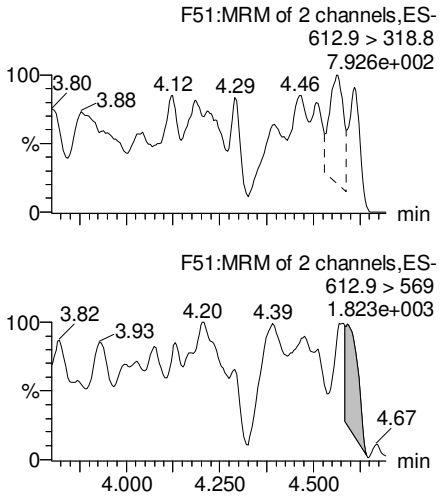

**N-MeFOSAA**



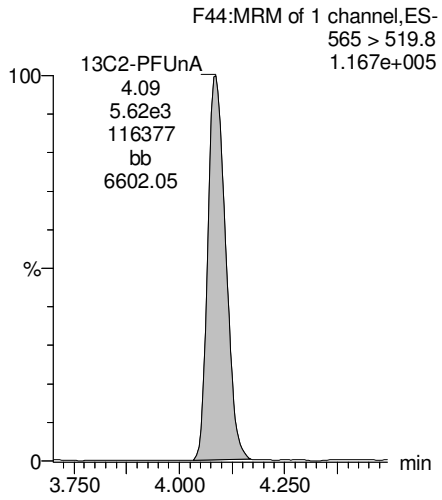

**N-EtFOSAA**



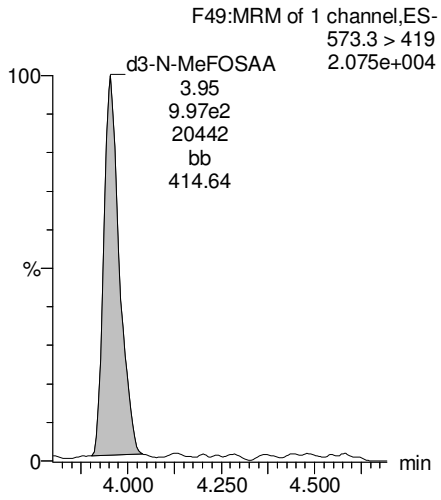

**PFDoA**



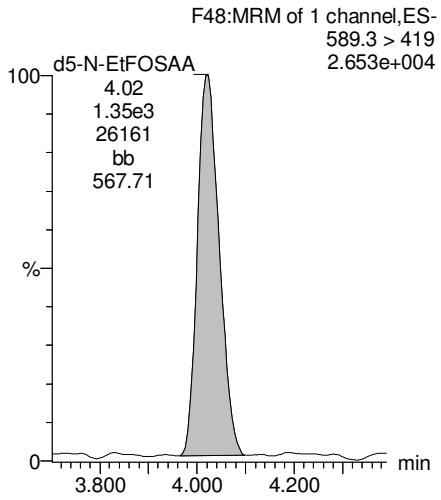

**13C2-PFUnA**



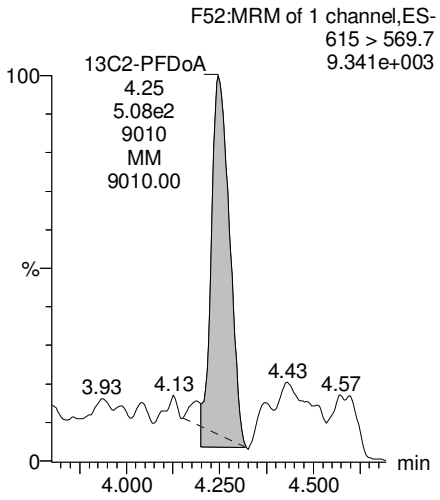

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**




AC 7/18/17

Vista Analytical Laboratory

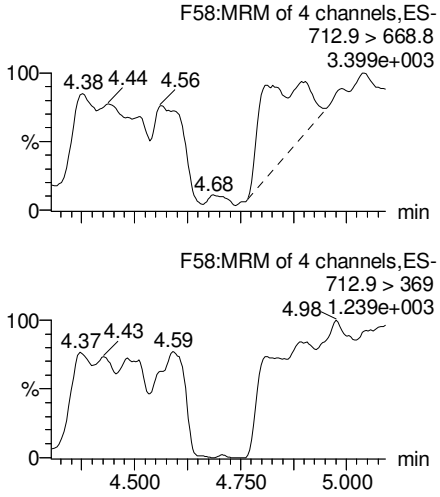
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-11.qld

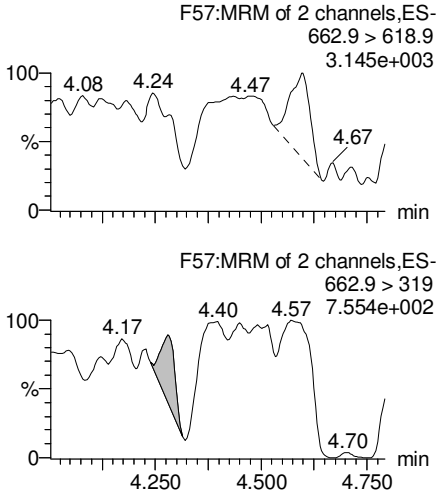
Last Altered: Tuesday, July 18, 2017 14:42:41 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:42:55 Pacific Daylight Time

**Name: 170713M1_11, Date: 13-Jul-2017, Time: 17:54:39, ID: 1700804-03RE1 IRPSite5-GW-FD01-20170629 0.11447, Description: IRPSite5-GW-FD01-20170629**

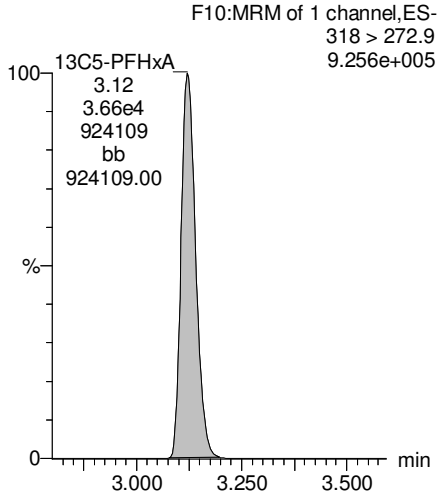
**PFTeDA**



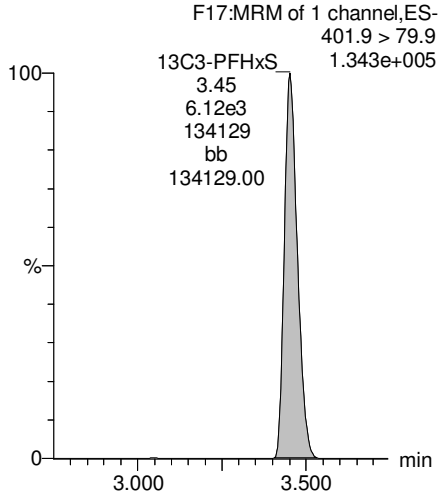

**PFTrDA**



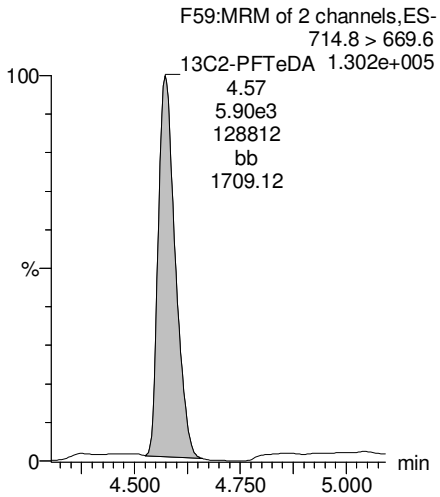

**13C5-PFHxA**



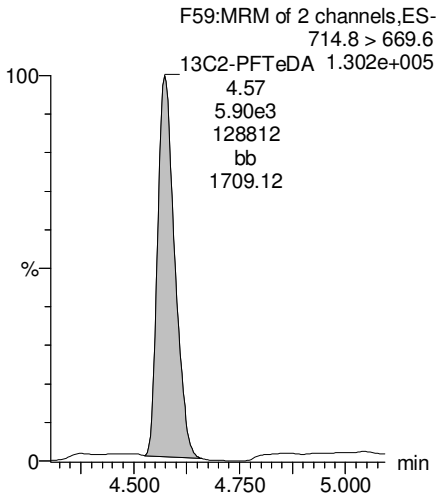

**13C3-PFHxS**



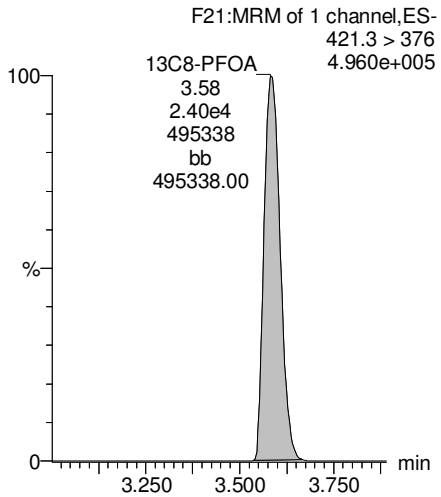

**13C2-PFTeDA**



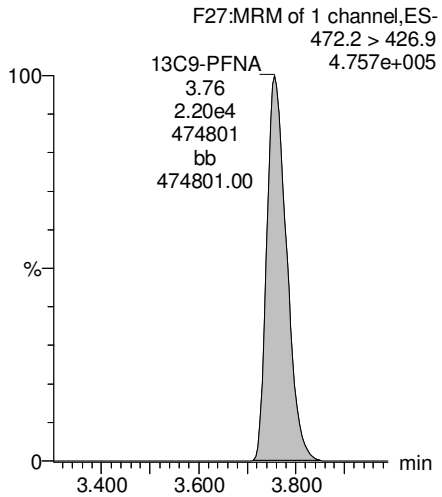

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**




AC 7/18/17

Vista Analytical Laboratory

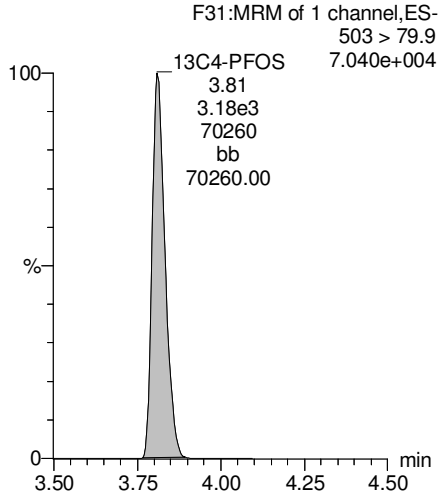
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-11.qld

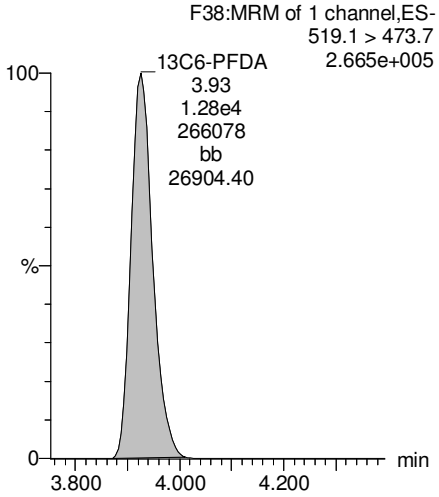
Last Altered: Tuesday, July 18, 2017 14:42:41 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:42:55 Pacific Daylight Time

**Name: 170713M1_11, Date: 13-Jul-2017, Time: 17:54:39, ID: 1700804-03RE1 IRPSite5-GW-FD01-20170629 0.11447, Description: IRPSite5-GW-FD01-20170629**

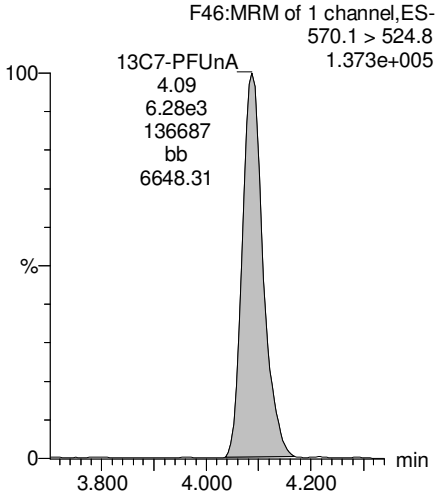
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-12.qld

Last Altered: Tuesday, July 18, 2017 14:45:10 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:45:25 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_12, Date: 13-Jul-2017, Time: 18:05:18, ID: 1700804-04RE1 IRPSite33-GW-FRB01-20170629 0.11778, Description: IRPSite33-GW-FRB01-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | | 3.09e3 | 0.123 | | 2.92 | | | | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | | 9.32e3 | 0.123 | | 3.16 | | | | |
| 3 | 3 | PFHpA | 363 > 318.9 | | 2.20e4 | 0.123 | | 3.43 | | | | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 4.91e0 | 2.13e3 | 0.123 | | 3.55 | 3.46 | 0.0288 | 0.539 | |
| 5 | 5 | PFOA | 413 > 368.7 | | 2.77e4 | 0.123 | | 3.63 | | | | |
| 6 | 6 | PFNA | 462.9 > 418.8 | | 2.00e4 | 0.123 | | 3.82 | | | | |
| 7 | 7 | PFOS | 499 > 79.9 | | 3.53e3 | 0.123 | | 3.86 | | | | |
| 8 | 8 | PFDA | 513 > 468.8 | | 9.48e3 | 0.123 | | 4.00 | | | | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 5.95e3 | 0.123 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 1.15e3 | 0.123 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 1.29e3 | 0.123 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 4.17e2 | 0.123 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 4.17e2 | 0.123 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 5.46e3 | 0.123 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.11e3 | 1.16e3 | 0.123 | 0.918 | 1.43 | 1.38 | 11.9 | 106 | 103.8 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 2.59e4 | 2.98e4 | 0.123 | 0.275 | 2.72 | 2.66 | 4.35 | 129 | 126.5 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 3.09e3 | 2.98e4 | 0.123 | 0.033 | 2.92 | 2.89 | 0.517 | 127 | 124.9 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 9.32e3 | 2.98e4 | 0.123 | 0.304 | 3.16 | 3.13 | 1.56 | 41.9 | 102.8 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.20e4 | 2.98e4 | 0.123 | 0.306 | 3.43 | 3.39 | 3.69 | 98.3 | 96.5 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.13e3 | 4.53e3 | 0.123 | 0.437 | 3.55 | 3.46 | 5.88 | 110 | 107.5 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 2.77e4 | 2.18e4 | 0.123 | 1.292 | 3.63 | 3.59 | 15.9 | 100 | 98.5 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.00e4 | 1.96e4 | 0.123 | 0.980 | 3.82 | 3.76 | 12.7 | 106 | 104.0 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 3.53e3 | 3.56e3 | 0.123 | 1.098 | 3.86 | 3.82 | 12.4 | 92.0 | 90.3 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 9.48e3 | 1.12e4 | 0.123 | 0.928 | 4.00 | 3.93 | 10.6 | 93.2 | 91.5 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 5.95e3 | 7.21e3 | 0.123 | 1.083 | 4.16 | 4.09 | 10.3 | 77.6 | 76.2 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 1.15e3 | 7.21e3 | 0.123 | 0.224 | 4.00 | 3.95 | 1.99 | 72.3 | 71.0 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.29e3 | 7.21e3 | 0.123 | 0.230 | 4.08 | 4.02 | 2.24 | 79.6 | 78.1 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 4.17e2 | 7.21e3 | 0.123 | 0.130 | 4.32 | 4.25 | 0.723 | 45.4 | 44.6 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 5.46e3 | 7.21e3 | 0.123 | 1.018 | 4.66 | 4.58 | 9.47 | 75.8 | 74.4 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.16e3 | 1.16e3 | 0.123 | 1.000 | 1.43 | 1.39 | 12.5 | 102 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 2.98e4 | 2.98e4 | 0.123 | 1.000 | 3.18 | 3.13 | 5.00 | 40.7 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 4.53e3 | 4.53e3 | 0.123 | 1.000 | 3.55 | 3.46 | 12.5 | 102 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-12.qld

Last Altered: Tuesday, July 18, 2017 14:45:10 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:45:25 Pacific Daylight Time

**Name: 170713M1_12, Date: 13-Jul-2017, Time: 18:05:18, ID: 1700804-04RE1 IRPSite33-GW-FRB01-20170629 0.11778, Description: IRPSite33-GW-FRB01-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.18e4 | 2.18e4 | 0.123 | 1.000 | 3.63 | 3.59 | 12.5 | 102 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 1.96e4 | 1.96e4 | 0.123 | 1.000 | 3.82 | 3.76 | 12.5 | 102 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 3.56e3 | 3.56e3 | 0.123 | 1.000 | 3.86 | 3.82 | 12.5 | 102 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.12e4 | 1.12e4 | 0.123 | 1.000 | 4.00 | 3.93 | 12.5 | 102 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 7.21e3 | 7.21e3 | 0.123 | 1.000 | 4.16 | 4.09 | 12.5 | 102 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 0.00e0 | 3.09e3 | 0.123 | | 2.92 | | 0.000 | | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 4.91e0 | 2.13e3 | 0.123 | | 3.55 | | 0.0288 | 0.539 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 0.00e0 | 2.77e4 | 0.123 | | 3.63 | | 0.000 | | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 0.00e0 | 3.53e3 | 0.123 | | 3.86 | | 0.000 | | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 1.15e3 | 0.123 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 1.29e3 | 0.123 | | 4.30 | | 0.000 | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-12.qld

Last Altered: Tuesday, July 18, 2017 14:45:10 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:45:25 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_12, Date: 13-Jul-2017, Time: 18:05:18, ID: 1700804-04RE1 IRPSite33-GW-FRB01-20170629 0.11778, Description: IRPSite33-GW-FRB01-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.46 | 4.907 | 2130.964 | 0.029 | MM | 0.5 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | | | 27740.279 | | MM-I | |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | N-EtFOSAA | 584.2 > 419 | | | 1294.414 | | MM-I | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

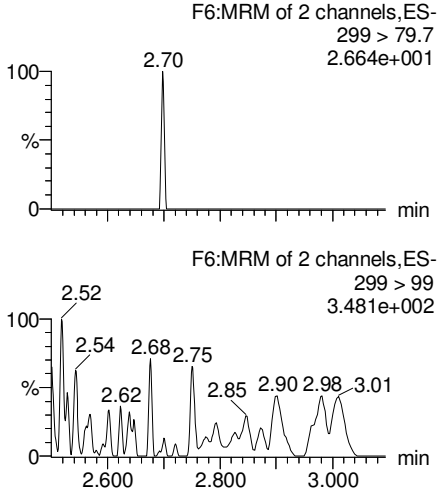
Dataset: U:\Q4.PRO\results\170713M1\170713M1-12.qld

Last Altered: Tuesday, July 18, 2017 14:45:10 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:45:25 Pacific Daylight Time

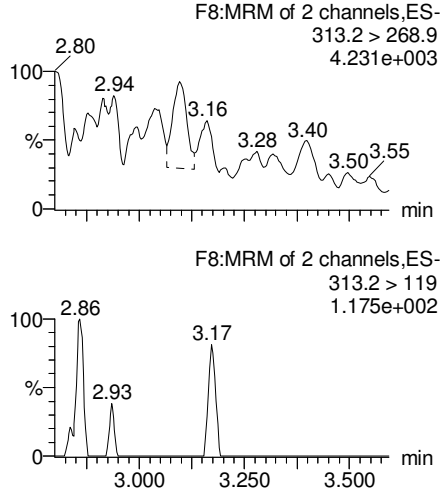
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_12, Date: 13-Jul-2017, Time: 18:05:18, ID: 1700804-04RE1 IRPSite33-GW-FRB01-20170629 0.11778, Description: IRPSite33-GW-FRB01-20170629**

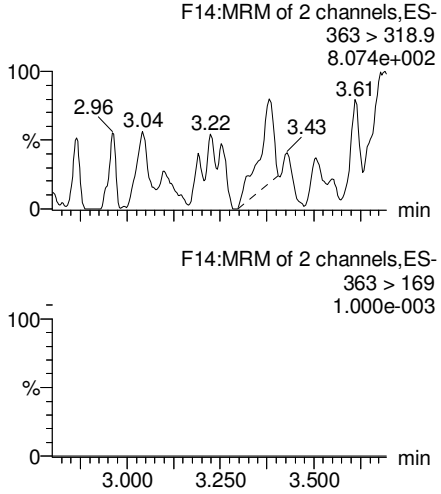
**Total PFBS**



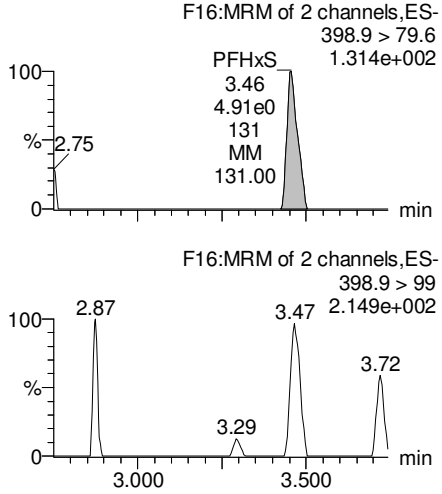

**PFHxA**



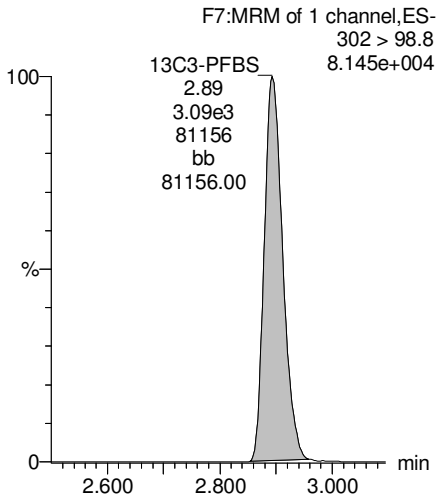

**PFHpA**



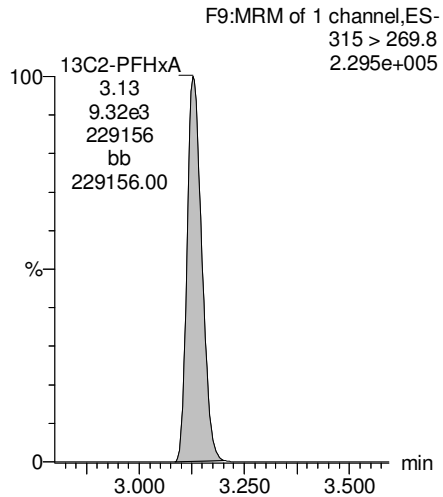

**Total PFHxS**



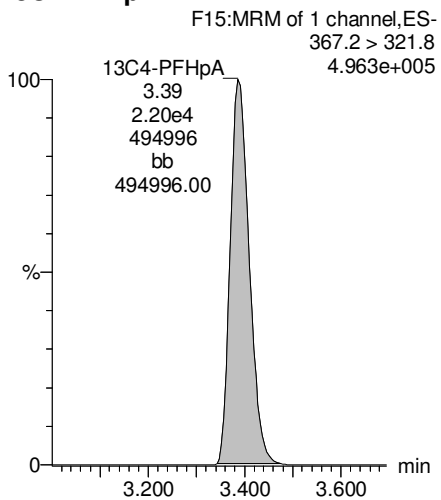

**13C3-PFBS**



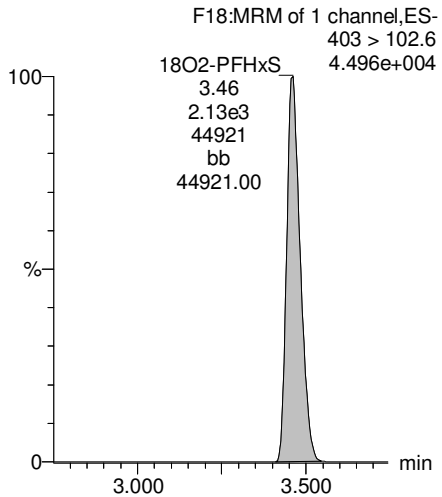

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-12.qld

Last Altered: Tuesday, July 18, 2017 14:45:10 Pacific Daylight Time
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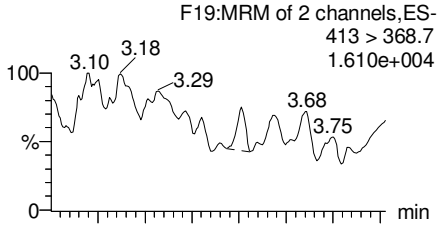
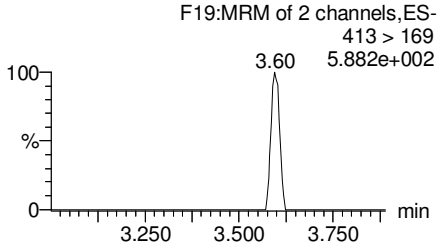
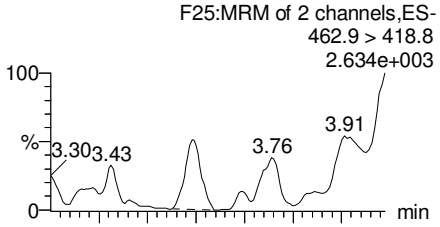
**Name: 170713M1_12, Date: 13-Jul-2017, Time: 18:05:18, ID: 1700804-04RE1 IRPSite33-GW-FRB01-20170629 0.11778, Description: IRPSite33-GW-FRB01-20170629**

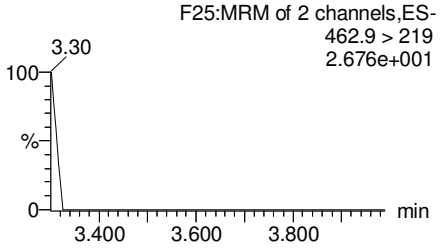
**Total PFOA**



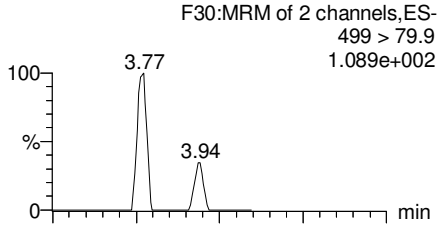



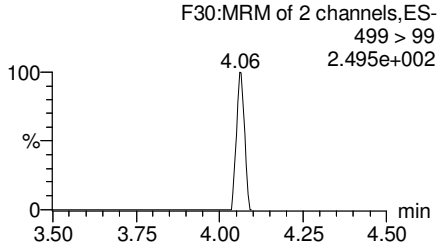

**PFNA**



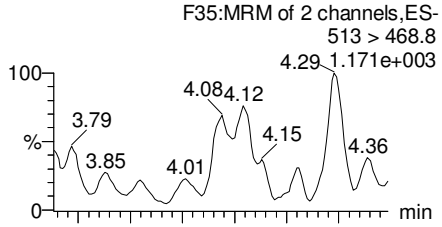



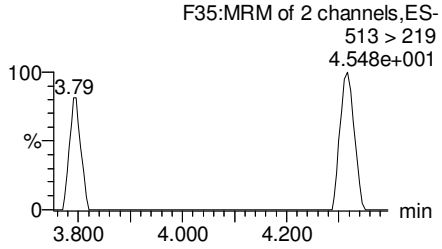

**Total PFOS**



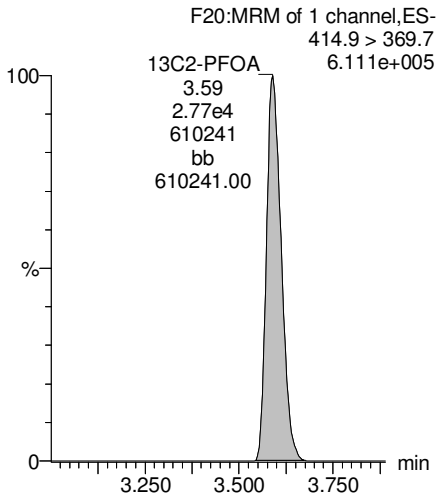




**PFDA**

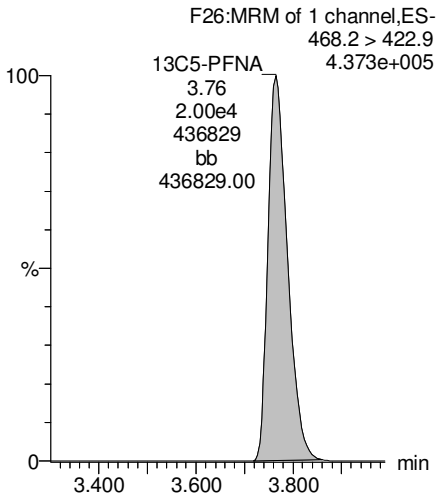


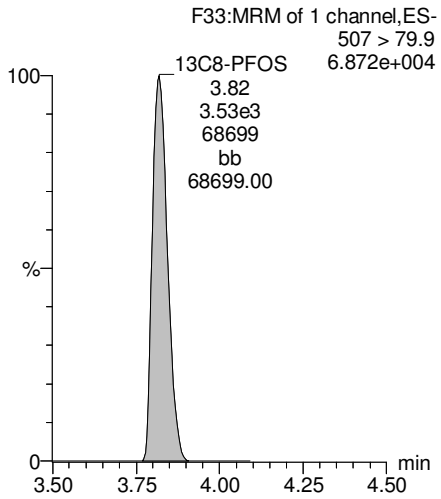

**13C2-PFOA**



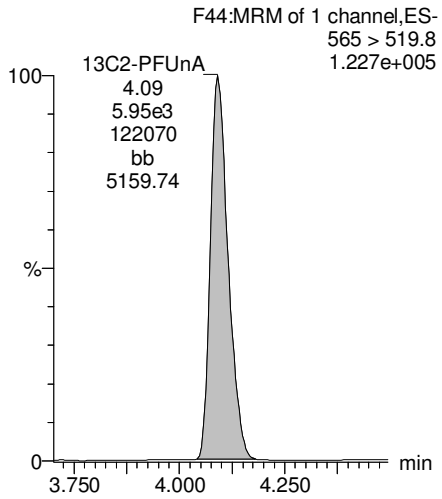

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-12.qld

Last Altered: Tuesday, July 18, 2017 14:45:10 Pacific Daylight Time
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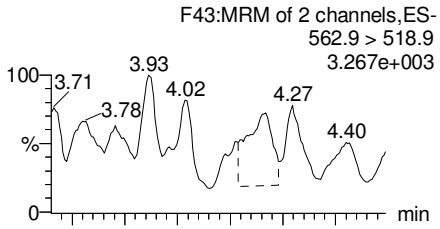
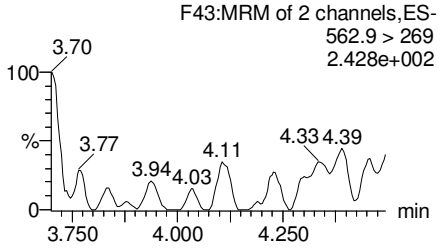
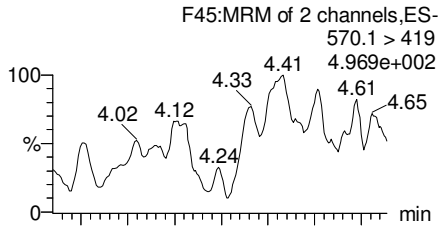
**Name: 170713M1_12, Date: 13-Jul-2017, Time: 18:05:18, ID: 1700804-04RE1 IRPSite33-GW-FRB01-20170629 0.11778, Description: IRPSite33-GW-FRB01-20170629**

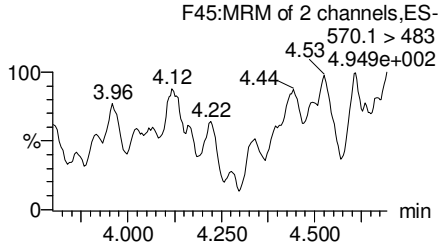
**PFUnA**



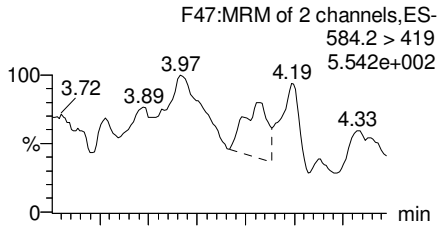



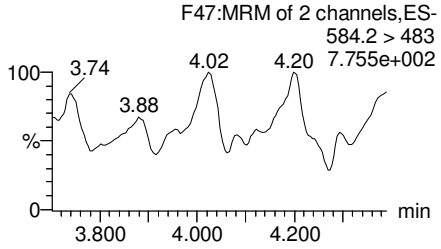

**N-MeFOSAA**



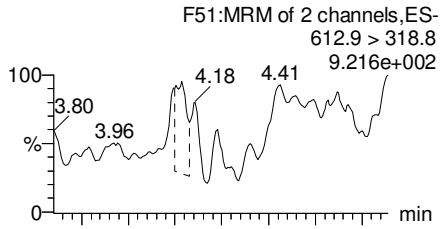



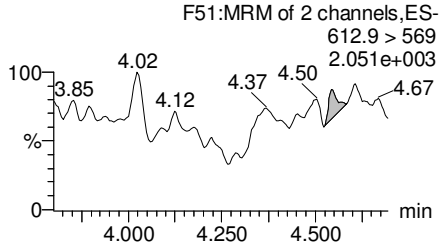

**N-EtFOSAA**



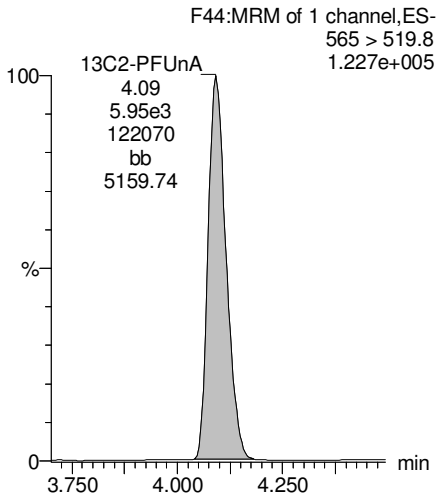




**PFDoA**

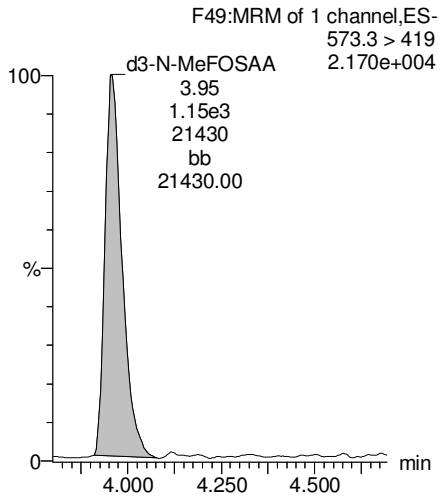


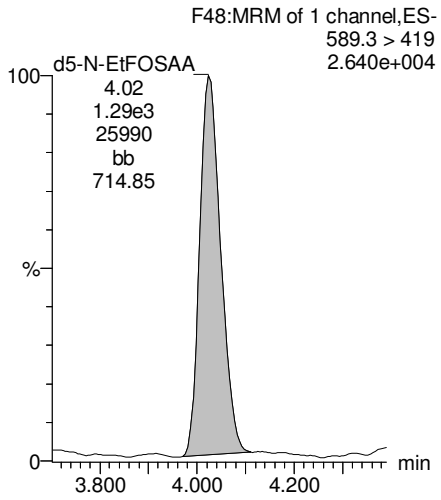

**13C2-PFUnA**



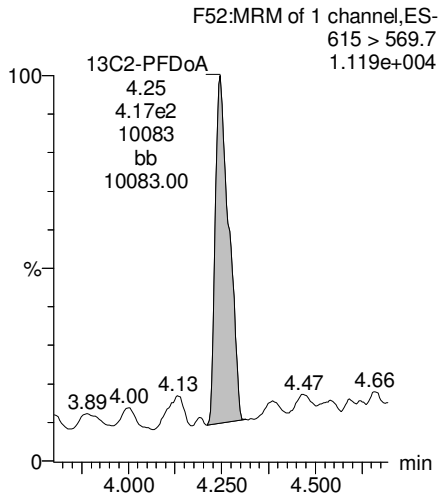

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-12.qld

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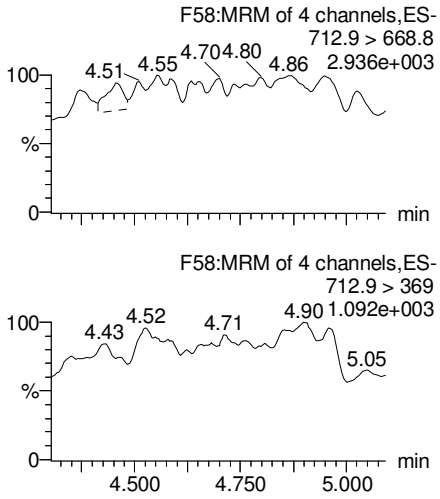
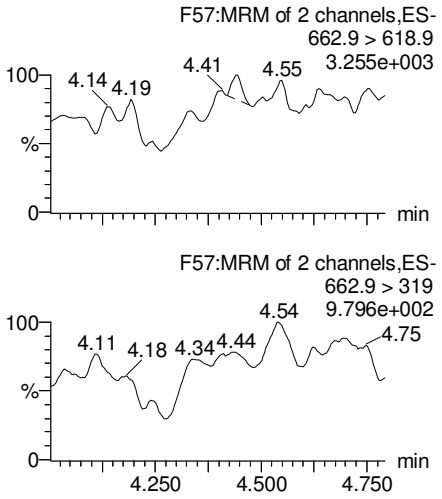
**Name: 170713M1_12, Date: 13-Jul-2017, Time: 18:05:18, ID: 1700804-04RE1 IRPSite33-GW-FRB01-20170629 0.11778, Description: IRPSite33-GW-FRB01-20170629**

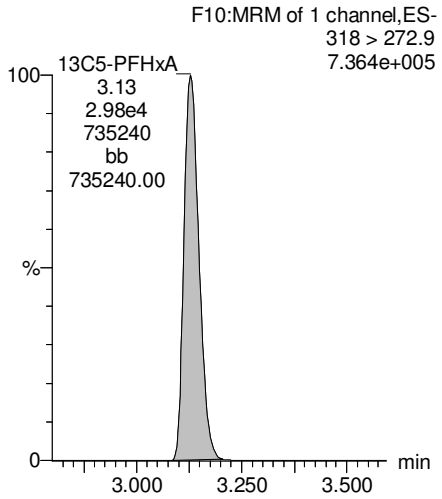
**PFTeDA**



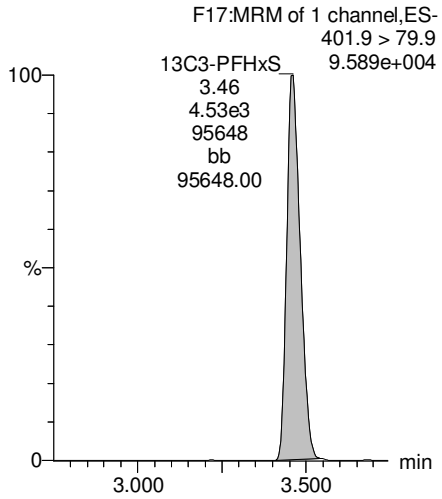

**PFTrDA**



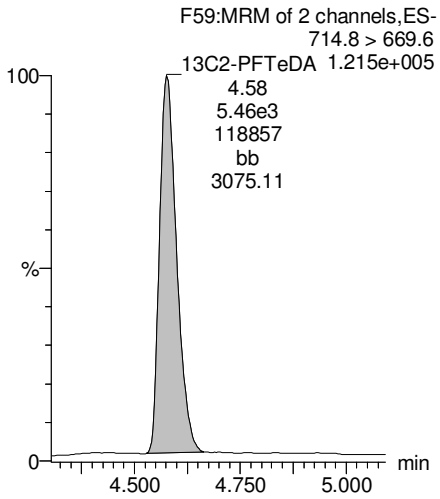

**13C5-PFHxA**



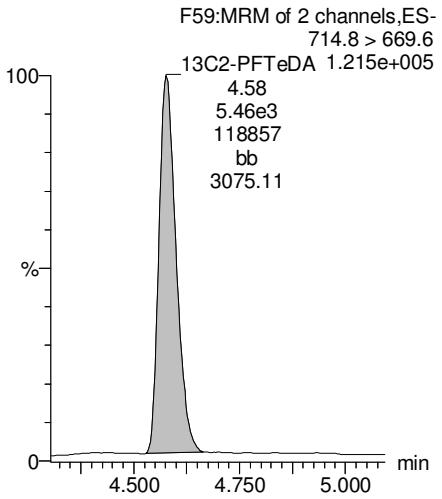

**13C3-PFHxS**



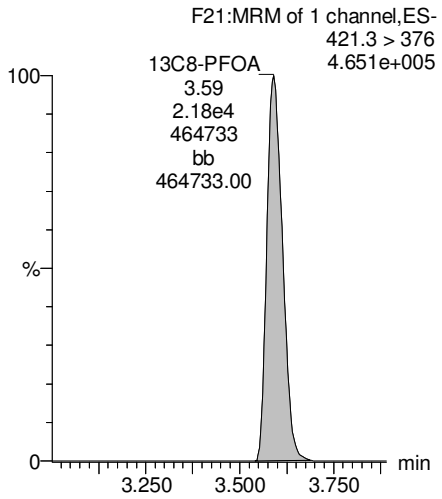

**13C2-PFTeDA**



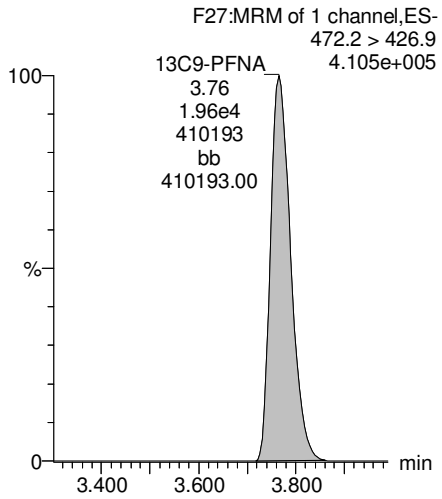

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

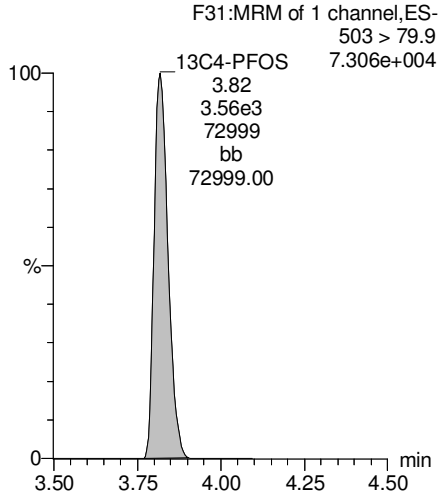
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-12.qld

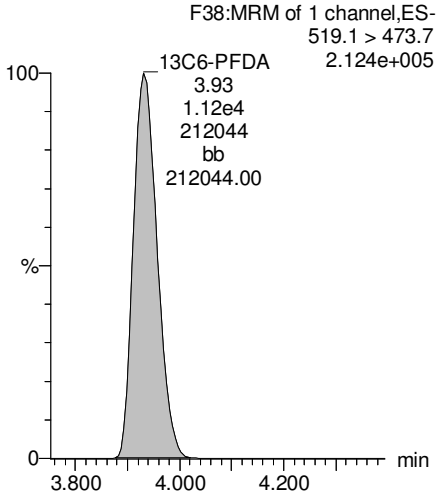
Last Altered: Tuesday, July 18, 2017 14:45:10 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:45:25 Pacific Daylight Time

**Name: 170713M1_12, Date: 13-Jul-2017, Time: 18:05:18, ID: 1700804-04RE1 IRPSite33-GW-FRB01-20170629 0.11778, Description: IRPSite33-GW-FRB01-20170629**

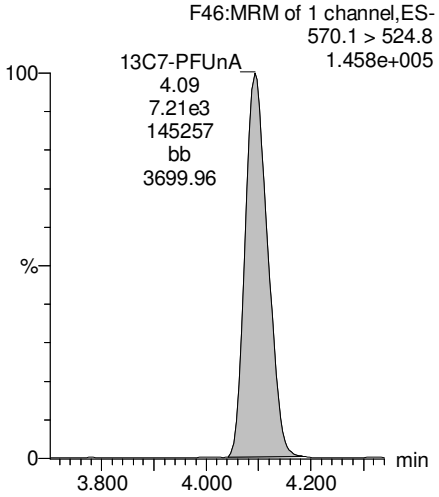
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-13.qld

Last Altered: Tuesday, July 18, 2017 14:48:01 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:48:17 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_13, Date: 13-Jul-2017, Time: 18:15:56, ID: 1700804-05RE1 IRPSite33-GW-11MW204D-20170629 0.114, Description: IRPSite33-GW-11MW204D-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 7.47e2 | 3.70e3 | 0.117 | | 2.92 | 2.89 | 2.52 | 9.95 | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 2.30e4 | 1.17e4 | 0.117 | | 3.16 | 3.13 | 9.86 | 51.0 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 7.90e3 | 2.70e4 | 0.117 | | 3.43 | 3.39 | 3.66 | 21.5 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 2.91e3 | 2.69e3 | 0.117 | | 3.55 | 3.46 | 13.5 | 62.9 | |
| 5 | 5 | PFOA | 413 > 368.7 | 3.16e4 | 3.29e4 | 0.117 | | 3.63 | 3.59 | 12.0 | 89.2 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | 6.67e2 | 2.32e4 | 0.117 | | 3.82 | 3.77 | 0.359 | 1.88 | |
| 7 | 7 | PFOS | 499 > 79.9 | 1.96e3 | 4.86e3 | 0.117 | | 3.86 | 3.81 | 5.03 | 38.3 | |
| 8 | 8 | PFDA | 513 > 468.8 | 2.63e2 | 1.20e4 | 0.117 | | 4.00 | 3.95 | 0.274 | 1.94 | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 8.94e3 | 0.117 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 1.73e3 | 0.117 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 1.82e3 | 0.117 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 5.10e2 | 0.117 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 5.10e2 | 0.117 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 6.81e3 | 0.117 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.43e3 | 1.47e3 | 0.117 | 0.918 | 1.43 | 1.38 | 12.2 | 113 | 106.5 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.22e4 | 3.82e4 | 0.117 | 0.275 | 2.72 | 2.66 | 4.22 | 131 | 122.8 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 3.70e3 | 3.82e4 | 0.117 | 0.033 | 2.92 | 2.89 | 0.485 | 125 | 117.1 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.17e4 | 3.82e4 | 0.117 | 0.304 | 3.16 | 3.13 | 1.53 | 42.9 | 100.6 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.70e4 | 3.82e4 | 0.117 | 0.306 | 3.43 | 3.39 | 3.54 | 98.5 | 92.5 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.69e3 | 5.83e3 | 0.117 | 0.437 | 3.55 | 3.46 | 5.76 | 112 | 105.4 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.29e4 | 2.96e4 | 0.117 | 1.292 | 3.63 | 3.59 | 13.9 | 91.6 | 85.9 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.32e4 | 2.67e4 | 0.117 | 0.980 | 3.82 | 3.76 | 10.9 | 94.5 | 88.7 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 4.86e3 | 4.20e3 | 0.117 | 1.098 | 3.86 | 3.82 | 14.5 | 112 | 105.4 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 1.20e4 | 1.51e4 | 0.117 | 0.928 | 4.00 | 3.93 | 9.91 | 91.1 | 85.5 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 8.94e3 | 1.05e4 | 0.117 | 1.083 | 4.16 | 4.09 | 10.6 | 83.9 | 78.7 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 1.73e3 | 1.05e4 | 0.117 | 0.224 | 4.00 | 3.96 | 2.06 | 78.2 | 73.4 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.82e3 | 1.05e4 | 0.117 | 0.230 | 4.08 | 4.02 | 2.17 | 80.4 | 75.4 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 5.10e2 | 1.05e4 | 0.117 | 0.130 | 4.32 | 4.25 | 0.608 | 39.9 | 37.4 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 6.81e3 | 1.05e4 | 0.117 | 1.018 | 4.66 | 4.58 | 8.11 | 67.9 | 63.7 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.47e3 | 1.47e3 | 0.117 | 1.000 | 1.43 | 1.38 | 12.5 | 107 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 3.82e4 | 3.82e4 | 0.117 | 1.000 | 3.18 | 3.13 | 5.00 | 42.6 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 5.83e3 | 5.83e3 | 0.117 | 1.000 | 3.55 | 3.46 | 12.5 | 107 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-13.qld

Last Altered: Tuesday, July 18, 2017 14:48:01 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:48:17 Pacific Daylight Time

**Name: 170713M1_13, Date: 13-Jul-2017, Time: 18:15:56, ID: 1700804-05RE1 IRPSite33-GW-11MW204D-20170629 0.114, Description: IRPSite33-GW-11MW204D-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.96e4 | 2.96e4 | 0.117 | 1.000 | 3.63 | 3.59 | 12.5 | 107 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.67e4 | 2.67e4 | 0.117 | 1.000 | 3.82 | 3.76 | 12.5 | 107 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 4.20e3 | 4.20e3 | 0.117 | 1.000 | 3.86 | 3.81 | 12.5 | 107 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.51e4 | 1.51e4 | 0.117 | 1.000 | 4.00 | 3.93 | 12.5 | 107 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 1.05e4 | 1.05e4 | 0.117 | 1.000 | 4.16 | 4.10 | 12.5 | 107 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 7.47e2 | 3.70e3 | 0.117 | | 2.92 | | 2.52 | 9.95 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 2.91e3 | 2.69e3 | 0.117 | | 3.55 | | 13.5 | 62.9 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 3.42e4 | 3.29e4 | 0.117 | | 3.63 | | 13.0 | 95.8 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 1.96e3 | 4.86e3 | 0.117 | | 3.86 | | 5.03 | 38.3 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 1.73e3 | 0.117 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 1.82e3 | 0.117 | | 4.30 | | 0.000 | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-13.qld

Last Altered: Tuesday, July 18, 2017 14:48:01 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:48:17 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_13, Date: 13-Jul-2017, Time: 18:15:56, ID: 1700804-05RE1 IRPSite33-GW-11MW204D-20170629 0.114, Description: IRPSite33-GW-11MW204D-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.89 | 746.780 | 3703.664 | 2.520 | bb | 10.0 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.46 | 2906.838 | 2685.359 | 13.531 | MM | 62.9 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | 3.59 | 31602.855 | 32874.227 | 12.017 | db | 89.2 |
| 2 | 40 | Total PFOA | 413 > 368.7 | 3.53 | 2609.961 | 32874.227 | 0.992 | bd | 6.6 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.81 | 1957.758 | 4861.352 | 5.034 | MM | 38.3 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

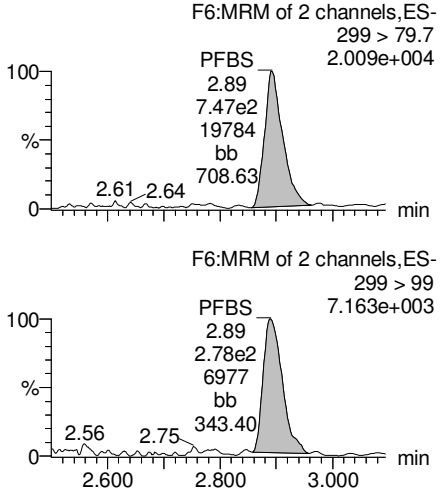
Dataset: U:\Q4.PRO\results\170713M1\170713M1-13.qld

Last Altered: Tuesday, July 18, 2017 14:48:01 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:48:17 Pacific Daylight Time

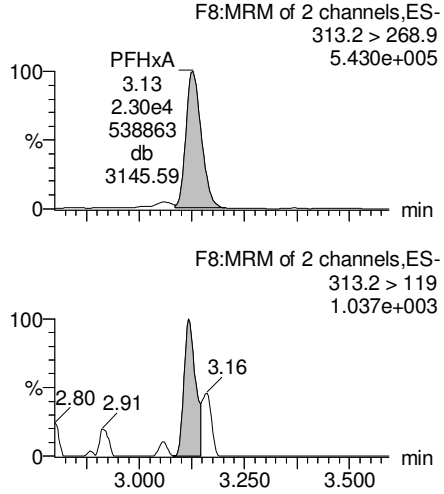
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_13, Date: 13-Jul-2017, Time: 18:15:56, ID: 1700804-05RE1 IRPSite33-GW-11MW204D-20170629 0.114, Description: IRPSite33-GW-11MW204D-20170629**

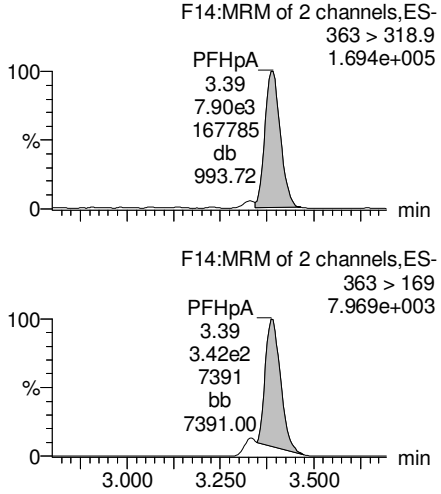
**Total PFBS**



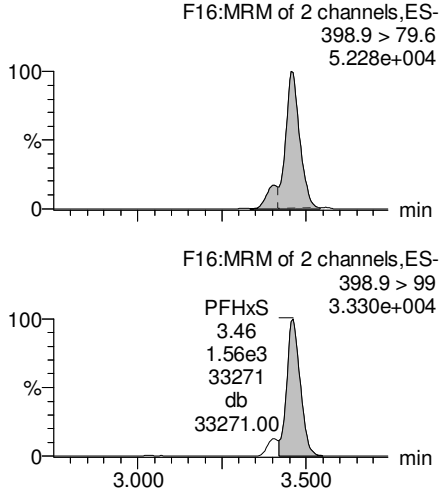

**PFHxA**



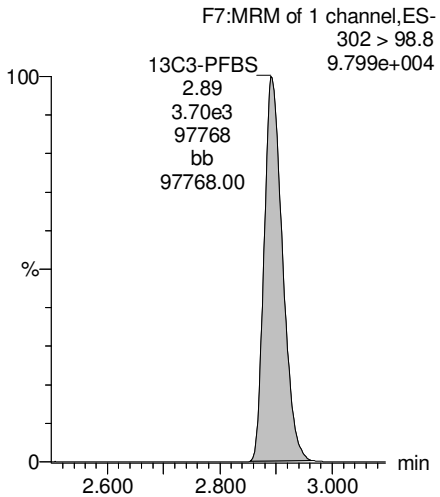

**PFHpA**



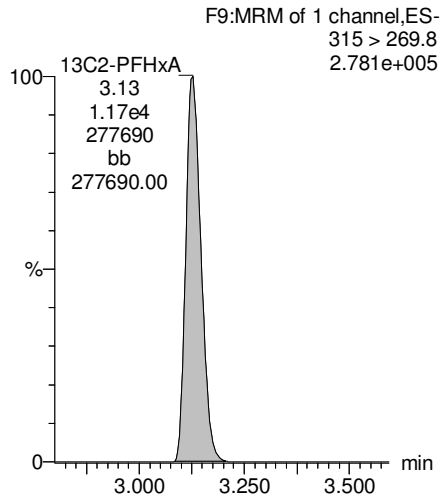

**Total PFHxS**



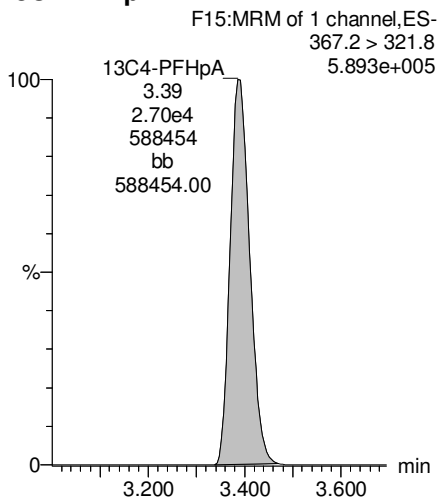

**13C3-PFBS**



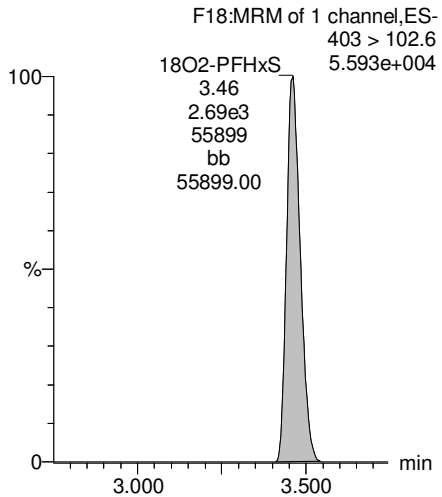

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

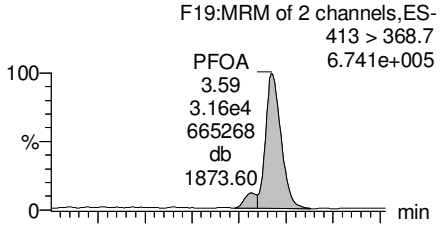
Reviewed: WJL 7/19/2017

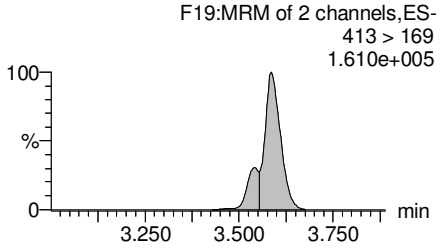
Dataset: U:\Q4.PRO\results\170713M1\170713M1-13.qld

Last Altered: Tuesday, July 18, 2017 14:48:01 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:48:17 Pacific Daylight Time

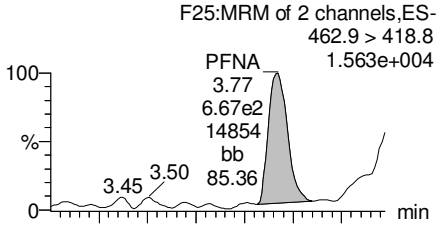
**Name: 170713M1_13, Date: 13-Jul-2017, Time: 18:15:56, ID: 1700804-05RE1 IRPSite33-GW-11MW204D-20170629 0.114, Description: IRPSite33-GW-11MW204D-20170629**

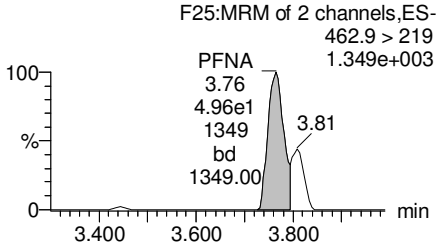
**Total PFOA**



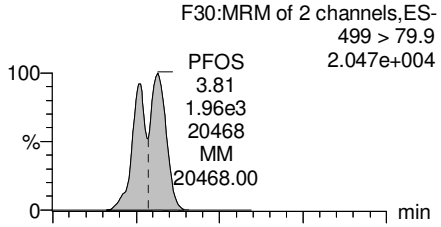



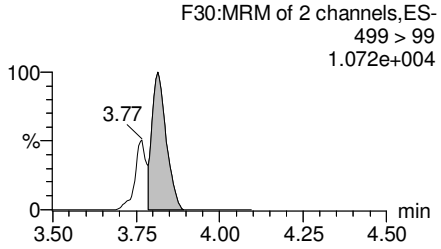

**PFNA**



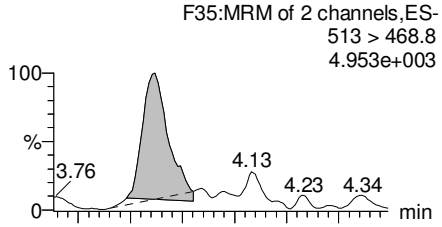



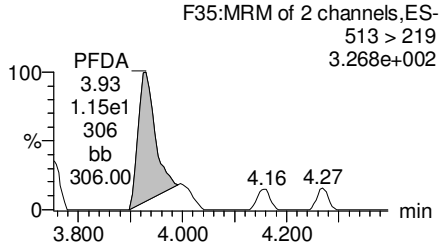

**Total PFOS**



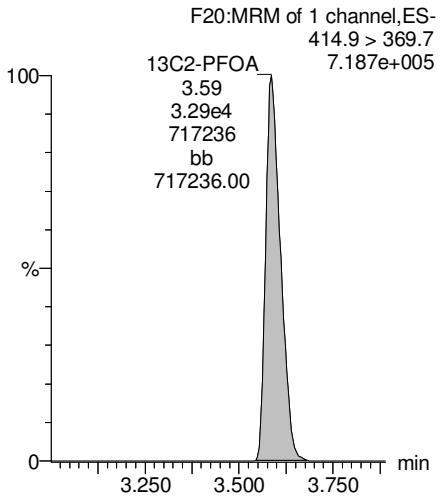




**PFDA**

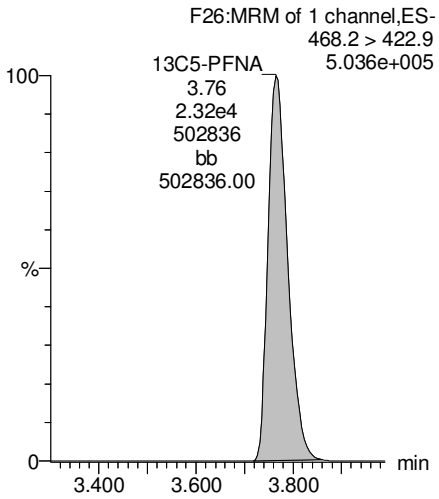


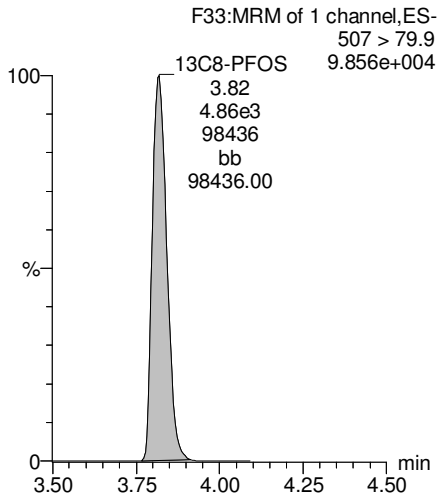

**13C2-PFOA**



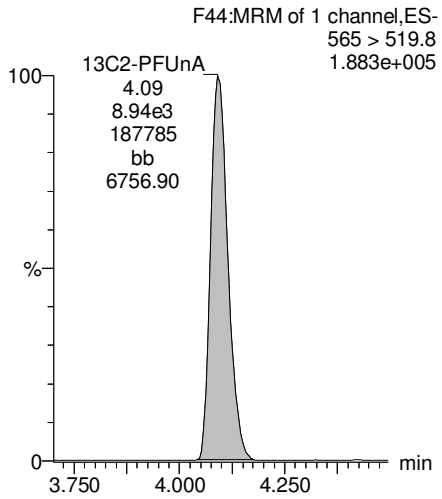

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

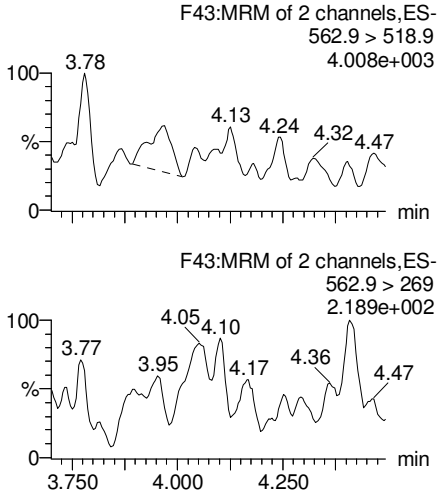
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-13.qld

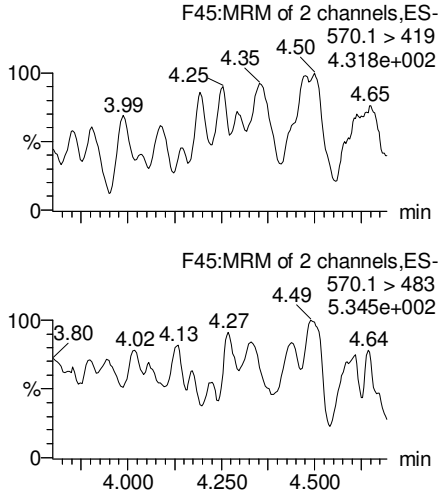
Last Altered: Tuesday, July 18, 2017 14:48:01 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:48:17 Pacific Daylight Time

**Name: 170713M1_13, Date: 13-Jul-2017, Time: 18:15:56, ID: 1700804-05RE1 IRPSite33-GW-11MW204D-20170629 0.114, Description: IRPSite33-GW-11MW204D-20170629**

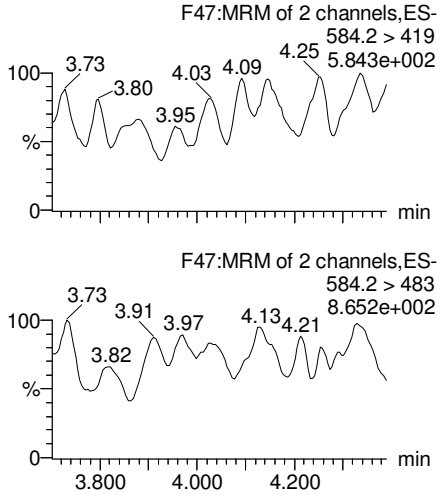
**PFUnA**



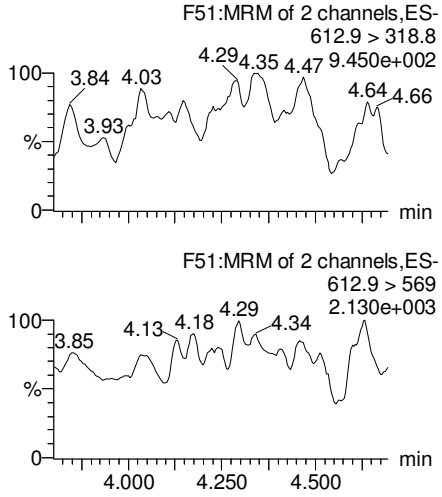

**N-MeFOSAA**



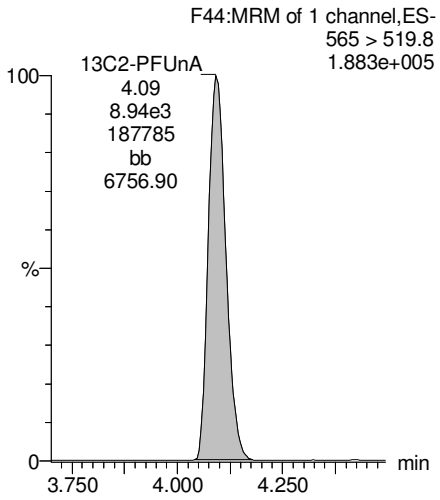

**N-EtFOSAA**



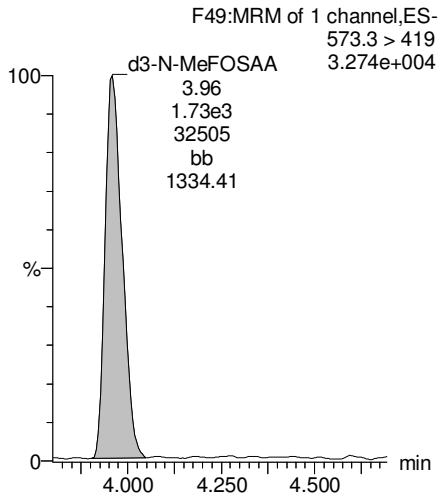

**PFDoA**



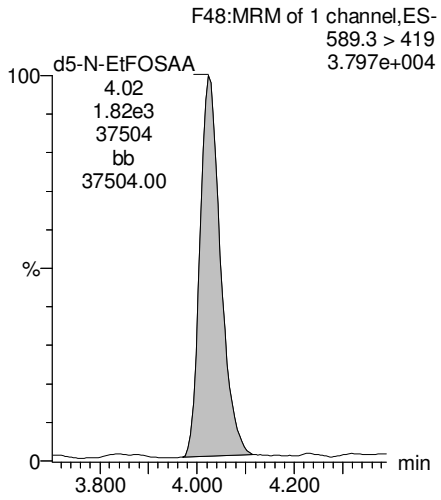

**13C2-PFUnA**



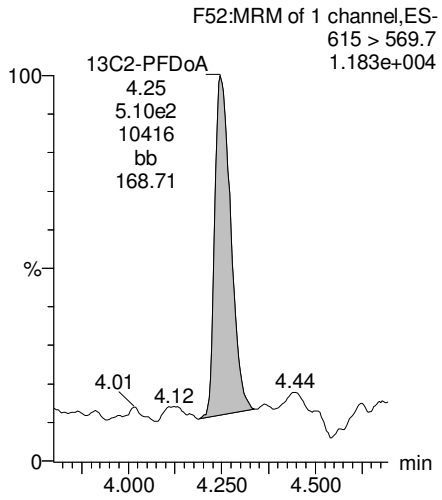

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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Vista Analytical Laboratory

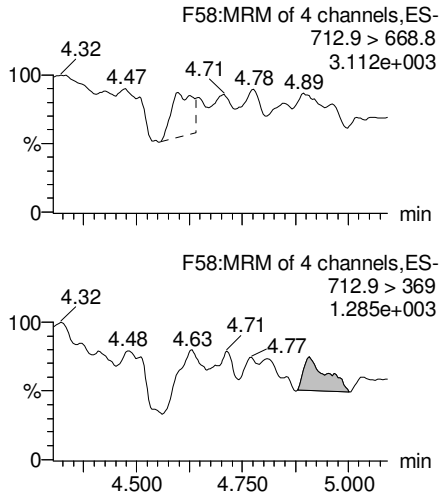
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-13.qld

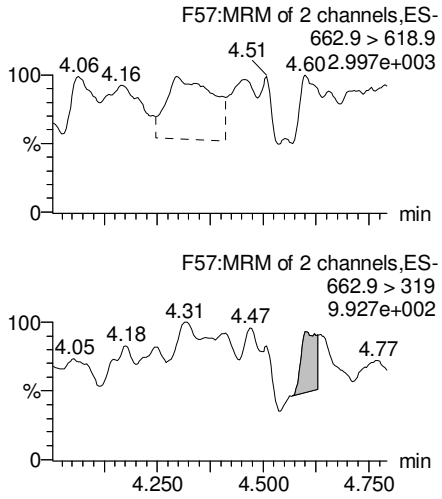
Last Altered: Tuesday, July 18, 2017 14:48:01 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:48:17 Pacific Daylight Time

**Name: 170713M1_13, Date: 13-Jul-2017, Time: 18:15:56, ID: 1700804-05RE1 IRPSite33-GW-11MW204D-20170629 0.114, Description: IRPSite33-GW-11MW204D-20170629**

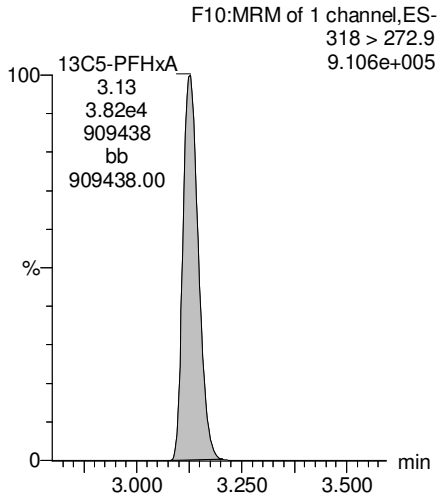
**PFTeDA**



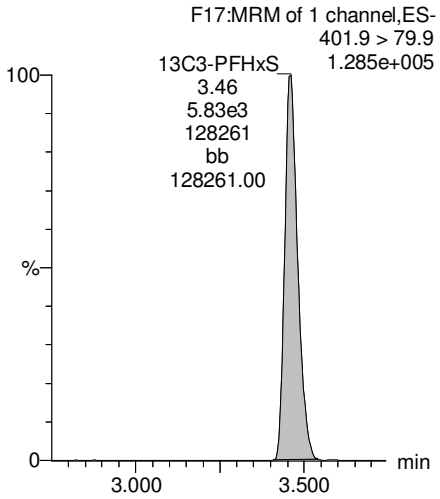

**PFTrDA**



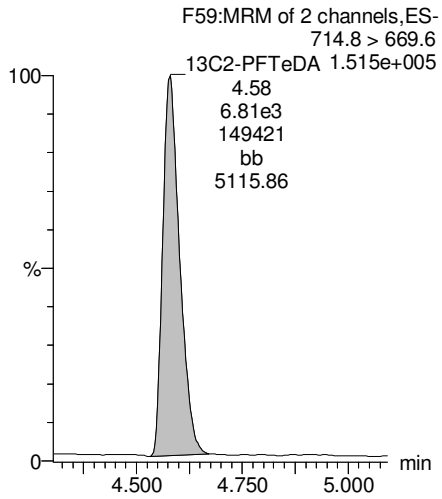

**13C5-PFHxA**



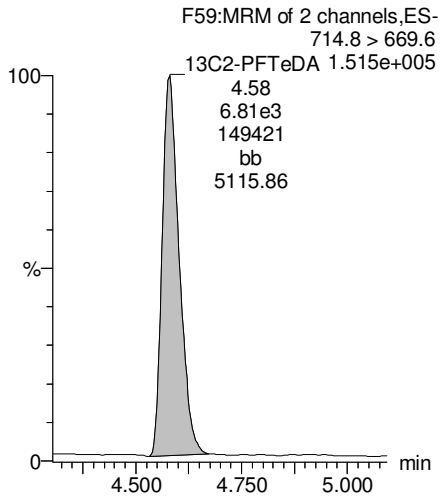

**13C3-PFHxS**



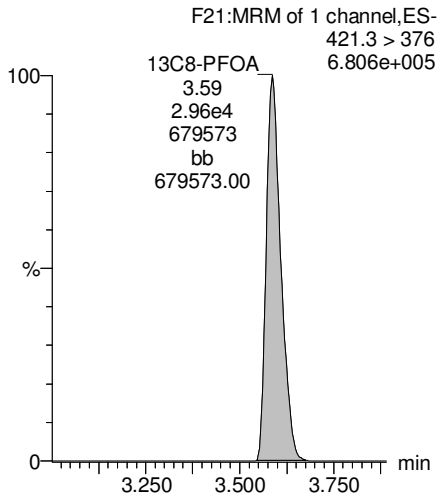

**13C2-PFTeDA**



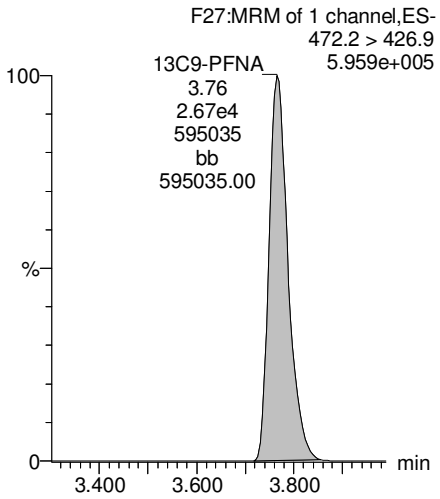

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

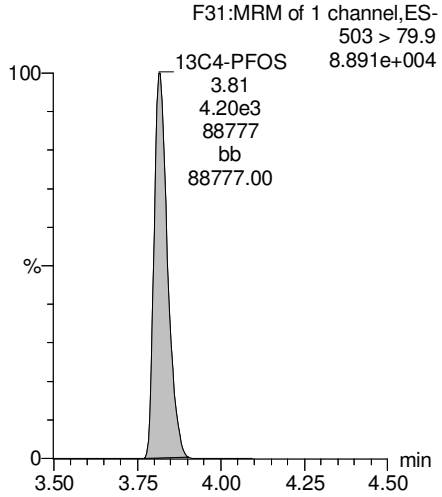
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-13.qld

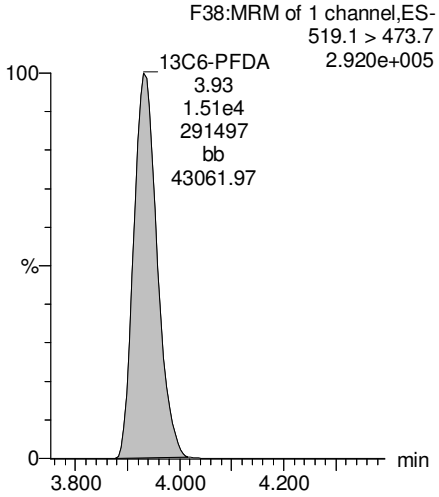
Last Altered: Tuesday, July 18, 2017 14:48:01 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:48:17 Pacific Daylight Time

**Name: 170713M1_13, Date: 13-Jul-2017, Time: 18:15:56, ID: 1700804-05RE1 IRPSite33-GW-11MW204D-20170629 0.114, Description: IRPSite33-GW-11MW204D-20170629**

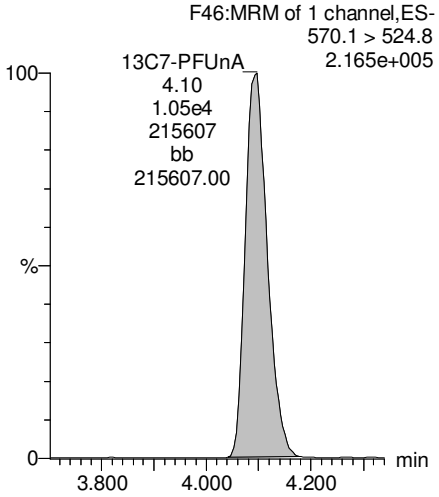
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-14.qld

Last Altered: Tuesday, July 18, 2017 14:50:33 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:06:07 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_14, Date: 13-Jul-2017, Time: 18:26:34, ID: 1700804-06RE1 IRPSite33-GW-11MW204S-20170629 0.120, Description: IRPSite33-GW-11MW204S-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 6.06e2 | 3.12e3 | 0.117 | | 2.92 | 2.90 | 2.43 | 9.66 | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 1.88e4 | 9.26e3 | 0.117 | | 3.16 | 3.13 | 10.2 | 52.9 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 5.98e3 | 2.15e4 | 0.117 | | 3.43 | 3.39 | 3.47 | 20.5 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 1.98e3 | 2.17e3 | 0.117 | | 3.55 | 3.46 | 11.4 | 53.6 | |
| 5 | 5 | PFOA | 413 > 368.7 | 1.98e4 | 2.65e4 | 0.117 | | 3.63 | 3.59 | 9.34 | 69.6 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | 3.86e2 | 2.01e4 | 0.117 | | 3.82 | 3.77 | 0.240 | 1.14 | |
| 7 | 7 | PFOS | 499 > 79.9 | 1.18e3 | 3.81e3 | 0.117 | | 3.86 | 3.76 | 3.86 | 29.6 | |
| 8 | 8 | PFDA | 513 > 468.8 | 1.29e2 | 1.02e4 | 0.117 | | 4.00 | 3.93 | 0.159 | 1.29 | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 5.98e3 | 0.117 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 1.13e3 | 0.117 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 1.14e3 | 0.117 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 4.30e2 | 0.117 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 4.30e2 | 0.117 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 5.67e3 | 0.117 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.13e3 | 1.24e3 | 0.117 | 0.918 | 1.43 | 1.37 | 11.4 | 107 | 99.6 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 2.55e4 | 2.77e4 | 0.117 | 0.275 | 2.72 | 2.67 | 4.60 | 143 | 133.8 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 3.12e3 | 2.77e4 | 0.117 | 0.033 | 2.92 | 2.89 | 0.563 | 146 | 135.9 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 9.26e3 | 2.77e4 | 0.117 | 0.304 | 3.16 | 3.13 | 1.67 | 47.2 | 110.0 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.15e4 | 2.77e4 | 0.117 | 0.306 | 3.43 | 3.39 | 3.89 | 109 | 101.7 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.17e3 | 4.99e3 | 0.117 | 0.437 | 3.55 | 3.46 | 5.43 | 107 | 99.4 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 2.65e4 | 2.35e4 | 0.117 | 1.292 | 3.63 | 3.59 | 14.1 | 93.3 | 87.1 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.01e4 | 2.06e4 | 0.117 | 0.980 | 3.82 | 3.76 | 12.2 | 107 | 99.5 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 3.81e3 | 3.34e3 | 0.117 | 1.098 | 3.86 | 3.81 | 14.3 | 111 | 104.0 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 1.02e4 | 1.17e4 | 0.117 | 0.928 | 4.00 | 3.93 | 10.9 | 100 | 93.6 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 5.98e3 | 6.13e3 | 0.117 | 1.083 | 4.16 | 4.09 | 12.2 | 96.6 | 90.1 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 1.13e3 | 6.13e3 | 0.117 | 0.224 | 4.00 | 3.96 | 2.30 | 87.8 | 81.9 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.14e3 | 6.13e3 | 0.117 | 0.230 | 4.08 | 4.02 | 2.32 | 86.5 | 80.7 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 4.30e2 | 6.13e3 | 0.117 | 0.130 | 4.32 | 4.25 | 0.877 | 57.9 | 54.0 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 5.67e3 | 6.13e3 | 0.117 | 1.018 | 4.66 | 4.58 | 11.5 | 97.3 | 90.7 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.24e3 | 1.24e3 | 0.117 | 1.000 | 1.43 | 1.36 | 12.5 | 107 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 2.77e4 | 2.77e4 | 0.117 | 1.000 | 3.18 | 3.13 | 5.00 | 42.9 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 4.99e3 | 4.99e3 | 0.117 | 1.000 | 3.55 | 3.46 | 12.5 | 107 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-14.qld

Last Altered: Tuesday, July 18, 2017 14:50:33 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:06:07 Pacific Daylight Time

**Name: 170713M1_14, Date: 13-Jul-2017, Time: 18:26:34, ID: 1700804-06RE1 IRPSite33-GW-11MW204S-20170629 0.120, Description: IRPSite33-GW-11MW204S-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.35e4 | 2.35e4 | 0.117 | 1.000 | 3.63 | 3.59 | 12.5 | 107 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.06e4 | 2.06e4 | 0.117 | 1.000 | 3.82 | 3.77 | 12.5 | 107 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 3.34e3 | 3.34e3 | 0.117 | 1.000 | 3.86 | 3.82 | 12.5 | 107 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.17e4 | 1.17e4 | 0.117 | 1.000 | 4.00 | 3.93 | 12.5 | 107 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 6.13e3 | 6.13e3 | 0.117 | 1.000 | 4.16 | 4.09 | 12.5 | 107 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 6.06e2 | 3.12e3 | 0.117 | | 2.92 | | 2.43 | 9.66 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 1.98e3 | 2.17e3 | 0.117 | | 3.55 | | 11.4 | 53.6 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 2.19e4 | 2.65e4 | 0.117 | | 3.63 | | 10.3 | 76.0 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 1.18e3 | 3.81e3 | 0.117 | | 3.86 | | 3.86 | 29.6 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 1.13e3 | 0.117 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 1.14e3 | 0.117 | | 4.30 | | 0.000 | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-14.qld

Last Altered: Tuesday, July 18, 2017 14:50:33 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:06:07 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_14, Date: 13-Jul-2017, Time: 18:26:34, ID: 1700804-06RE1 IRPSite33-GW-11MW204S-20170629 0.120, Description: IRPSite33-GW-11MW204S-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.90 | 605.720 | 3119.961 | 2.427 | bb | 9.7 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.46 | 1980.404 | 2167.802 | 11.419 | MM | 53.6 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | 3.59 | 19796.086 | 26487.924 | 9.342 | db | 69.6 |
| 2 | 40 | Total PFOA | 413 > 368.7 | 3.54 | 2064.943 | 26487.924 | 0.974 | bd | 6.5 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.76 | 1178.117 | 3812.808 | 3.862 | MM | 29.6 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

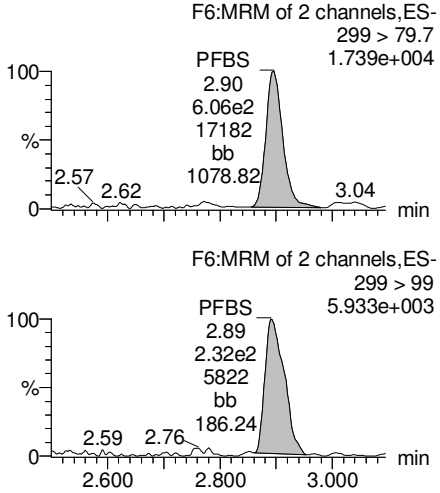
Dataset: U:\Q4.PRO\results\170713M1\170713M1-14.qld

Last Altered: Tuesday, July 18, 2017 14:50:33 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:06:07 Pacific Daylight Time

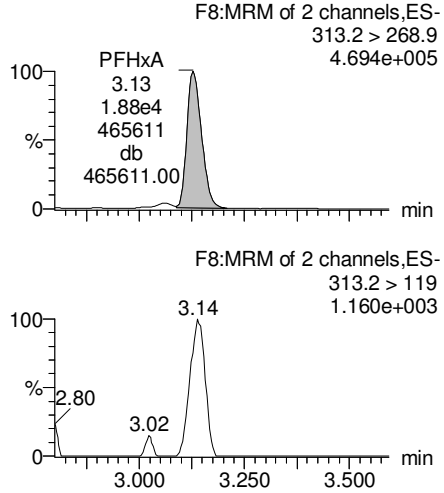
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_14, Date: 13-Jul-2017, Time: 18:26:34, ID: 1700804-06RE1 IRPSite33-GW-11MW204S-20170629 0.120, Description: IRPSite33-GW-11MW204S-20170629**

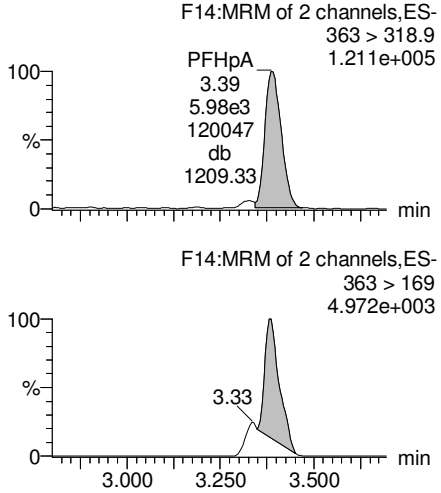
**Total PFBS**



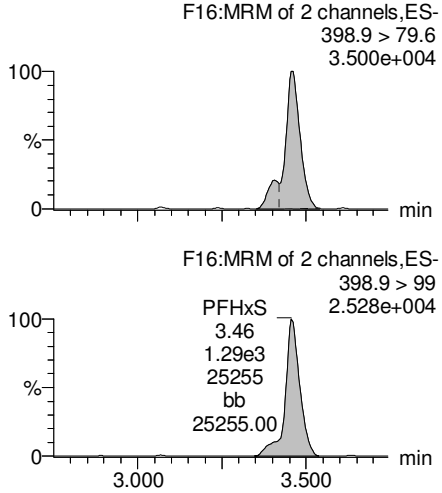

**PFHxA**



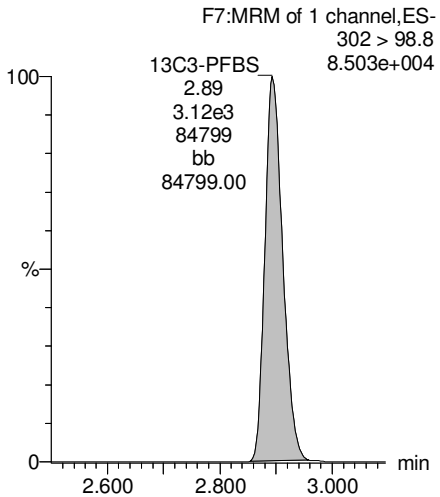

**PFHpA**



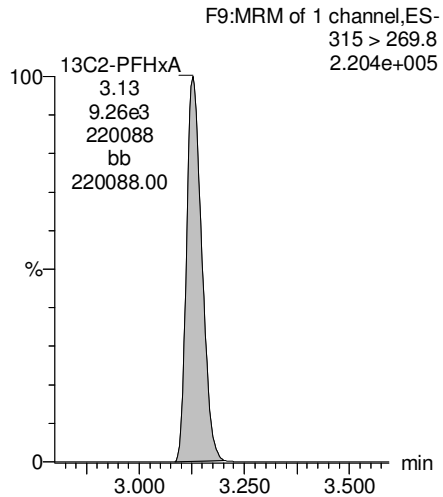

**Total PFHxS**



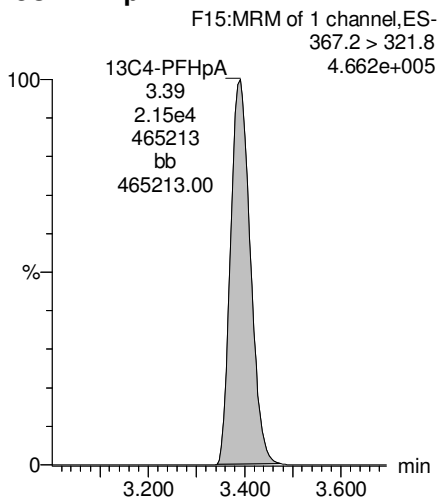

**13C3-PFBS**



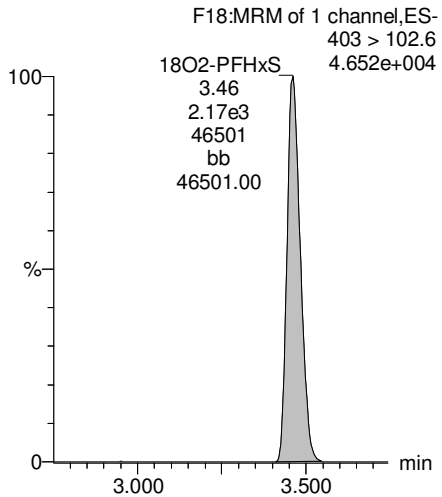

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**




AC 7/18/17

Vista Analytical Laboratory

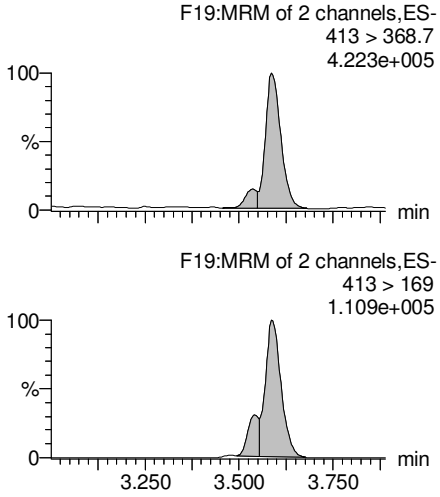
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-14.qld

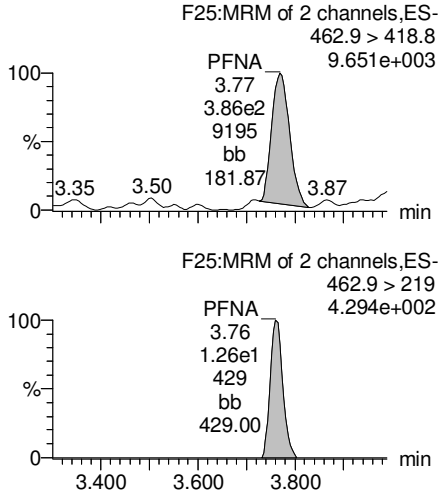
Last Altered: Tuesday, July 18, 2017 14:50:33 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:06:07 Pacific Daylight Time

**Name: 170713M1_14, Date: 13-Jul-2017, Time: 18:26:34, ID: 1700804-06RE1 IRPSite33-GW-11MW204S-20170629 0.120, Description: IRPSite33-GW-11MW204S-20170629**

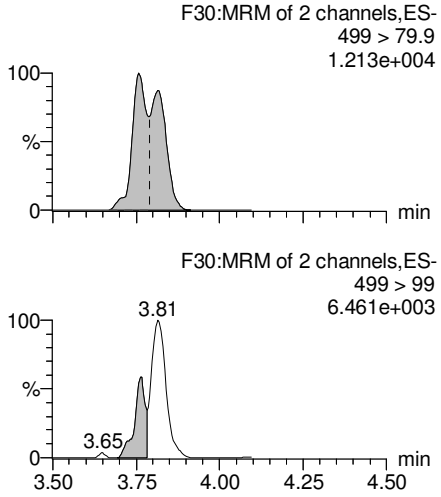
**Total PFOA**



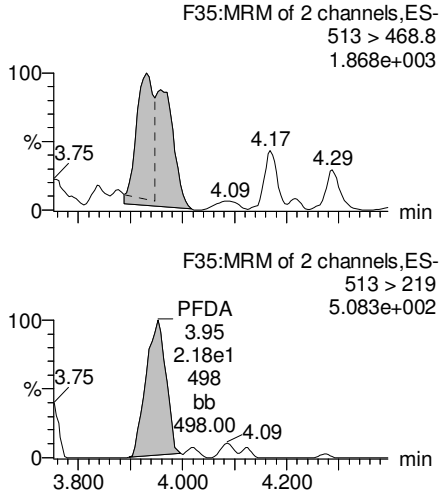

**PFNA**



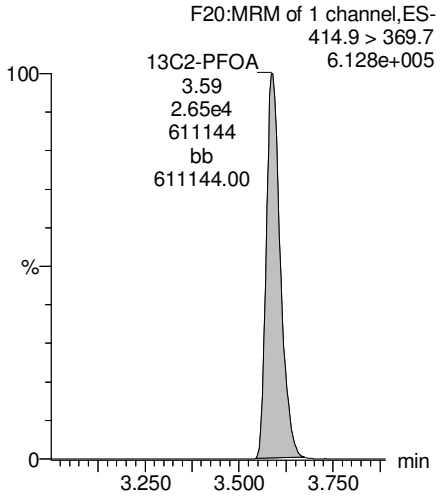

**Total PFOS**



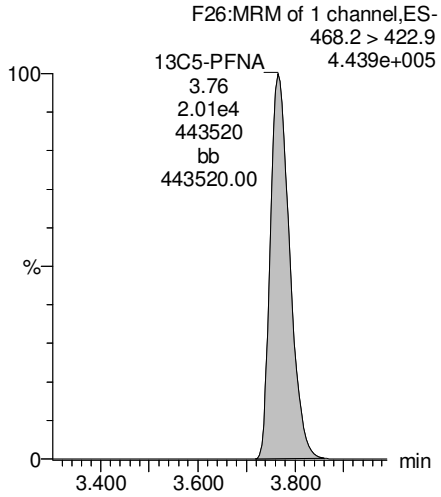

**PFDA**



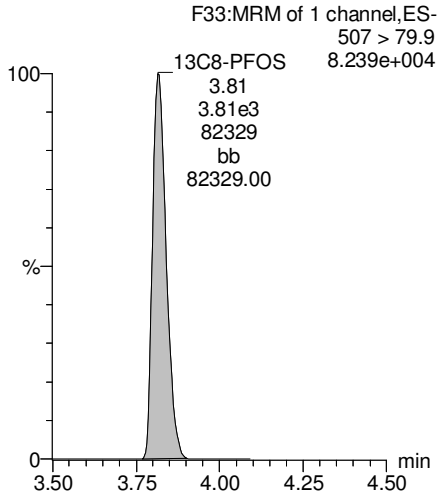

**13C2-PFOA**



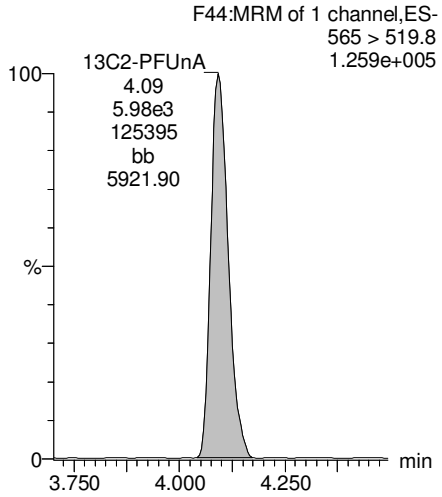

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**

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Vista Analytical Laboratory

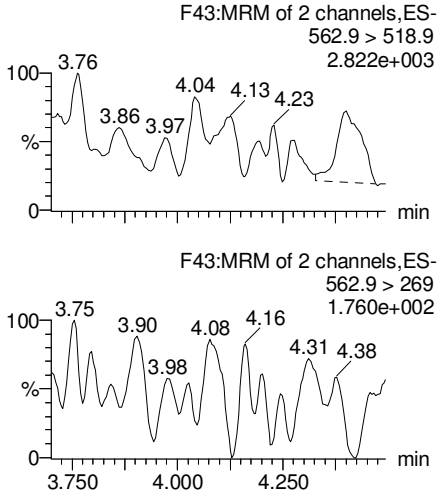
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-14.qld

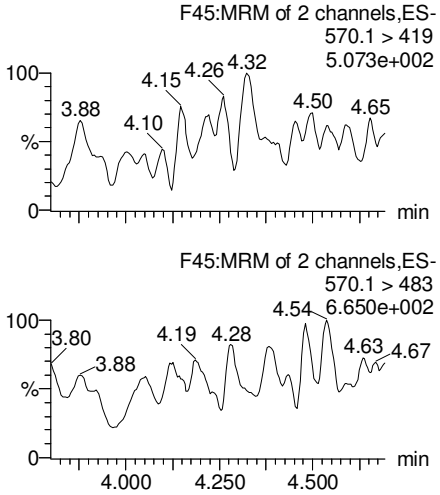
Last Altered: Tuesday, July 18, 2017 14:50:33 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:06:07 Pacific Daylight Time

**Name: 170713M1_14, Date: 13-Jul-2017, Time: 18:26:34, ID: 1700804-06RE1 IRPSite33-GW-11MW204S-20170629 0.120, Description: IRPSite33-GW-11MW204S-20170629**

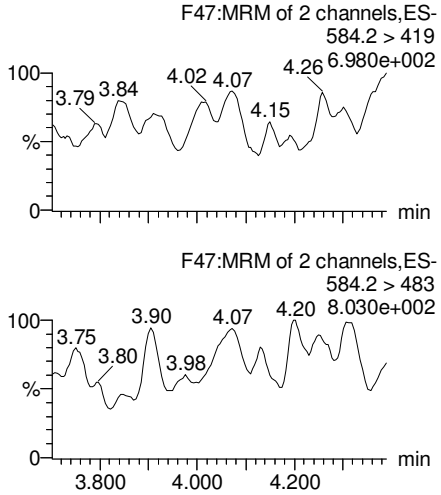
**PFUnA**



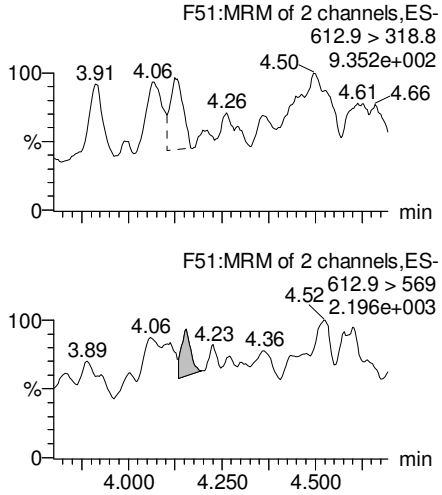

**N-MeFOSAA**



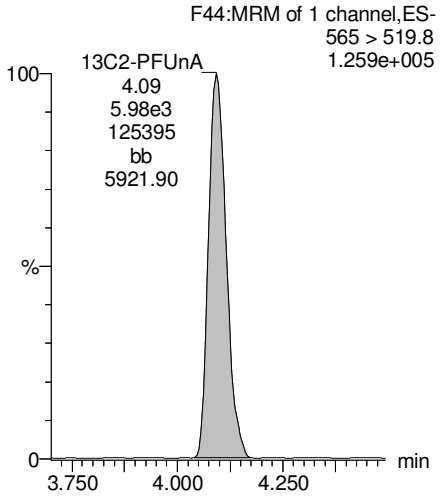

**N-EtFOSAA**



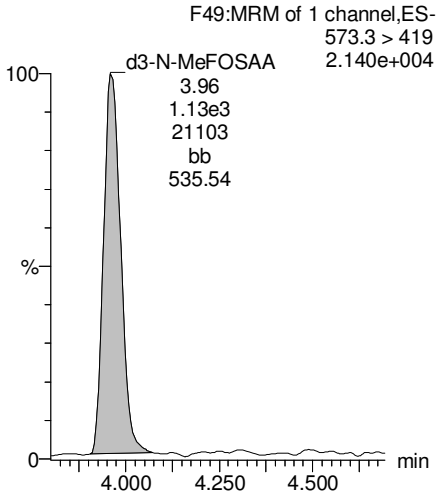

**PFDoA**



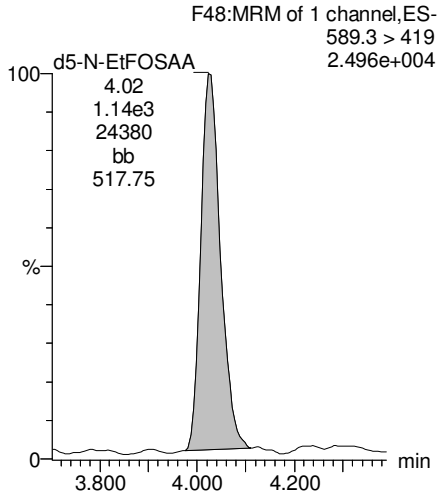

**13C2-PFUnA**



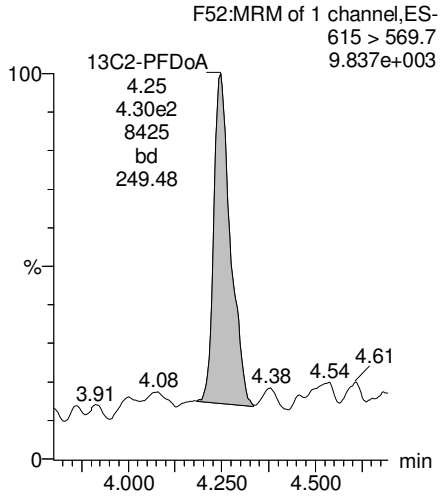

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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Vista Analytical Laboratory

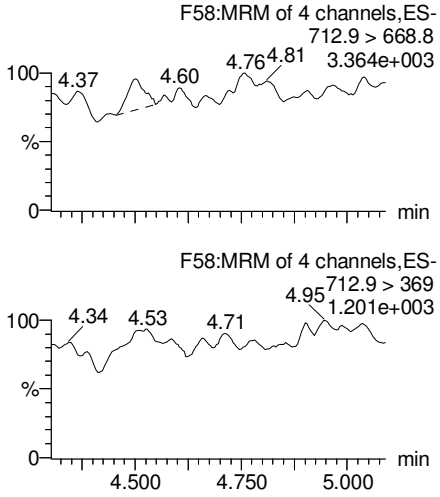
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-14.qld

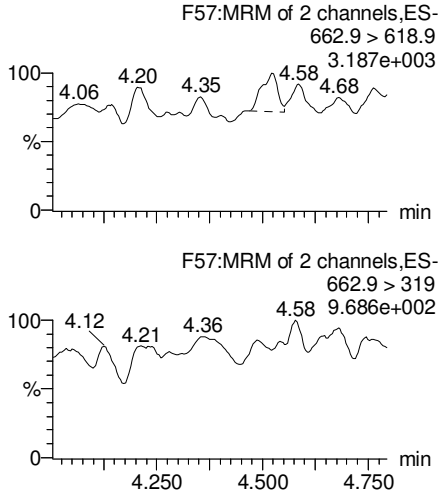
Last Altered: Tuesday, July 18, 2017 14:50:33 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:06:07 Pacific Daylight Time

**Name: 170713M1_14, Date: 13-Jul-2017, Time: 18:26:34, ID: 1700804-06RE1 IRPSite33-GW-11MW204S-20170629 0.120, Description: IRPSite33-GW-11MW204S-20170629**

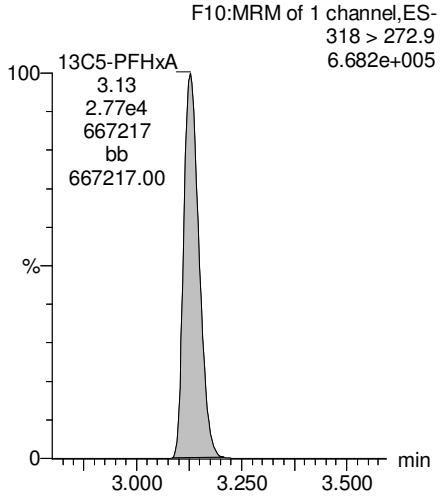
**PFTeDA**



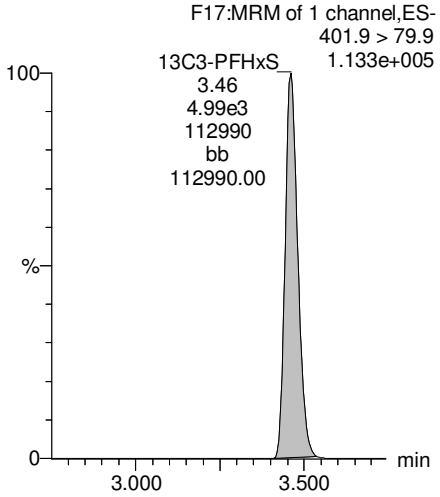

**PFTrDA**



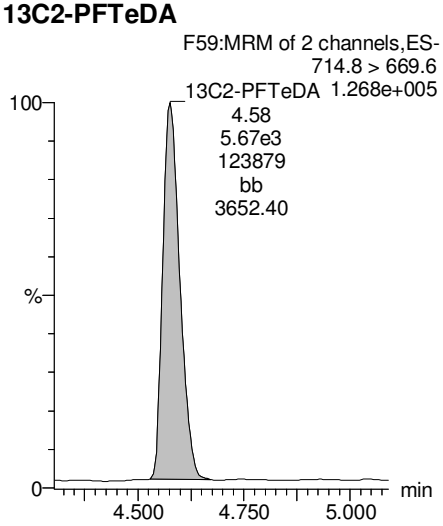

**13C5-PFHxA**



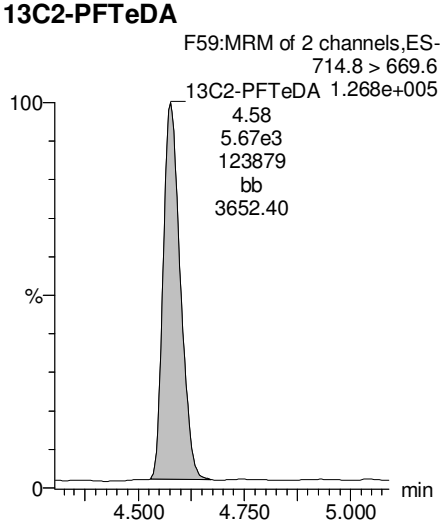

**13C3-PFHxS**



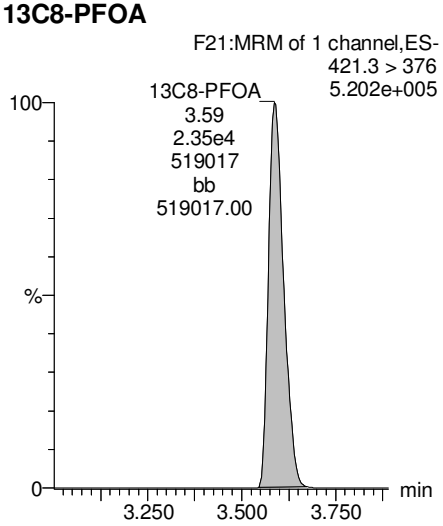

**13C2-PFTeDA**



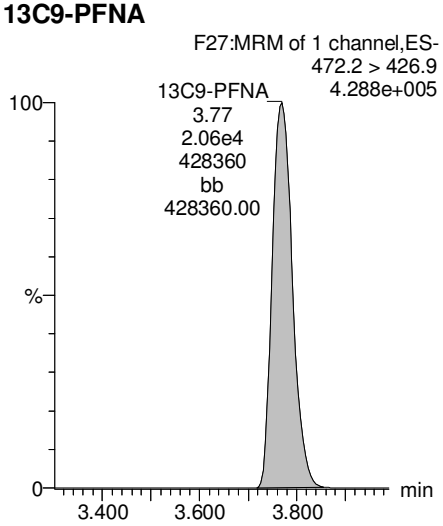

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

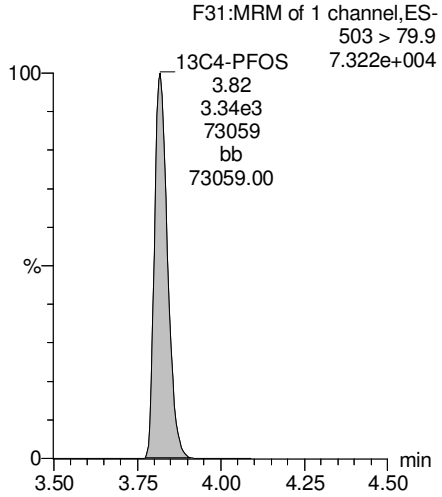
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-14.qld

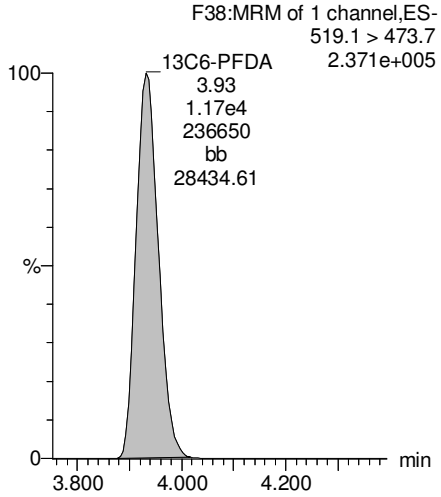
Last Altered: Tuesday, July 18, 2017 14:50:33 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:06:07 Pacific Daylight Time

**Name: 170713M1_14, Date: 13-Jul-2017, Time: 18:26:34, ID: 1700804-06RE1 IRPSite33-GW-11MW204S-20170629 0.120, Description: IRPSite33-GW-11MW204S-20170629**

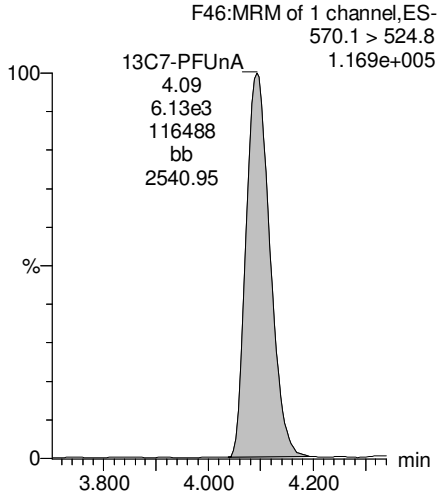
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-15.qld

Last Altered: Tuesday, July 18, 2017 14:51:32 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:05:35 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_15, Date: 13-Jul-2017, Time: 18:37:13, ID: 1700804-07RE1 Bldg 110-GW-11MW205D-20170629 0.1212, Description: Bldg 110-GW-11MW205D-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 9.23e2 | 4.00e3 | 0.117 | | 2.92 | 2.90 | 2.88 | 11.3 | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 2.21e4 | 1.23e4 | 0.117 | | 3.16 | 3.13 | 8.97 | 46.3 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 3.90e3 | 2.56e4 | 0.117 | | 3.43 | 3.39 | 1.91 | 11.1 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 4.28e3 | 2.96e3 | 0.117 | | 3.55 | 3.46 | 18.1 | 83.7 | |
| 5 | 5 | PFOA | 413 > 368.7 | 1.70e4 | 3.42e4 | 0.117 | | 3.63 | 3.59 | 6.21 | 45.6 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | | 2.30e4 | 0.117 | | 3.82 | | | | |
| 7 | 7 | PFOS | 499 > 79.9 | 1.04e3 | 4.85e3 | 0.117 | | 3.86 | 3.76 | 2.67 | 20.3 | |
| 8 | 8 | PFDA | 513 > 468.8 | | 1.10e4 | 0.117 | | 4.00 | | | | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 5.11e3 | 0.117 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 1.19e3 | 0.117 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 1.12e3 | 0.117 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 3.04e2 | 0.117 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 3.04e2 | 0.117 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 3.40e3 | 0.117 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.42e3 | 1.46e3 | 0.117 | 0.918 | 1.43 | 1.38 | 12.2 | 113 | 106.1 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.23e4 | 3.61e4 | 0.117 | 0.275 | 2.72 | 2.67 | 4.47 | 139 | 130.1 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 4.00e3 | 3.61e4 | 0.117 | 0.033 | 2.92 | 2.90 | 0.554 | 142 | 133.8 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.23e4 | 3.61e4 | 0.117 | 0.304 | 3.16 | 3.13 | 1.71 | 48.0 | 112.6 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.56e4 | 3.61e4 | 0.117 | 0.306 | 3.43 | 3.39 | 3.54 | 98.6 | 92.6 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.96e3 | 6.18e3 | 0.117 | 0.437 | 3.55 | 3.46 | 5.99 | 117 | 109.5 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.42e4 | 2.78e4 | 0.117 | 1.292 | 3.63 | 3.59 | 15.4 | 102 | 95.4 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.30e4 | 2.38e4 | 0.117 | 0.980 | 3.82 | 3.77 | 12.1 | 105 | 98.8 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 4.85e3 | 4.46e3 | 0.117 | 1.098 | 3.86 | 3.82 | 13.6 | 106 | 99.1 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 1.10e4 | 1.54e4 | 0.117 | 0.928 | 4.00 | 3.93 | 8.86 | 81.3 | 76.4 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 5.11e3 | 5.66e3 | 0.117 | 1.083 | 4.16 | 4.09 | 11.3 | 88.8 | 83.4 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 1.19e3 | 5.66e3 | 0.117 | 0.224 | 4.00 | 3.97 | 2.62 | 99.4 | 93.4 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.12e3 | 5.66e3 | 0.117 | 0.230 | 4.08 | 4.03 | 2.48 | 92.0 | 86.4 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 3.04e2 | 5.66e3 | 0.117 | 0.130 | 4.32 | 4.25 | 0.672 | 44.1 | 41.4 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 3.40e3 | 5.66e3 | 0.117 | 1.018 | 4.66 | 4.58 | 7.50 | 62.8 | 58.9 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.46e3 | 1.46e3 | 0.117 | 1.000 | 1.43 | 1.39 | 12.5 | 106 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 3.61e4 | 3.61e4 | 0.117 | 1.000 | 3.18 | 3.13 | 5.00 | 42.6 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 6.18e3 | 6.18e3 | 0.117 | 1.000 | 3.55 | 3.46 | 12.5 | 106 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-15.qld

Last Altered: Tuesday, July 18, 2017 14:51:32 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:05:35 Pacific Daylight Time

**Name: 170713M1_15, Date: 13-Jul-2017, Time: 18:37:13, ID: 1700804-07RE1 Bldg 110-GW-11MW205D-20170629 0.1212, Description: Bldg 110-GW-11MW205D-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.78e4 | 2.78e4 | 0.117 | 1.000 | 3.63 | 3.59 | 12.5 | 106 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.38e4 | 2.38e4 | 0.117 | 1.000 | 3.82 | 3.77 | 12.5 | 106 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 4.46e3 | 4.46e3 | 0.117 | 1.000 | 3.86 | 3.82 | 12.5 | 106 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.54e4 | 1.54e4 | 0.117 | 1.000 | 4.00 | 3.93 | 12.5 | 106 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 5.66e3 | 5.66e3 | 0.117 | 1.000 | 4.16 | 4.09 | 12.5 | 106 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 9.23e2 | 4.00e3 | 0.117 | | 2.92 | | 2.88 | 11.3 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 4.28e3 | 2.96e3 | 0.117 | | 3.55 | | 18.1 | 83.7 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 1.88e4 | 3.42e4 | 0.117 | | 3.63 | | 6.86 | 49.6 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 1.04e3 | 4.85e3 | 0.117 | | 3.86 | | 2.67 | 20.3 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 1.19e3 | 0.117 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 1.12e3 | 0.117 | | 4.30 | | 0.000 | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-15.qld

Last Altered: Tuesday, July 18, 2017 14:51:32 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:05:35 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_15, Date: 13-Jul-2017, Time: 18:37:13, ID: 1700804-07RE1 Bldg 110-GW-11MW205D-20170629 0.1212, Description: Bldg 110-GW-11MW205D-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.90 | 922.977 | 4000.696 | 2.884 | bb | 11.3 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.46 | 4279.309 | 2957.770 | 18.085 | MM | 83.7 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 40 | Total PFOA | 413 > 368.7 | 3.54 | 1773.561 | 34227.504 | 0.648 | bd | 4.0 |
| 2 | 5 | PFOA | 413 > 368.7 | 3.59 | 17005.928 | 34227.504 | 6.211 | db | 45.6 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.76 | 1035.111 | 4850.592 | 2.667 | MM | 20.3 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

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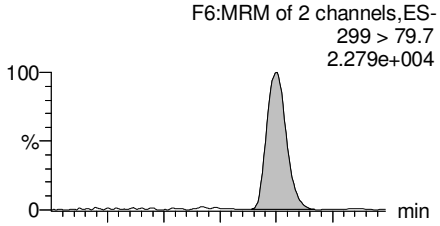
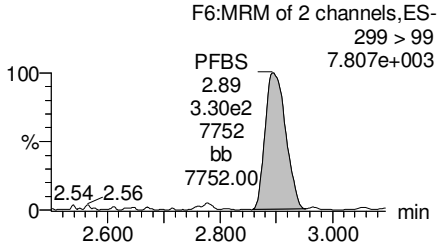
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

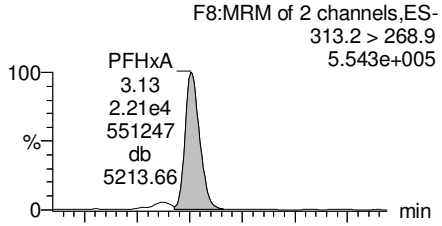
**Name: 170713M1_15, Date: 13-Jul-2017, Time: 18:37:13, ID: 1700804-07RE1 Bldg 110-GW-11MW205D-20170629 0.1212, Description: Bldg 110-GW-11MW205D-20170629**

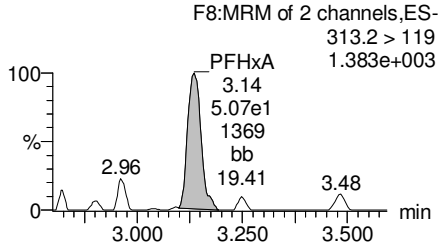
**Total PFBS**



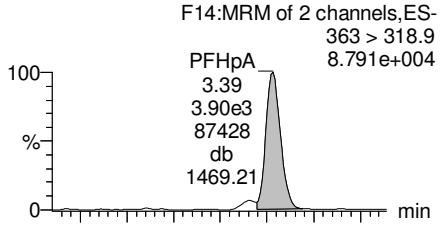



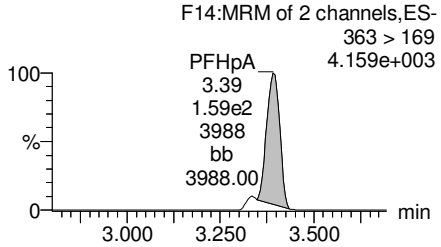

**PFHxA**



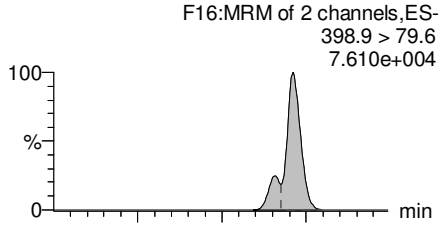



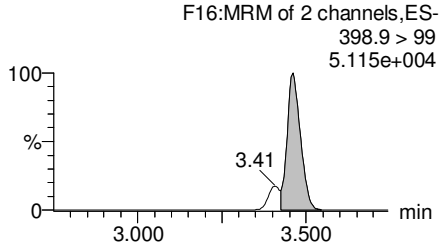

**PFHpA**



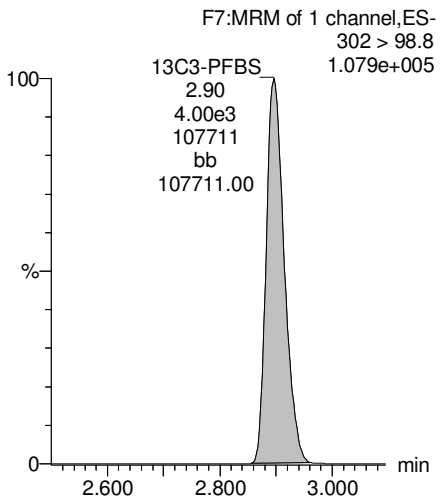




**Total PFHxS**

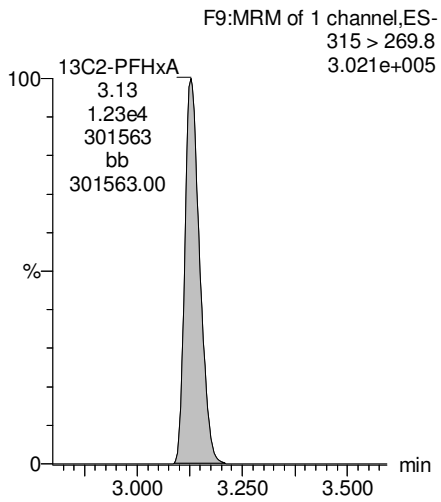


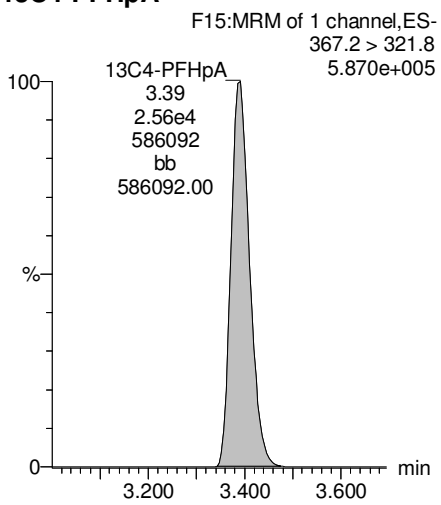

**13C3-PFBS**



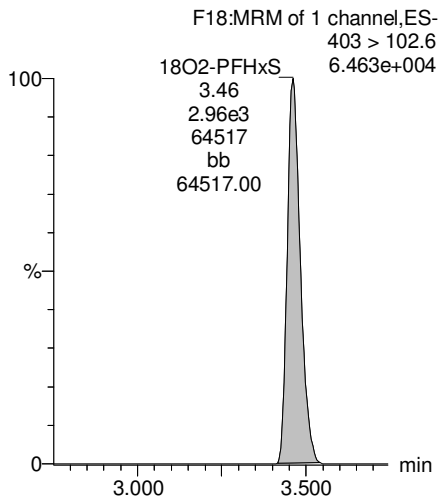

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

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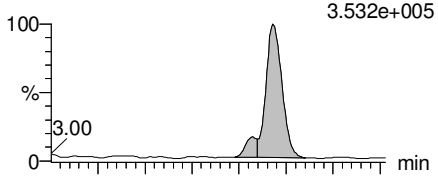
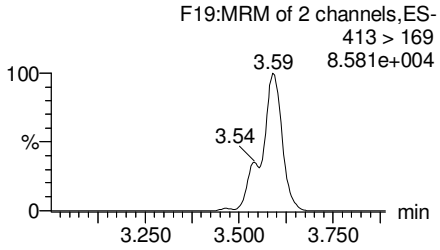
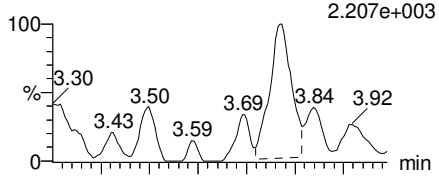
**Name: 170713M1_15, Date: 13-Jul-2017, Time: 18:37:13, ID: 1700804-07RE1 Bldg 110-GW-11MW205D-20170629 0.1212, Description: Bldg 110-GW-11MW205D-20170629**

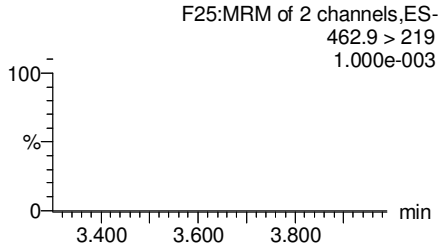
**Total PFOA**



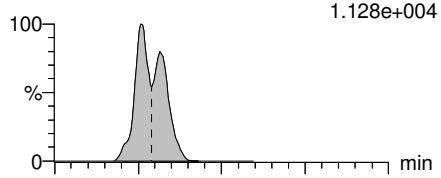



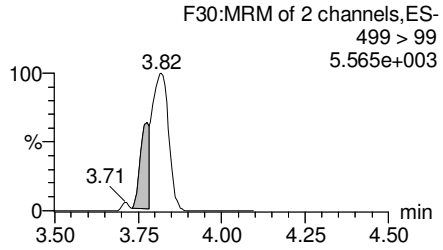

**PFNA**



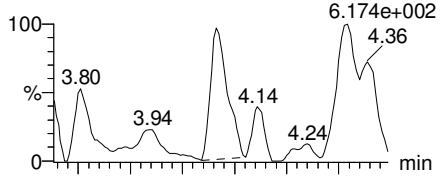



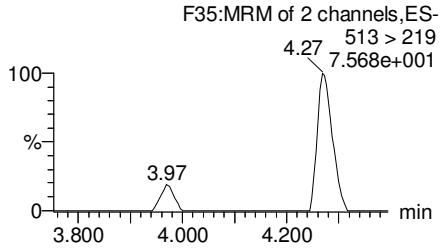

**Total PFOS**



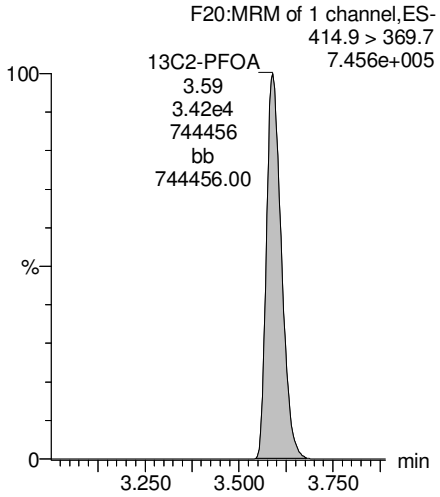




**PFDA**

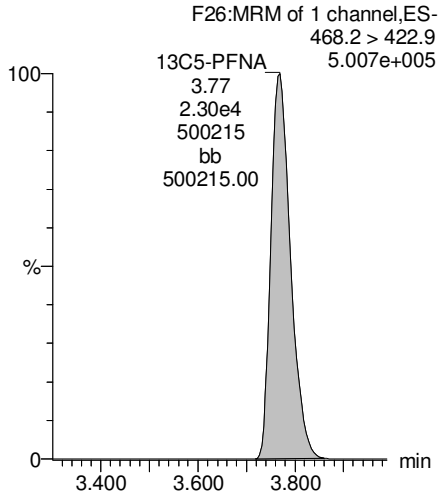


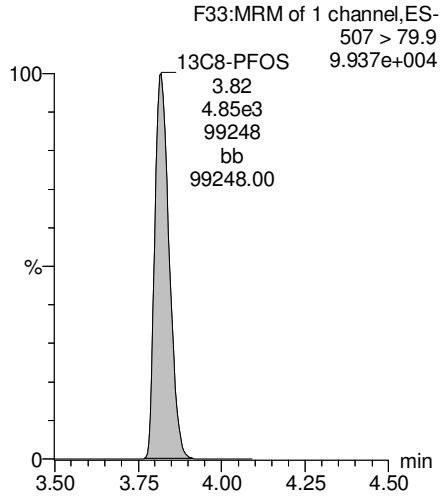

**13C2-PFOA**



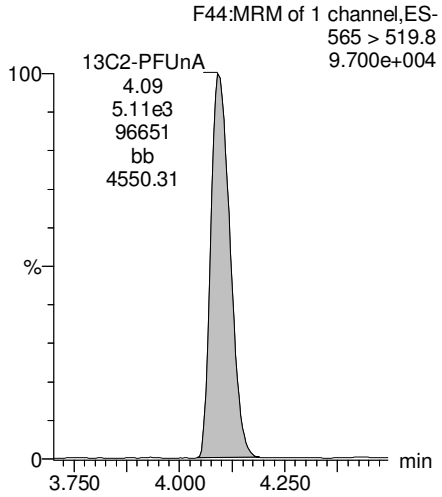

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-15.qld

Last Altered: Tuesday, July 18, 2017 14:51:32 Pacific Daylight Time
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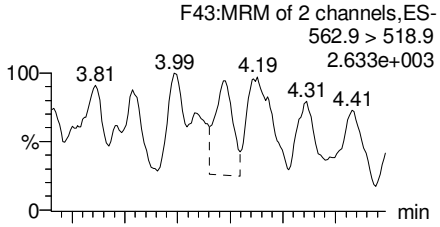
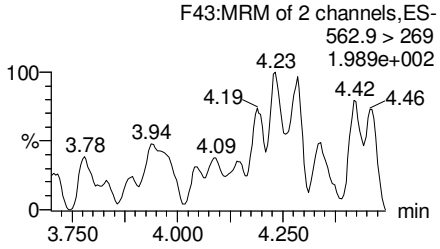
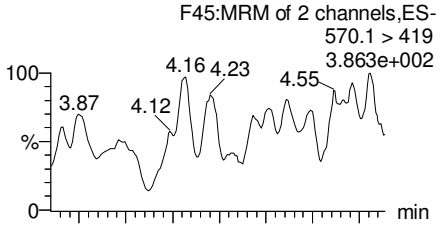
**Name: 170713M1_15, Date: 13-Jul-2017, Time: 18:37:13, ID: 1700804-07RE1 Bldg 110-GW-11MW205D-20170629 0.1212, Description: Bldg 110-GW-11MW205D-20170629**

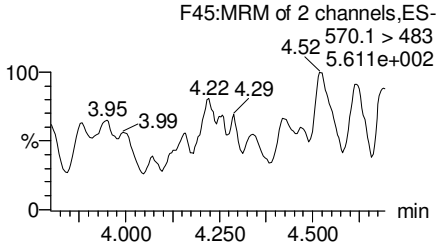
**PFUnA**



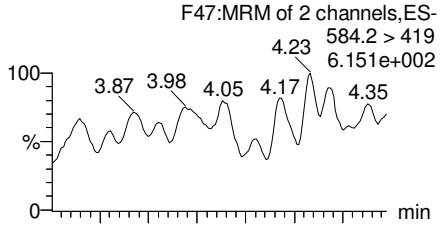



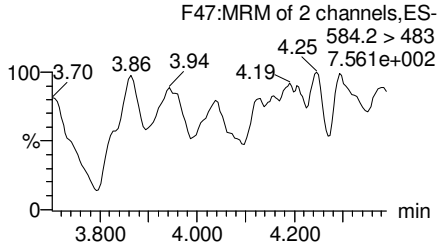

**N-MeFOSAA**



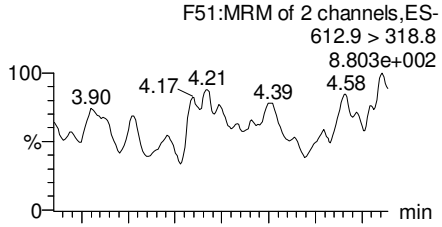



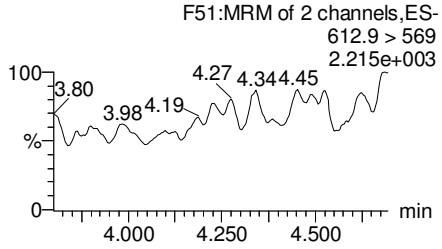

**N-EtFOSAA**



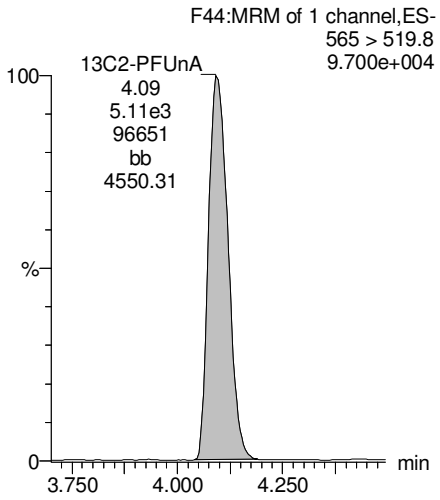




**PFDoA**

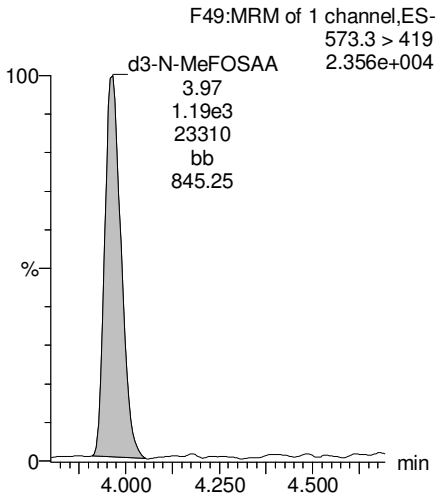


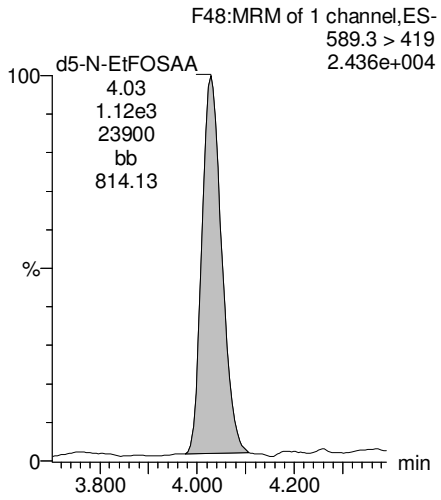

**13C2-PFUnA**



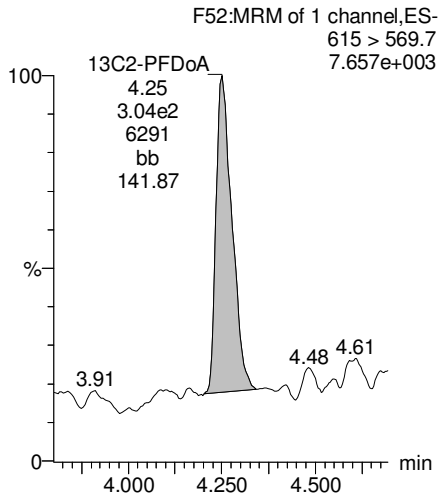

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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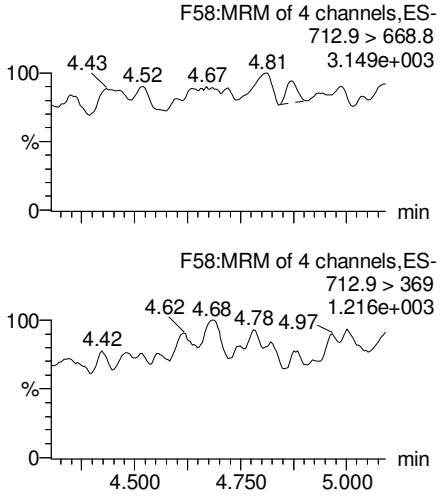
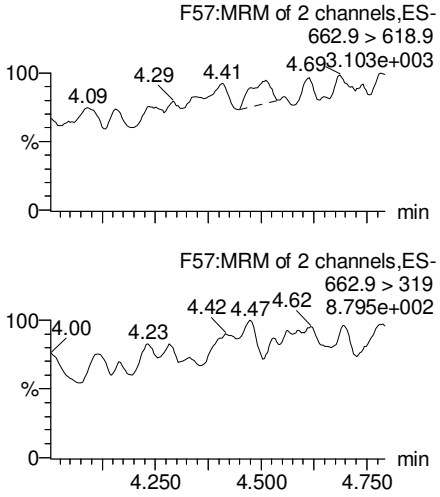
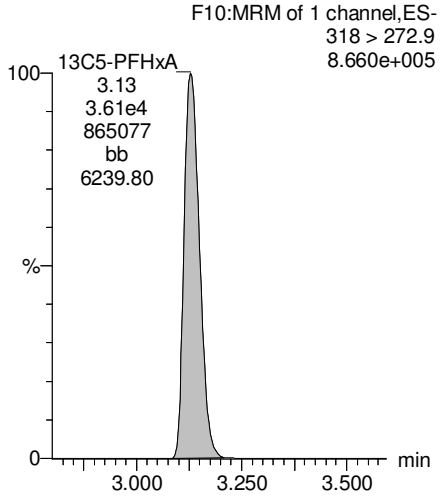
**PFTeDA**



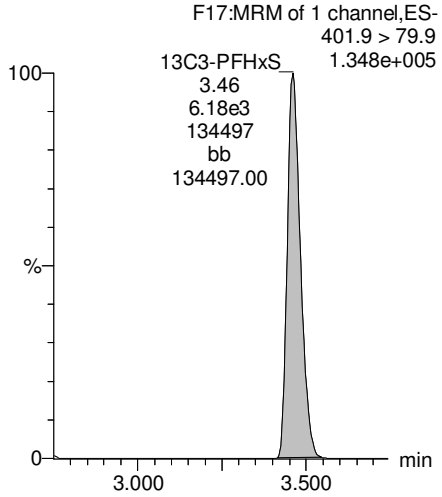

**PFTrDA**



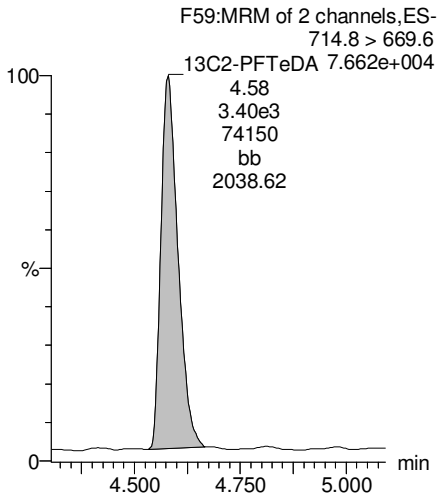

**13C5-PFHxA**



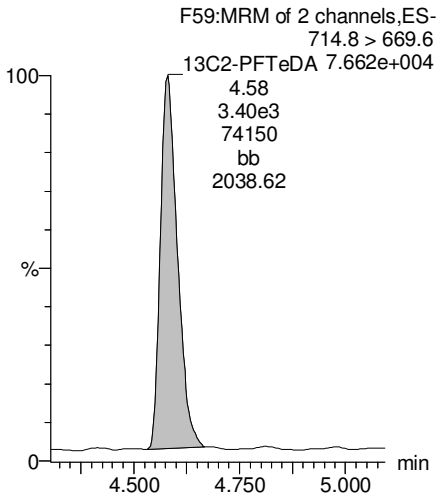

**13C3-PFHxS**



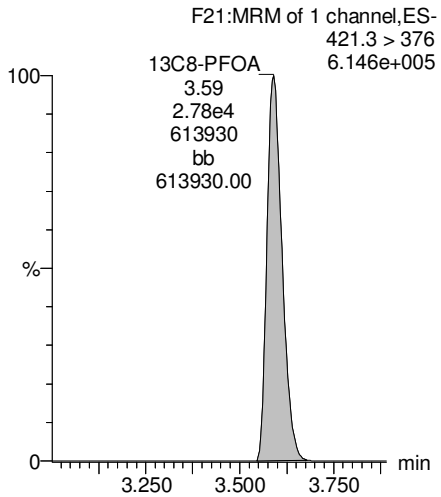

**13C2-PFTeDA**



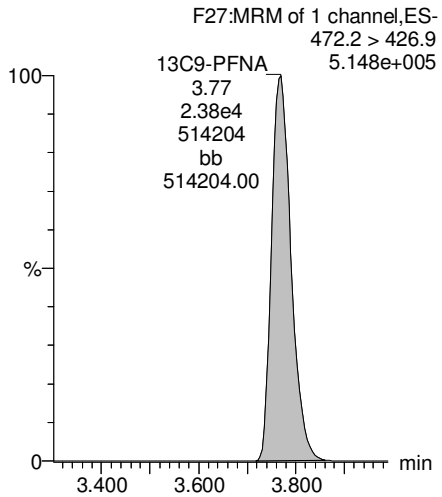

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

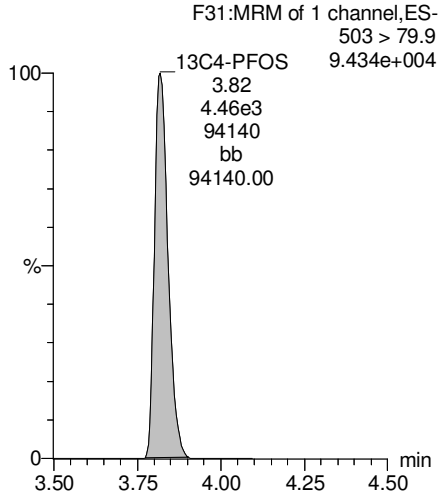
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-15.qld

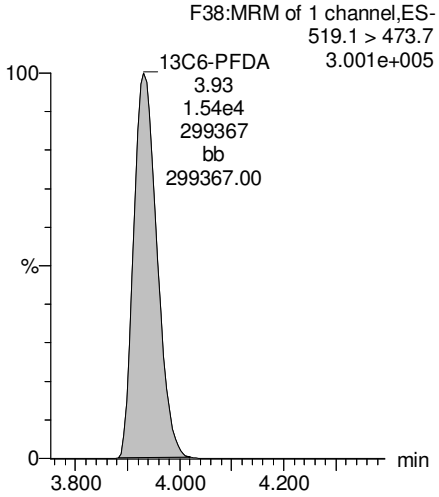
Last Altered: Tuesday, July 18, 2017 14:51:32 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:05:35 Pacific Daylight Time

**Name: 170713M1_15, Date: 13-Jul-2017, Time: 18:37:13, ID: 1700804-07RE1 Bldg 110-GW-11MW205D-20170629 0.1212, Description: Bldg 110-GW-11MW205D-20170629**

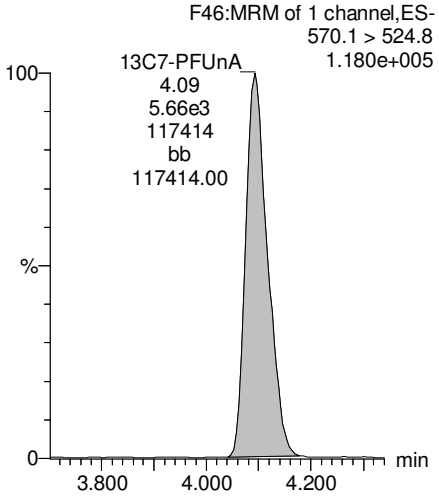
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-16.qld

Last Altered: Tuesday, July 18, 2017 14:54:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:55:07 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_16, Date: 13-Jul-2017, Time: 18:47:51, ID: 1700804-08RE1 Bldg 110-GW-FRB01-20170629 0.12521, Description: Bldg 110-GW-FRB01-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | | 4.10e3 | 0.120 | | 2.92 | | | | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | | 1.21e4 | 0.120 | | 3.16 | | | | |
| 3 | 3 | PFHpA | 363 > 318.9 | | 2.74e4 | 0.120 | | 3.43 | | | | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | | 3.08e3 | 0.120 | | 3.55 | | | | |
| 5 | 5 | PFOA | 413 > 368.7 | | 3.68e4 | 0.120 | | 3.63 | | | | |
| 6 | 6 | PFNA | 462.9 > 418.8 | | 2.87e4 | 0.120 | | 3.82 | | | | |
| 7 | 7 | PFOS | 499 > 79.9 | | 6.60e3 | 0.120 | | 3.86 | | | | |
| 8 | 8 | PFDA | 513 > 468.8 | | 1.94e4 | 0.120 | | 4.00 | | | | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 1.23e4 | 0.120 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 3.19e3 | 0.120 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 3.26e3 | 0.120 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 4.87e2 | 0.120 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 4.87e2 | 0.120 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 8.19e2 | 0.120 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.49e3 | 1.47e3 | 0.120 | 0.918 | 1.43 | 1.38 | 12.6 | 115 | 110.1 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.38e4 | 3.65e4 | 0.120 | 0.275 | 2.72 | 2.66 | 4.64 | 141 | 135.1 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 4.10e3 | 3.65e4 | 0.120 | 0.033 | 2.92 | 2.89 | 0.562 | 142 | 135.7 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.21e4 | 3.65e4 | 0.120 | 0.304 | 3.16 | 3.13 | 1.65 | 45.4 | 108.8 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.74e4 | 3.65e4 | 0.120 | 0.306 | 3.43 | 3.39 | 3.75 | 102 | 98.1 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 3.08e3 | 6.34e3 | 0.120 | 0.437 | 3.55 | 3.46 | 6.08 | 116 | 111.2 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.68e4 | 3.20e4 | 0.120 | 1.292 | 3.63 | 3.59 | 14.4 | 92.9 | 89.1 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.87e4 | 2.88e4 | 0.120 | 0.980 | 3.82 | 3.76 | 12.4 | 106 | 101.6 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 6.60e3 | 5.86e3 | 0.120 | 1.098 | 3.86 | 3.82 | 14.1 | 107 | 102.5 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 1.94e4 | 2.70e4 | 0.120 | 0.928 | 4.00 | 3.94 | 8.95 | 80.5 | 77.2 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 1.23e4 | 1.33e4 | 0.120 | 1.083 | 4.16 | 4.09 | 11.6 | 89.7 | 85.9 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 3.19e3 | 1.33e4 | 0.120 | 0.224 | 4.00 | 3.96 | 3.00 | 112 | 107.1 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 3.26e3 | 1.33e4 | 0.120 | 0.230 | 4.08 | 4.03 | 3.07 | 111 | 106.7 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 4.87e2 | 1.33e4 | 0.120 | 0.130 | 4.32 | 4.26 | 0.458 | 29.5 | 28.2 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 8.19e2 | 1.33e4 | 0.120 | 1.018 | 4.66 | 4.58 | 0.771 | 6.32 | 6.1 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.47e3 | 1.47e3 | 0.120 | 1.000 | 1.43 | 1.39 | 12.5 | 104 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 3.65e4 | 3.65e4 | 0.120 | 1.000 | 3.18 | 3.13 | 5.00 | 41.7 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 6.34e3 | 6.34e3 | 0.120 | 1.000 | 3.55 | 3.46 | 12.5 | 104 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-16.qld

Last Altered: Tuesday, July 18, 2017 14:54:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:55:07 Pacific Daylight Time

**Name: 170713M1_16, Date: 13-Jul-2017, Time: 18:47:51, ID: 1700804-08RE1 Bldg 110-GW-FRB01-20170629 0.12521, Description: Bldg 110-GW-FRB01-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 3.20e4 | 3.20e4 | 0.120 | 1.000 | 3.63 | 3.59 | 12.5 | 104 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.88e4 | 2.88e4 | 0.120 | 1.000 | 3.82 | 3.76 | 12.5 | 104 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 5.86e3 | 5.86e3 | 0.120 | 1.000 | 3.86 | 3.82 | 12.5 | 104 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 2.70e4 | 2.70e4 | 0.120 | 1.000 | 4.00 | 3.94 | 12.5 | 104 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 1.33e4 | 1.33e4 | 0.120 | 1.000 | 4.16 | 4.10 | 12.5 | 104 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 0.00e0 | 4.10e3 | 0.120 | | 2.92 | | 0.000 | | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 0.00e0 | 3.08e3 | 0.120 | | 3.55 | | 0.000 | | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 0.00e0 | 3.68e4 | 0.120 | | 3.63 | | 0.000 | | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 0.00e0 | 6.60e3 | 0.120 | | 3.86 | | 0.000 | | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 3.19e3 | 0.120 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 3.26e3 | 0.120 | | 4.30 | | 0.000 | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-16.qld

Last Altered: Tuesday, July 18, 2017 14:54:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:55:07 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_16, Date: 13-Jul-2017, Time: 18:47:51, ID: 1700804-08RE1 Bldg 110-GW-FRB01-20170629 0.12521, Description: Bldg 110-GW-FRB01-20170629**

**Total PFBS**

| | # Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |

**Total PFHxS**

| | # Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |

**Total PFOA**

| | # Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |

**Total PFOS**

| | # Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |

**Total N-Me-FOSAA**

| | # Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |

**Total N-EtFOSAA**

| | # Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

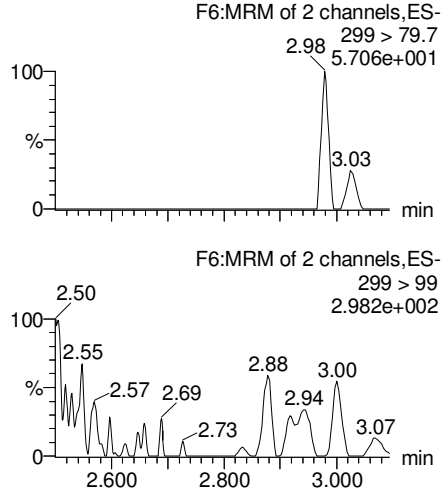
Dataset: U:\Q4.PRO\results\170713M1\170713M1-16.qld

Last Altered: Tuesday, July 18, 2017 14:54:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:55:07 Pacific Daylight Time

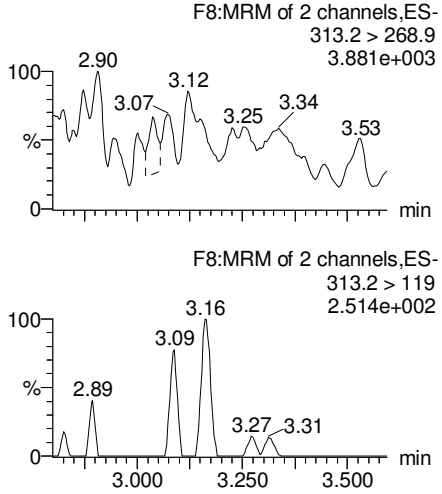
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_16, Date: 13-Jul-2017, Time: 18:47:51, ID: 1700804-08RE1 Bldg 110-GW-FRB01-20170629 0.12521, Description: Bldg 110-GW-FRB01-20170629**

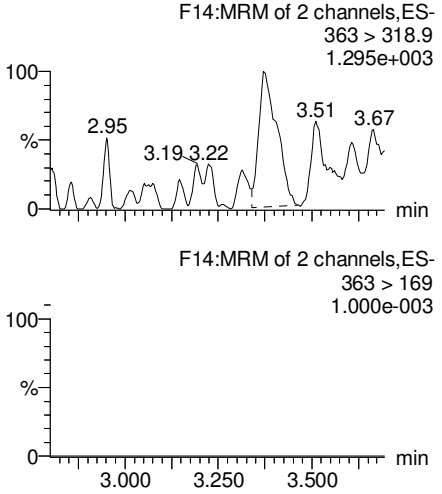
**Total PFBS**



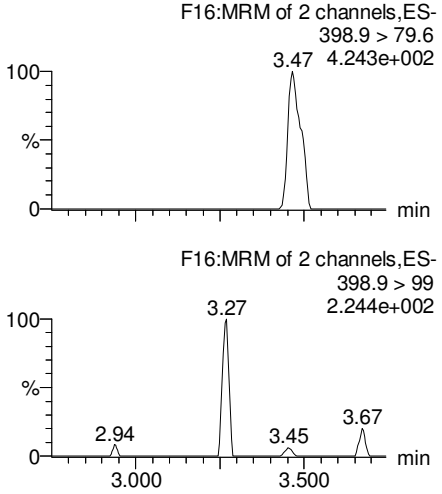

**PFHxA**



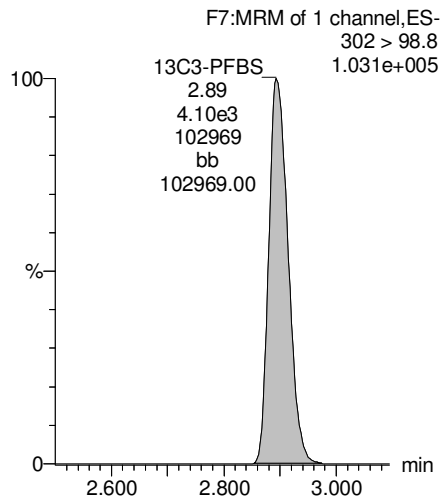

**PFHpA**



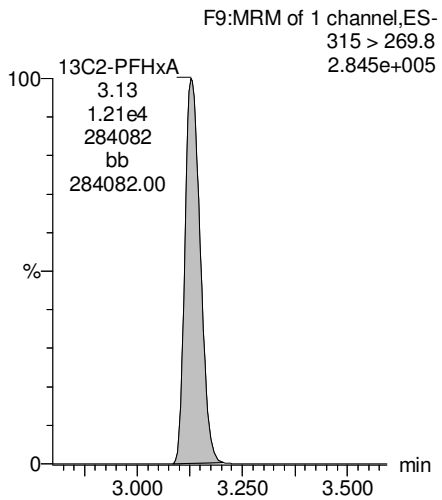

**Total PFHxS**



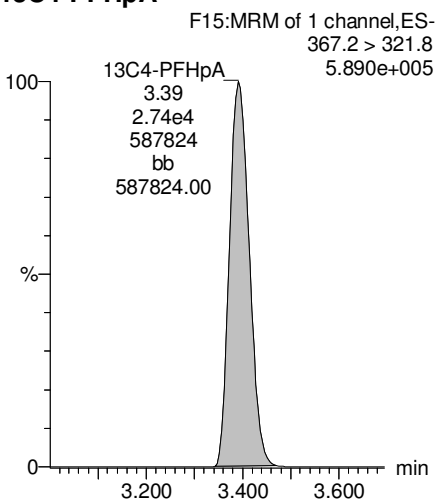

**13C3-PFBS**



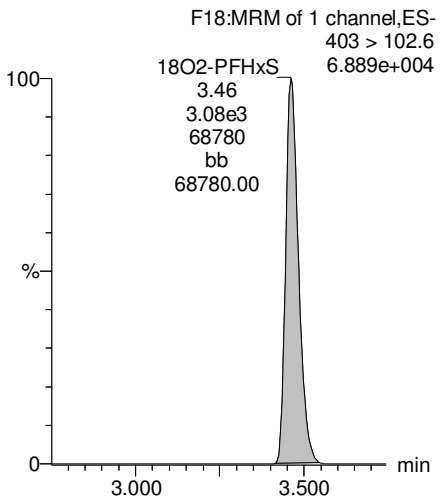

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

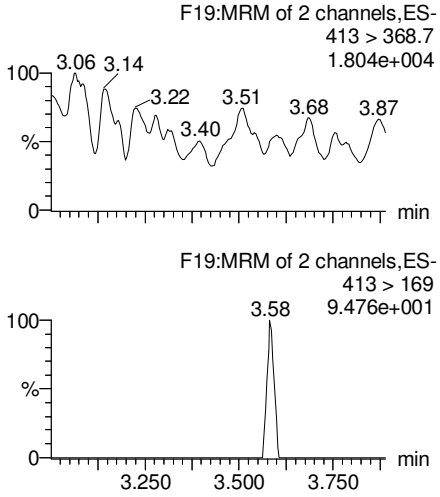
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-16.qld

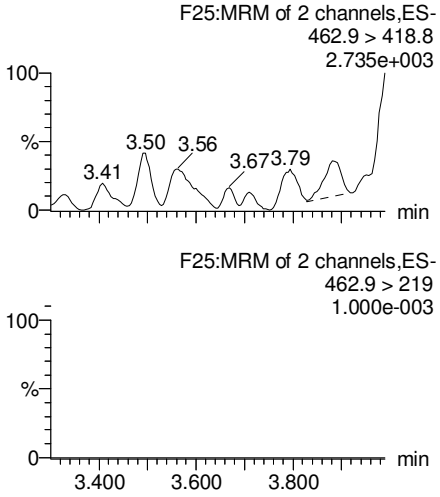
Last Altered: Tuesday, July 18, 2017 14:54:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:55:07 Pacific Daylight Time

**Name: 170713M1_16, Date: 13-Jul-2017, Time: 18:47:51, ID: 1700804-08RE1 Bldg 110-GW-FRB01-20170629 0.12521, Description: Bldg 110-GW-FRB01-20170629**

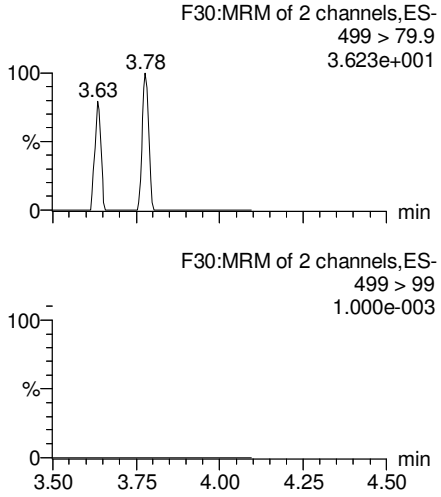
**Total PFOA**



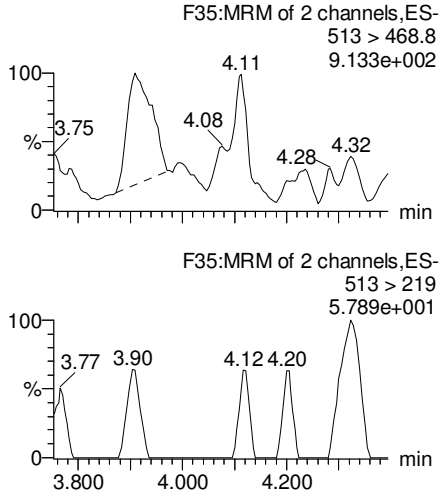

**PFNA**



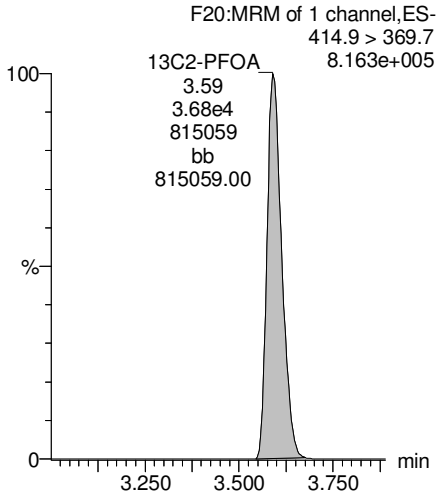

**Total PFOS**



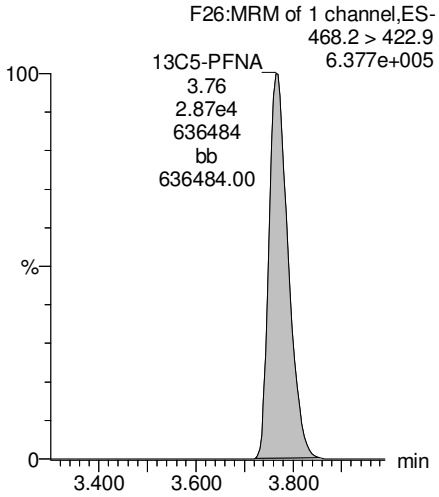

**PFDA**



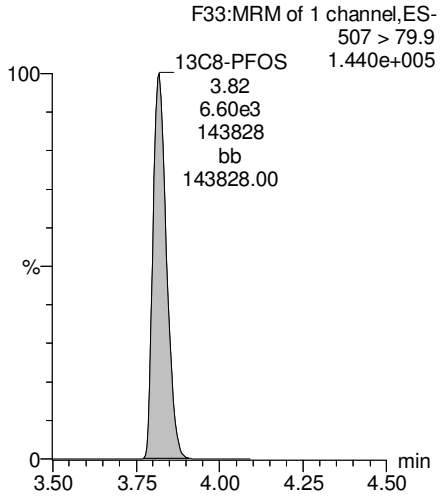

**13C2-PFOA**



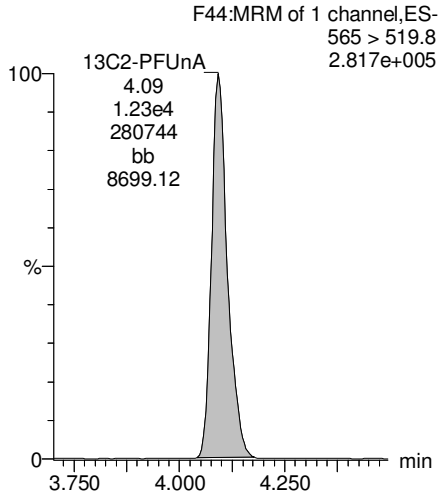

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**

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Vista Analytical Laboratory

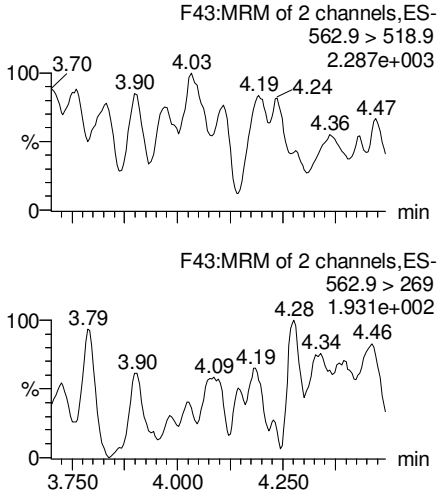
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-16.qld

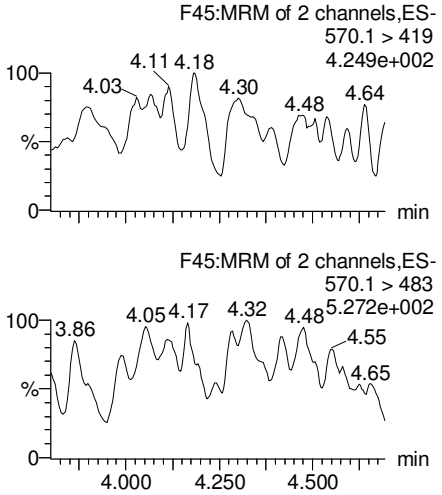
Last Altered: Tuesday, July 18, 2017 14:54:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:55:07 Pacific Daylight Time

**Name: 170713M1_16, Date: 13-Jul-2017, Time: 18:47:51, ID: 1700804-08RE1 Bldg 110-GW-FRB01-20170629 0.12521, Description: Bldg 110-GW-FRB01-20170629**

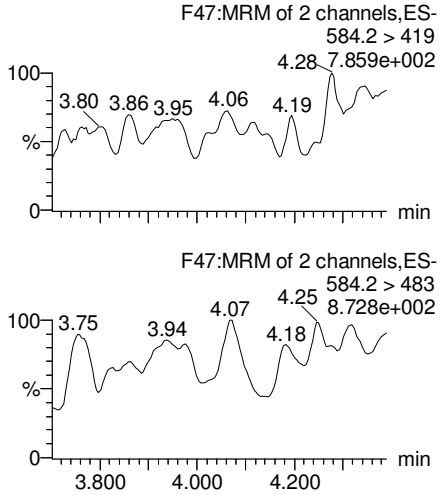
**PFUnA**



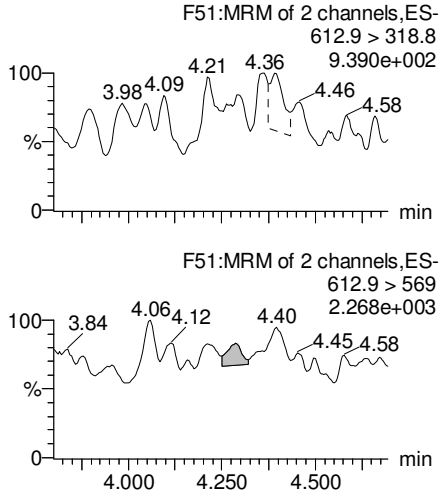

**N-MeFOSAA**



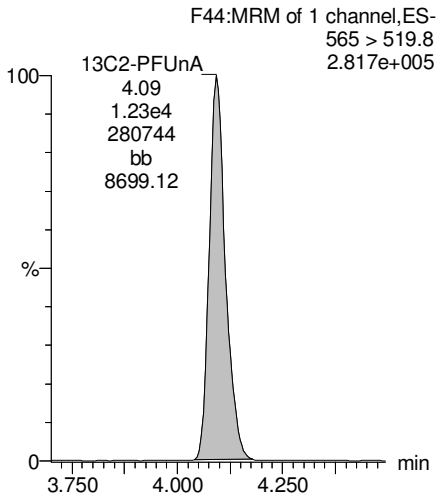

**N-EtFOSAA**



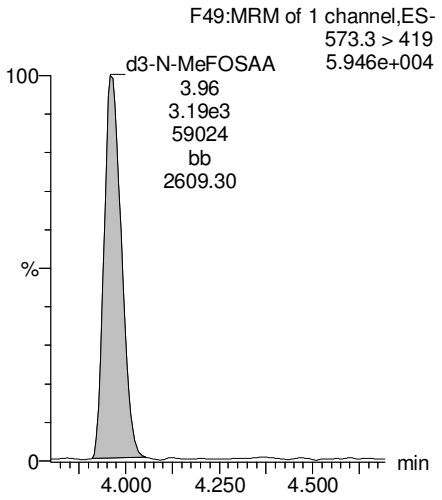

**PFDoA**



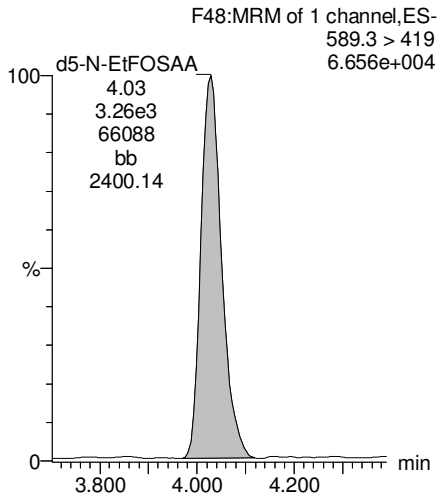

**13C2-PFUnA**



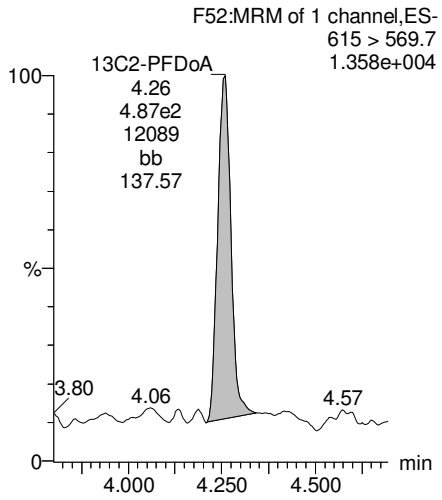

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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Vista Analytical Laboratory

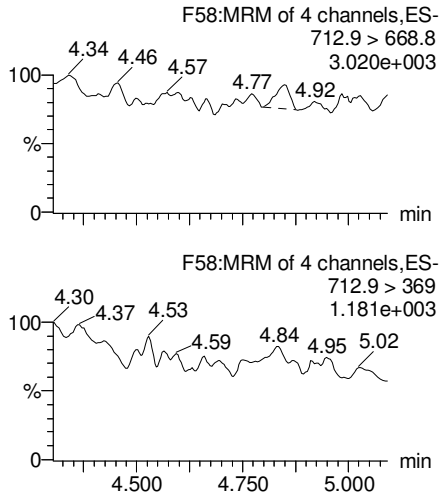
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-16.qld

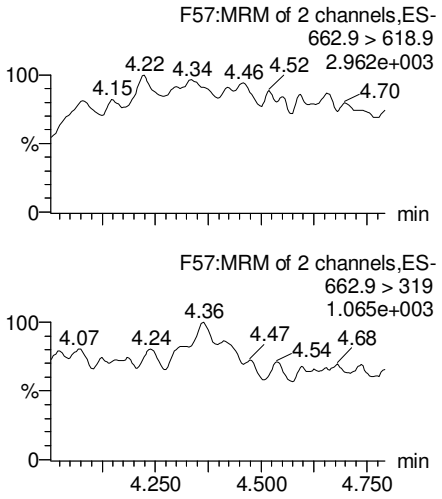
Last Altered: Tuesday, July 18, 2017 14:54:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:55:07 Pacific Daylight Time

**Name: 170713M1_16, Date: 13-Jul-2017, Time: 18:47:51, ID: 1700804-08RE1 Bldg 110-GW-FRB01-20170629 0.12521, Description: Bldg 110-GW-FRB01-20170629**

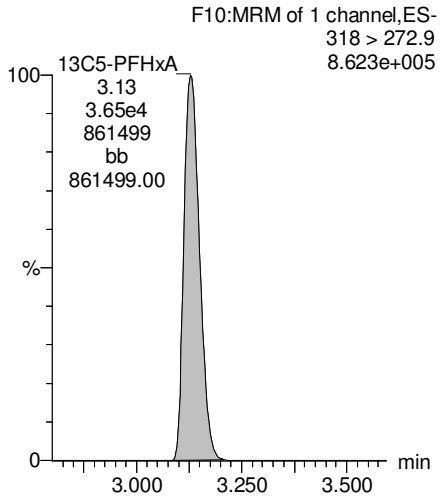
**PFTeDA**



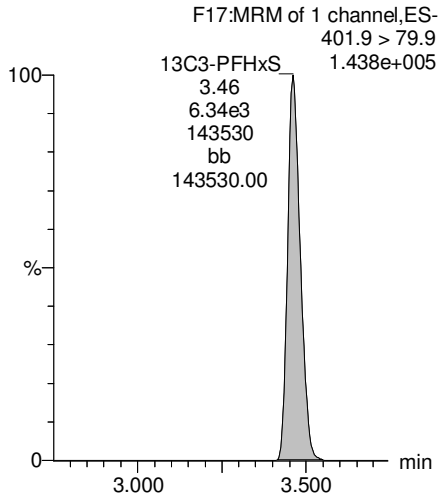

**PFTrDA**



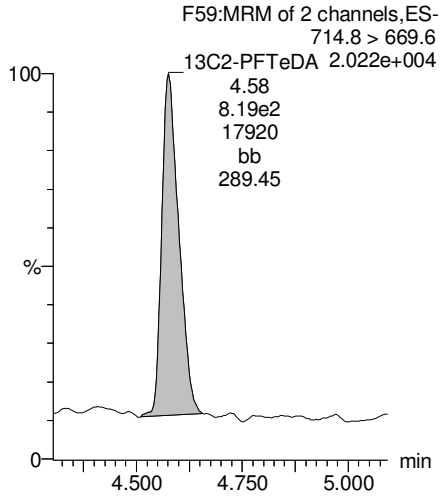

**13C5-PFHxA**



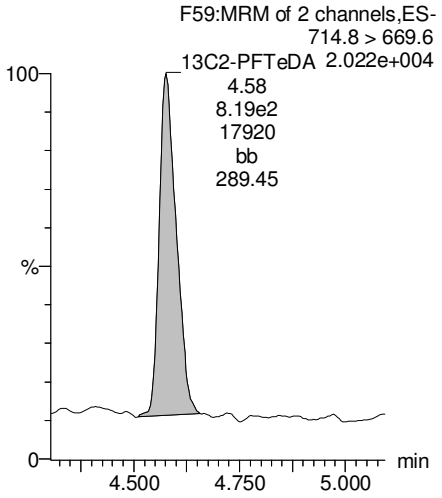

**13C3-PFHxS**



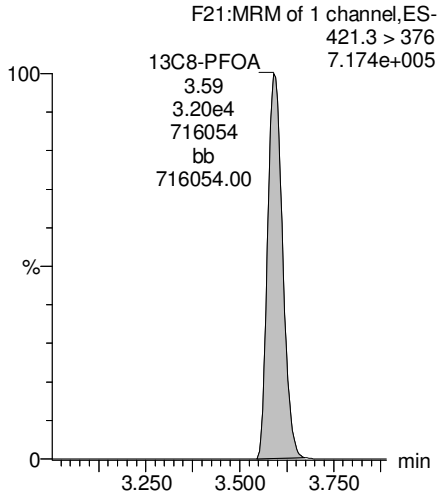

**13C2-PFTeDA**



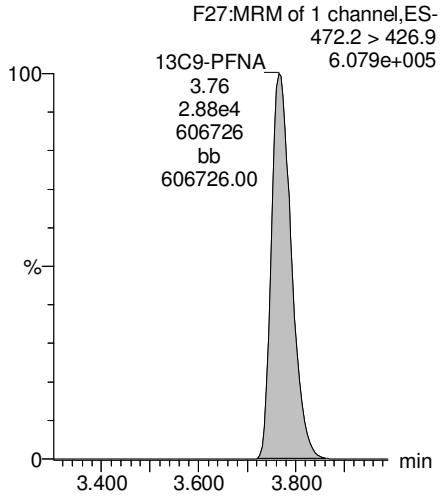

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

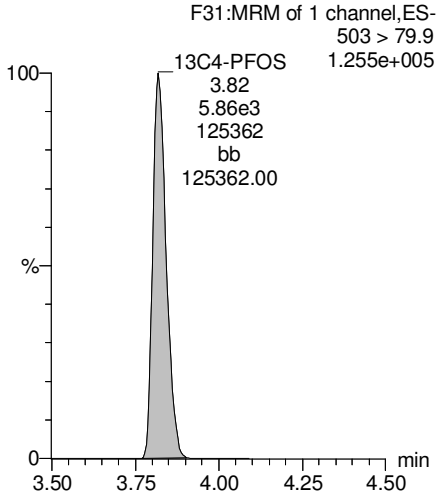
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-16.qld

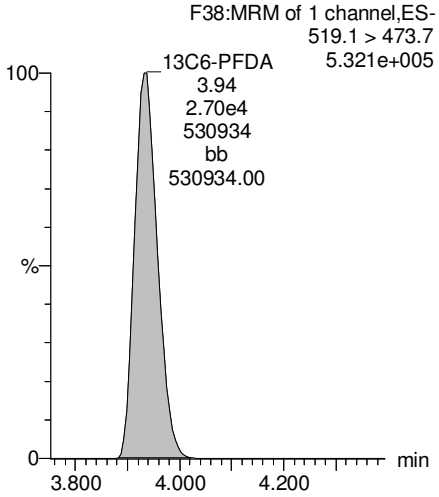
Last Altered: Tuesday, July 18, 2017 14:54:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:55:07 Pacific Daylight Time

**Name: 170713M1_16, Date: 13-Jul-2017, Time: 18:47:51, ID: 1700804-08RE1 Bldg 110-GW-FRB01-20170629 0.12521, Description: Bldg 110-GW-FRB01-20170629**

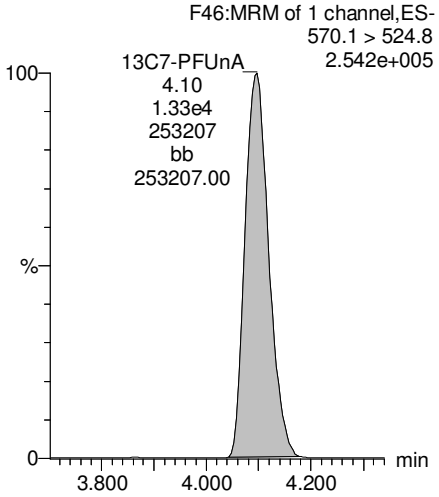
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-17.qld

Last Altered: Tuesday, July 18, 2017 14:59:31 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:59:36 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_17, Date: 13-Jul-2017, Time: 18:58:37, ID: 1700804-09RE1 Bldg 110-GW-11MW205S-20170629 0.1147, Description: Bldg 110-GW-11MW205S-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 5.20e2 | 4.54e3 | 0.112 | | 2.92 | 2.90 | 1.43 | 6.18 | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 1.01e4 | 1.27e4 | 0.112 | | 3.16 | 3.13 | 3.99 | 21.5 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 2.11e3 | 2.91e4 | 0.112 | | 3.43 | 3.39 | 0.906 | 5.44 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 3.18e3 | 3.66e3 | 0.112 | | 3.55 | 3.46 | 10.9 | 53.2 | |
| 5 | 5 | PFOA | 413 > 368.7 | 5.80e3 | 3.72e4 | 0.112 | | 3.63 | 3.59 | 1.95 | 14.4 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | | 2.65e4 | 0.112 | | 3.82 | | | | |
| 7 | 7 | PFOS | 499 > 79.9 | 1.90e3 | 5.18e3 | 0.112 | | 3.86 | 3.82 | 4.60 | 36.8 | |
| 8 | 8 | PFDA | 513 > 468.8 | 3.58e2 | 1.48e4 | 0.112 | | 4.00 | 3.93 | 0.303 | 2.21 | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 1.52e4 | 0.112 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 2.83e3 | 0.112 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 3.28e3 | 0.112 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 1.79e3 | 0.112 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 1.79e3 | 0.112 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 1.96e4 | 0.112 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.71e3 | 1.72e3 | 0.112 | 0.918 | 1.43 | 1.38 | 12.4 | 121 | 108.4 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.72e4 | 4.23e4 | 0.112 | 0.275 | 2.72 | 2.67 | 4.39 | 143 | 127.8 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 4.54e3 | 4.23e4 | 0.112 | 0.033 | 2.92 | 2.90 | 0.536 | 145 | 129.4 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.27e4 | 4.23e4 | 0.112 | 0.304 | 3.16 | 3.13 | 1.50 | 44.1 | 98.6 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.91e4 | 4.23e4 | 0.112 | 0.306 | 3.43 | 3.39 | 3.44 | 101 | 89.9 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 3.66e3 | 7.66e3 | 0.112 | 0.437 | 3.55 | 3.46 | 5.97 | 122 | 109.2 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.72e4 | 2.99e4 | 0.112 | 1.292 | 3.63 | 3.59 | 15.5 | 108 | 96.2 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.65e4 | 3.02e4 | 0.112 | 0.980 | 3.82 | 3.77 | 11.0 | 100 | 89.5 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 5.18e3 | 4.63e3 | 0.112 | 1.098 | 3.86 | 3.82 | 14.0 | 114 | 101.9 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 1.48e4 | 1.93e4 | 0.112 | 0.928 | 4.00 | 3.94 | 9.59 | 92.6 | 82.7 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 1.52e4 | 1.59e4 | 0.112 | 1.083 | 4.16 | 4.10 | 12.0 | 99.2 | 88.6 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 2.83e3 | 1.59e4 | 0.112 | 0.224 | 4.00 | 3.96 | 2.23 | 89.1 | 79.6 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 3.28e3 | 1.59e4 | 0.112 | 0.230 | 4.08 | 4.03 | 2.58 | 101 | 89.9 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 1.79e3 | 1.59e4 | 0.112 | 0.130 | 4.32 | 4.25 | 1.41 | 97.2 | 86.9 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 1.96e4 | 1.59e4 | 0.112 | 1.018 | 4.66 | 4.58 | 15.5 | 136 | 121.4 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.72e3 | 1.72e3 | 0.112 | 1.000 | 1.43 | 1.38 | 12.5 | 112 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 4.23e4 | 4.23e4 | 0.112 | 1.000 | 3.18 | 3.13 | 5.00 | 44.8 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 7.66e3 | 7.66e3 | 0.112 | 1.000 | 3.55 | 3.46 | 12.5 | 112 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-17.qld

Last Altered: Tuesday, July 18, 2017 14:59:31 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:59:36 Pacific Daylight Time

**Name: 170713M1_17, Date: 13-Jul-2017, Time: 18:58:37, ID: 1700804-09RE1 Bldg 110-GW-11MW205S-20170629 0.1147, Description: Bldg 110-GW-11MW205S-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.99e4 | 2.99e4 | 0.112 | 1.000 | 3.63 | 3.59 | 12.5 | 112 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 3.02e4 | 3.02e4 | 0.112 | 1.000 | 3.82 | 3.77 | 12.5 | 112 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 4.63e3 | 4.63e3 | 0.112 | 1.000 | 3.86 | 3.82 | 12.5 | 112 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.93e4 | 1.93e4 | 0.112 | 1.000 | 4.00 | 3.93 | 12.5 | 112 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 1.59e4 | 1.59e4 | 0.112 | 1.000 | 4.16 | 4.10 | 12.5 | 112 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 5.20e2 | 4.54e3 | 0.112 | | 2.92 | | 1.43 | 6.18 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 3.18e3 | 3.66e3 | 0.112 | | 3.55 | | 10.9 | 53.2 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 6.24e3 | 3.72e4 | 0.112 | | 3.63 | | 2.10 | 14.7 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 1.90e3 | 5.18e3 | 0.112 | | 3.86 | | 4.60 | 36.8 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 2.83e3 | 0.112 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 3.28e3 | 0.112 | | 4.30 | | 0.000 | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-17.qld

Last Altered: Tuesday, July 18, 2017 14:59:31 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:59:36 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_17, Date: 13-Jul-2017, Time: 18:58:37, ID: 1700804-09RE1 Bldg 110-GW-11MW205S-20170629 0.1147, Description: Bldg 110-GW-11MW205S-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.90 | 519.987 | 4539.162 | 1.432 | bb | 6.2 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.46 | 3176.948 | 3655.580 | 10.863 | MM | 53.2 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | 3.59 | 5804.291 | 37166.527 | 1.952 | MM | 14.4 |
| 2 | 40 | Total PFOA | 413 > 368.7 | 3.54 | 431.658 | 37166.527 | 0.145 | MM | 0.2 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.82 | 1903.728 | 5175.866 | 4.598 | MM | 36.8 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | N-EtFOSAA | 584.2 > 419 | | | 3277.420 | | MM-I | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

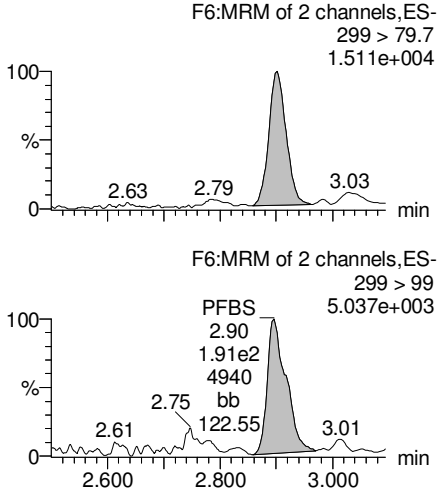
Dataset: U:\Q4.PRO\results\170713M1\170713M1-17.qld

Last Altered: Tuesday, July 18, 2017 14:59:31 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:59:36 Pacific Daylight Time

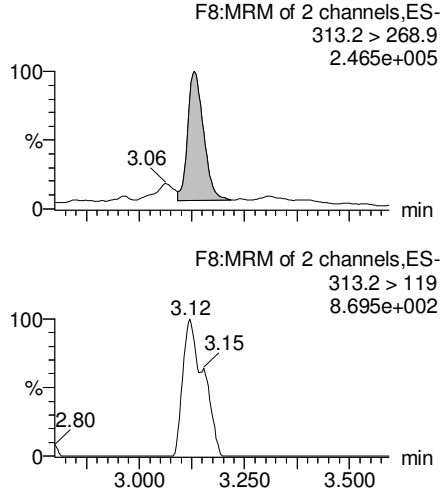
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_17, Date: 13-Jul-2017, Time: 18:58:37, ID: 1700804-09RE1 Bldg 110-GW-11MW205S-20170629 0.1147, Description: Bldg 110-GW-11MW205S-20170629**

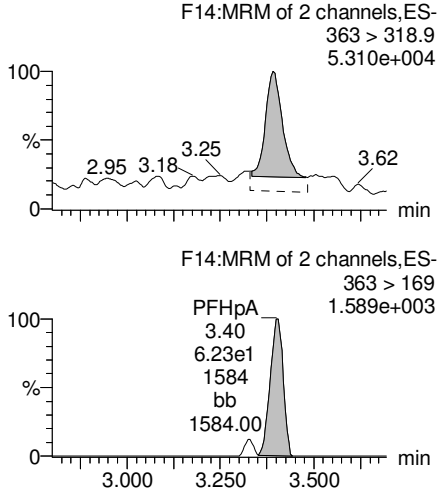
**Total PFBS**



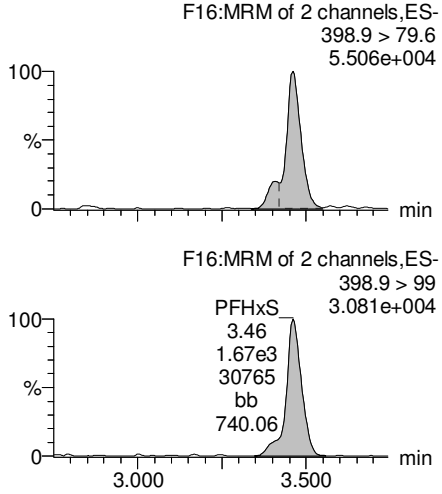

**PFHxA**



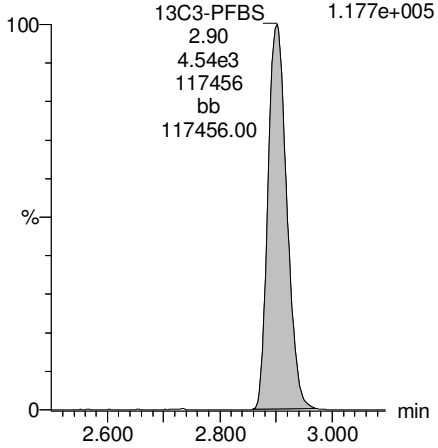

**PFHpA**



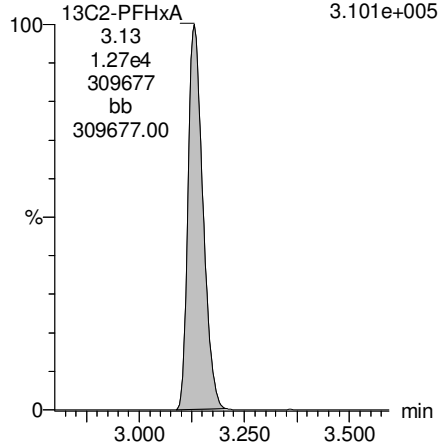

**Total PFHxS**



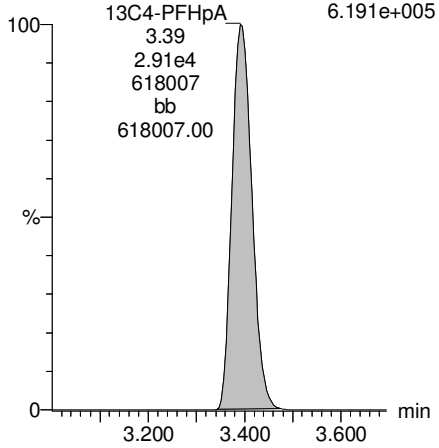

**13C3-PFBS**



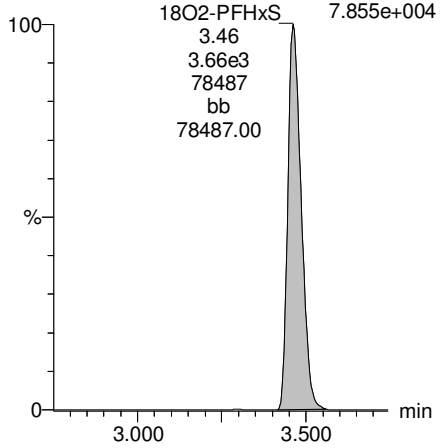

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

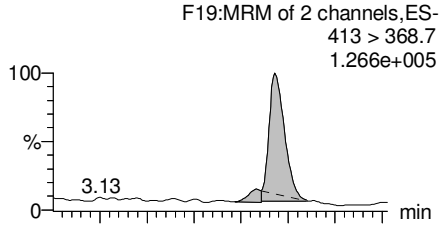
Reviewed: WJL 7/19/2017

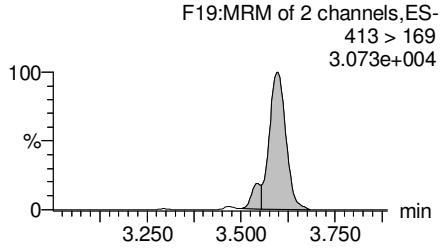
Dataset: U:\Q4.PRO\results\170713M1\170713M1-17.qld

Last Altered: Tuesday, July 18, 2017 14:59:31 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:59:36 Pacific Daylight Time

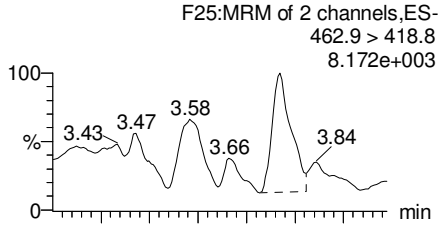
**Name: 170713M1_17, Date: 13-Jul-2017, Time: 18:58:37, ID: 1700804-09RE1 Bldg 110-GW-11MW205S-20170629 0.1147, Description: Bldg 110-GW-11MW205S-20170629**

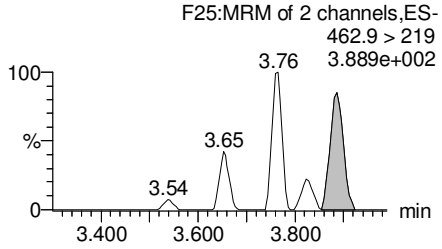
**Total PFOA**



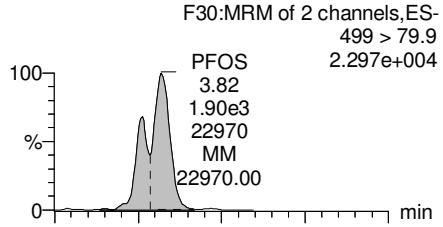



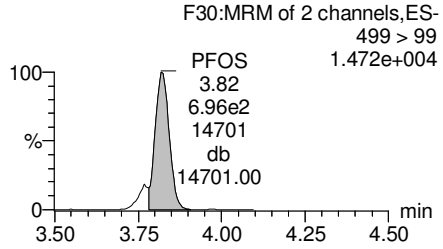

**PFNA**



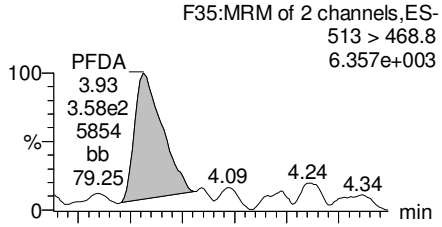



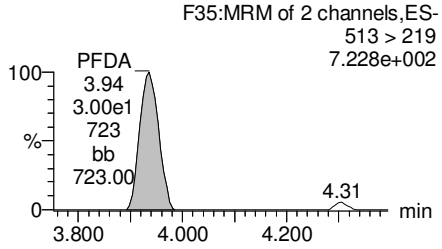

**Total PFOS**



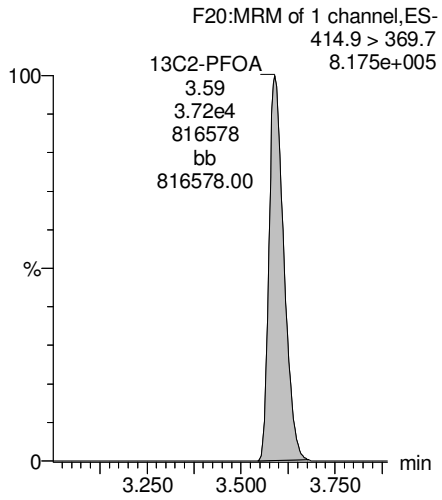




**PFDA**

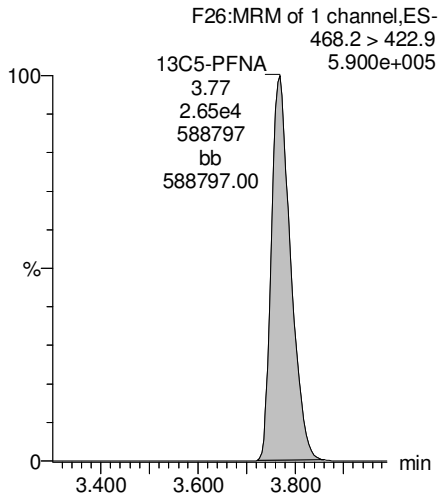


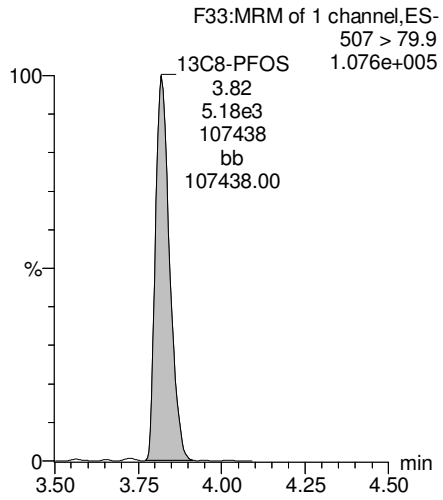

**13C2-PFOA**



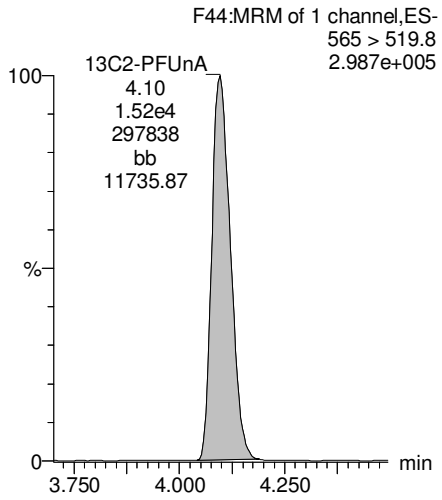

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

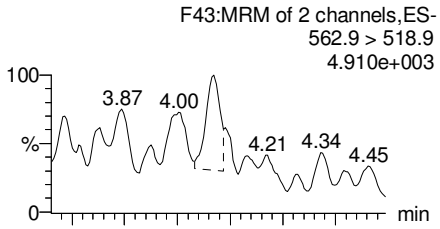
Reviewed: WJL 7/19/2017

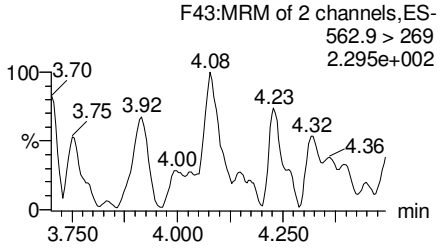
Dataset: U:\Q4.PRO\results\170713M1\170713M1-17.qld

Last Altered: Tuesday, July 18, 2017 14:59:31 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:59:36 Pacific Daylight Time

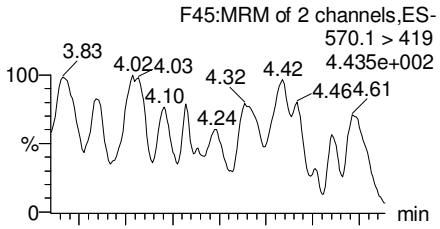
**Name: 170713M1_17, Date: 13-Jul-2017, Time: 18:58:37, ID: 1700804-09RE1 Bldg 110-GW-11MW205S-20170629 0.1147, Description: Bldg 110-GW-11MW205S-20170629**

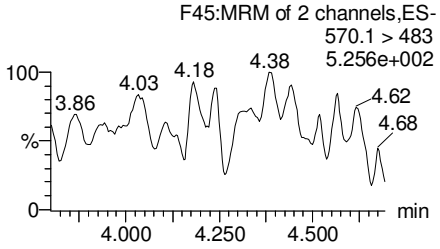
**PFUnA**



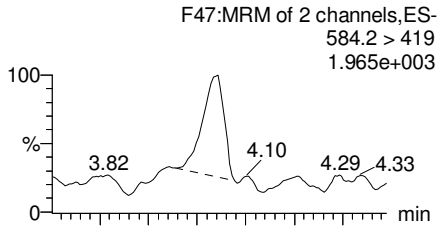



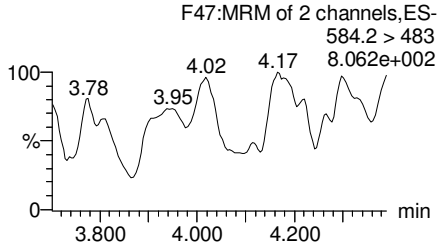

**N-MeFOSAA**



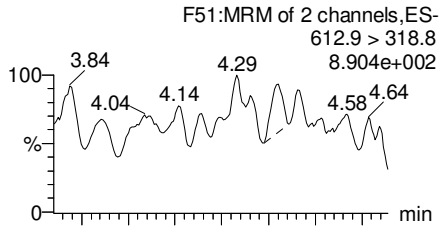



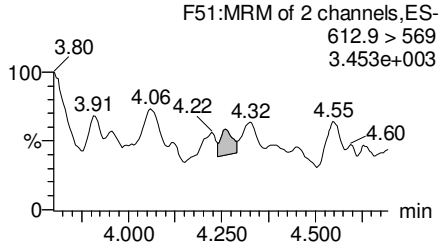

**N-EtFOSAA**



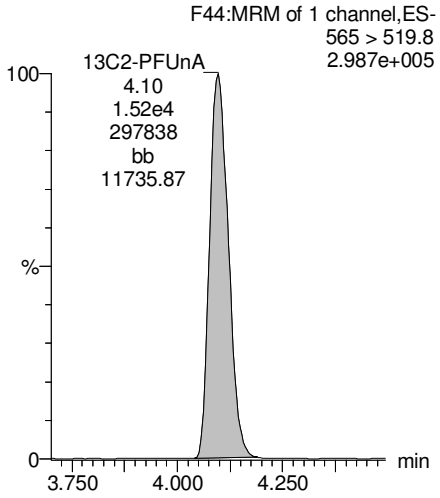




**PFDoA**

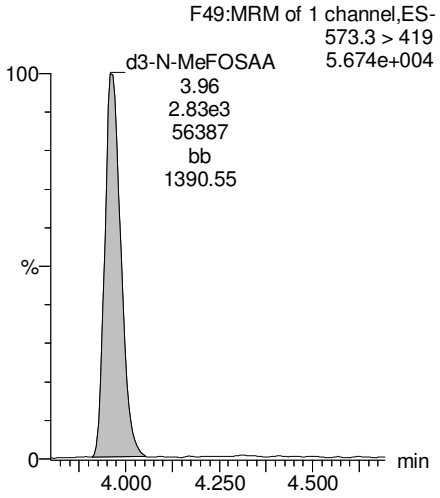


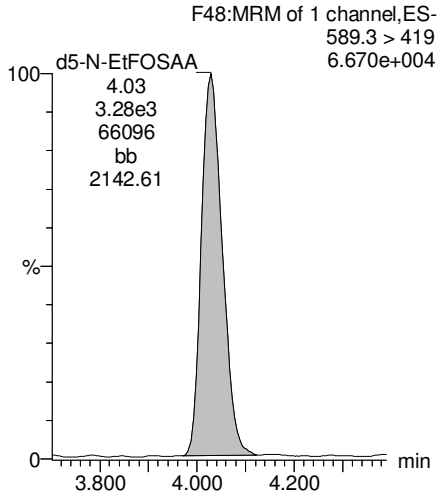

**13C2-PFUnA**



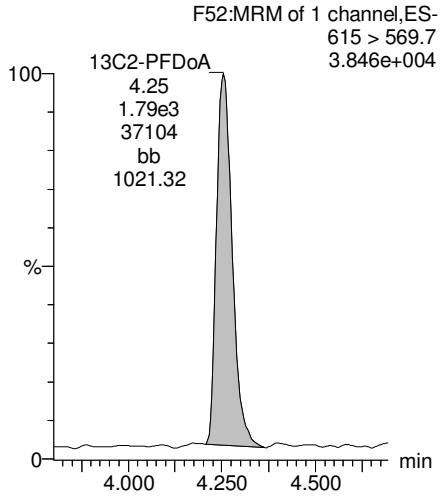

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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Vista Analytical Laboratory

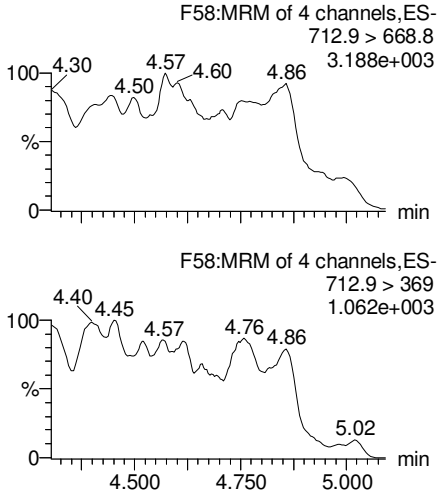
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-17.qld

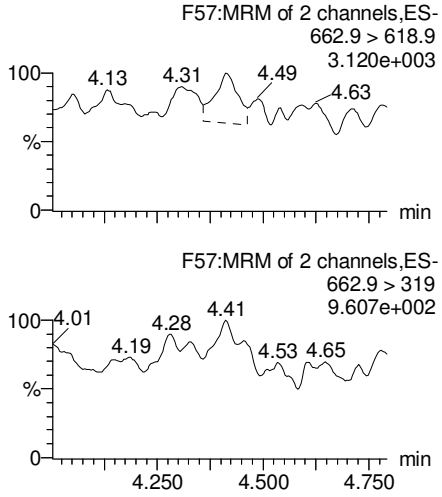
Last Altered: Tuesday, July 18, 2017 14:59:31 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:59:36 Pacific Daylight Time

**Name: 170713M1_17, Date: 13-Jul-2017, Time: 18:58:37, ID: 1700804-09RE1 Bldg 110-GW-11MW205S-20170629 0.1147, Description: Bldg 110-GW-11MW205S-20170629**

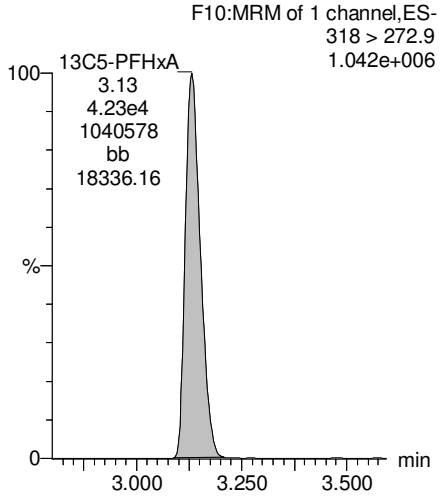
**PFTeDA**



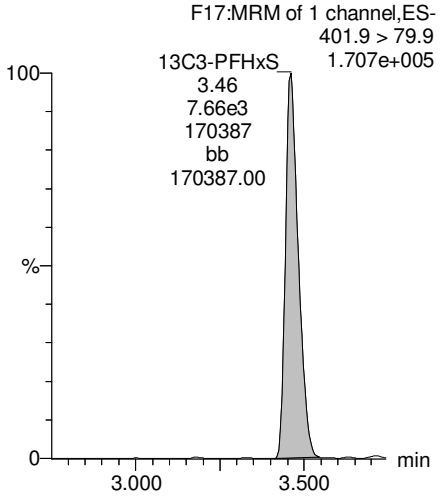

**PFTrDA**



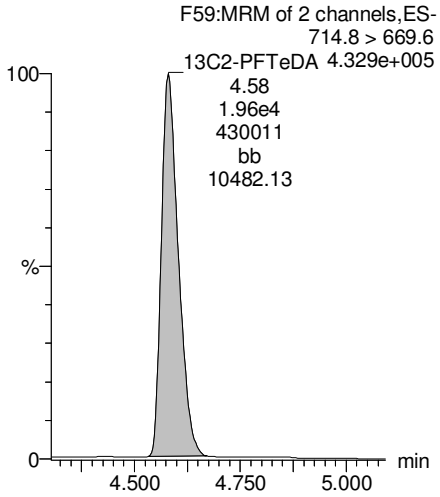

**13C5-PFHxA**



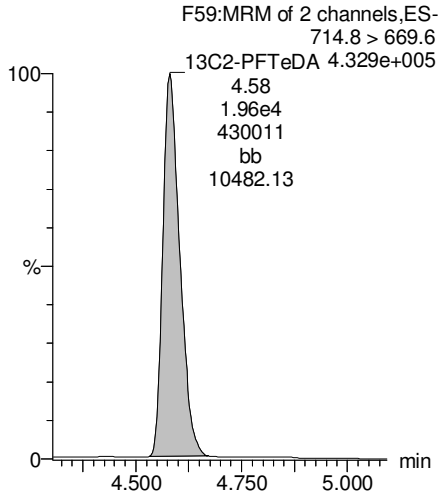

**13C3-PFHxS**



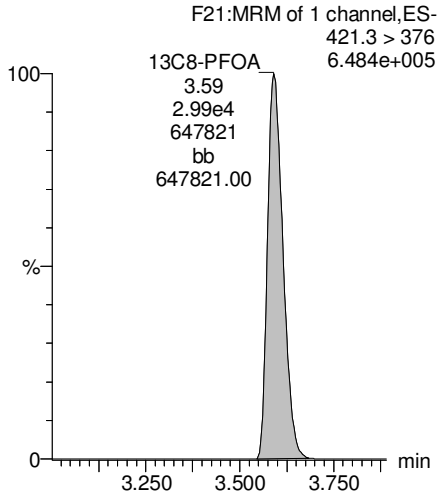

**13C2-PFTeDA**



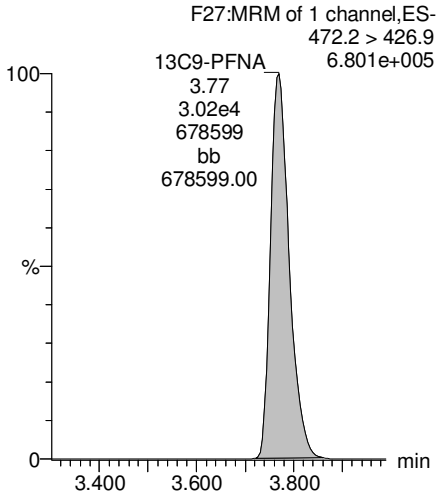

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

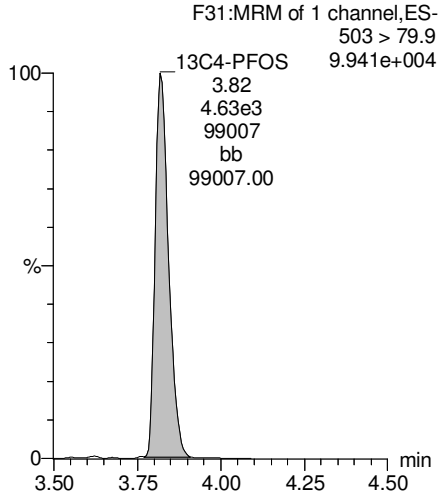
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-17.qld

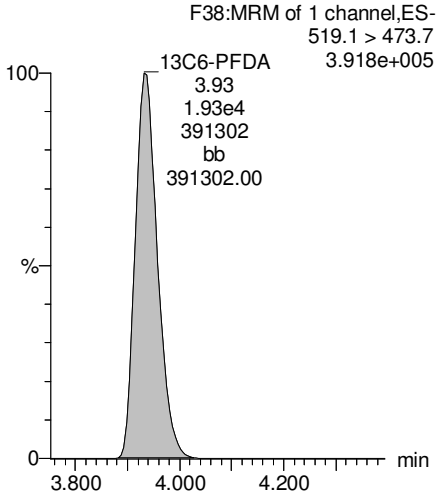
Last Altered: Tuesday, July 18, 2017 14:59:31 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 14:59:36 Pacific Daylight Time

**Name: 170713M1_17, Date: 13-Jul-2017, Time: 18:58:37, ID: 1700804-09RE1 Bldg 110-GW-11MW205S-20170629 0.1147, Description: Bldg 110-GW-11MW205S-20170629**

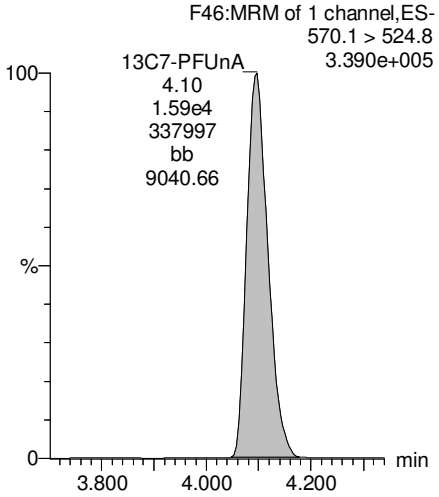
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-18.qld

Last Altered: Tuesday, July 18, 2017 15:01:19 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:01:39 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_18, Date: 13-Jul-2017, Time: 19:09:16, ID: 1700804-10RE1 IRPSite7-GW-07GW102-20170629 0.12057, Description: IRPSite7-GW-07GW102-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 8.70e2 | 4.62e3 | 0.121 | | 2.92 | 2.90 | 2.35 | 9.06 | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 2.80e4 | 1.36e4 | 0.121 | | 3.16 | 3.13 | 10.3 | 51.7 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 1.31e4 | 3.07e4 | 0.121 | | 3.43 | 3.39 | 5.34 | 30.6 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 1.73e4 | 3.07e3 | 0.121 | | 3.55 | 3.46 | 70.6 | 309 | |
| 5 | 5 | PFOA | 413 > 368.7 | 2.87e4 | 3.59e4 | 0.121 | | 3.63 | 3.59 | 10.0 | 72.0 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | 1.22e3 | 2.20e4 | 0.121 | | 3.82 | 3.77 | 0.692 | 3.84 | |
| 7 | 7 | PFOS | 499 > 79.9 | 1.49e4 | 2.95e3 | 0.121 | | 3.86 | 3.76 | 62.9 | 433 | |
| 8 | 8 | PFDA | 513 > 468.8 | | 9.04e3 | 0.121 | | 4.00 | | | | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 5.35e3 | 0.121 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 8.92e2 | 0.121 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 1.13e3 | 0.121 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 3.89e2 | 0.121 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 3.89e2 | 0.121 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 5.76e3 | 0.121 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.58e3 | 1.71e3 | 0.121 | 0.918 | 1.43 | 1.38 | 11.5 | 104 | 100.6 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.74e4 | 4.53e4 | 0.121 | 0.275 | 2.72 | 2.67 | 4.13 | 125 | 120.3 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 4.62e3 | 4.53e4 | 0.121 | 0.033 | 2.92 | 2.90 | 0.511 | 128 | 123.3 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.36e4 | 4.53e4 | 0.121 | 0.304 | 3.16 | 3.13 | 1.50 | 41.0 | 99.0 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 3.07e4 | 4.53e4 | 0.121 | 0.306 | 3.43 | 3.39 | 3.39 | 91.7 | 88.6 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 3.07e3 | 6.71e3 | 0.121 | 0.437 | 3.55 | 3.46 | 5.72 | 108 | 104.6 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.59e4 | 3.03e4 | 0.121 | 1.292 | 3.63 | 3.59 | 14.8 | 94.9 | 91.7 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.20e4 | 2.41e4 | 0.121 | 0.980 | 3.82 | 3.77 | 11.4 | 96.6 | 93.3 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 2.95e3 | 2.64e3 | 0.121 | 1.098 | 3.86 | 3.82 | 14.0 | 105 | 101.7 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 9.04e3 | 1.02e4 | 0.121 | 0.928 | 4.00 | 3.93 | 11.1 | 98.8 | 95.5 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 5.35e3 | 5.73e3 | 0.121 | 1.083 | 4.16 | 4.10 | 11.7 | 89.3 | 86.2 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 8.92e2 | 5.73e3 | 0.121 | 0.224 | 4.00 | 3.97 | 1.95 | 71.8 | 69.4 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.13e3 | 5.73e3 | 0.121 | 0.230 | 4.08 | 4.03 | 2.47 | 88.8 | 85.8 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 3.89e2 | 5.73e3 | 0.121 | 0.130 | 4.32 | 4.25 | 0.849 | 54.1 | 52.3 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 5.76e3 | 5.73e3 | 0.121 | 1.018 | 4.66 | 4.58 | 12.6 | 102 | 98.7 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.71e3 | 1.71e3 | 0.121 | 1.000 | 1.43 | 1.38 | 12.5 | 103 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 4.53e4 | 4.53e4 | 0.121 | 1.000 | 3.18 | 3.13 | 5.00 | 41.4 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 6.71e3 | 6.71e3 | 0.121 | 1.000 | 3.55 | 3.46 | 12.5 | 103 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-18.qld

Last Altered: Tuesday, July 18, 2017 15:01:19 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:01:39 Pacific Daylight Time

**Name: 170713M1_18, Date: 13-Jul-2017, Time: 19:09:16, ID: 1700804-10RE1 IRPSite7-GW-07GW102-20170629 0.12057, Description: IRPSite7-GW-07GW102-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 3.03e4 | 3.03e4 | 0.121 | 1.000 | 3.63 | 3.59 | 12.5 | 103 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.41e4 | 2.41e4 | 0.121 | 1.000 | 3.82 | 3.77 | 12.5 | 103 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 2.64e3 | 2.64e3 | 0.121 | 1.000 | 3.86 | 3.82 | 12.5 | 103 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.02e4 | 1.02e4 | 0.121 | 1.000 | 4.00 | 3.93 | 12.5 | 103 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 5.73e3 | 5.73e3 | 0.121 | 1.000 | 4.16 | 4.10 | 12.5 | 103 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 8.70e2 | 4.62e3 | 0.121 | | 2.92 | | 2.35 | 9.06 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 1.73e4 | 3.07e3 | 0.121 | | 3.55 | | 70.6 | 309 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 2.98e4 | 3.59e4 | 0.121 | | 3.63 | | 10.4 | 73.9 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 1.49e4 | 2.95e3 | 0.121 | | 3.86 | | 62.9 | 433 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 8.92e2 | 0.121 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 1.13e3 | 0.121 | | 4.30 | | 0.000 | | |

AC 7/18/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-18.qld

Last Altered: Tuesday, July 18, 2017 15:01:19 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:01:39 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_18, Date: 13-Jul-2017, Time: 19:09:16, ID: 1700804-10RE1 IRPSite7-GW-07GW102-20170629 0.12057, Description: IRPSite7-GW-07GW102-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.90 | 870.469 | 4622.597 | 2.354 | bb | 9.1 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.46 | 17328.627 | 3067.581 | 70.612 | MM | 309.3 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | 3.59 | 28726.936 | 35874.363 | 10.010 | db | 72.0 |
| 2 | 40 | Total PFOA | 413 > 368.7 | 3.54 | 1072.987 | 35874.363 | 0.374 | bd | 1.9 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.76 | 14853.599 | 2952.506 | 62.886 | MM | 433.1 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

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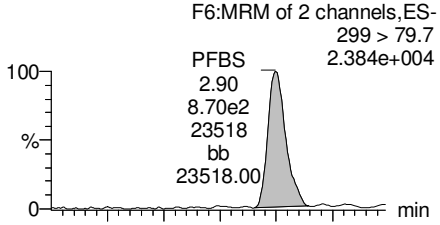
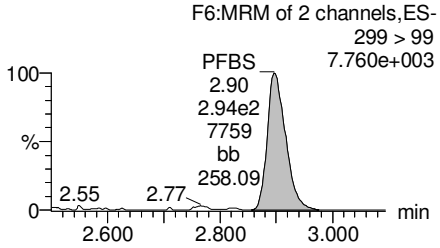
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

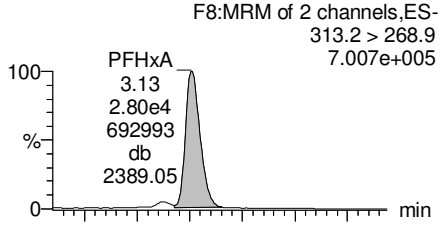
**Name: 170713M1_18, Date: 13-Jul-2017, Time: 19:09:16, ID: 1700804-10RE1 IRPSite7-GW-07GW102-20170629 0.12057, Description: IRPSite7-GW-07GW102-20170629**

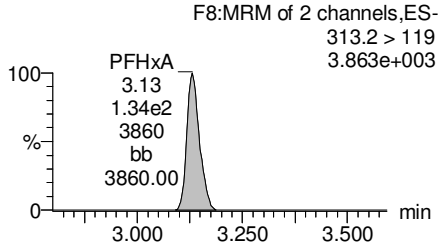
**Total PFBS**



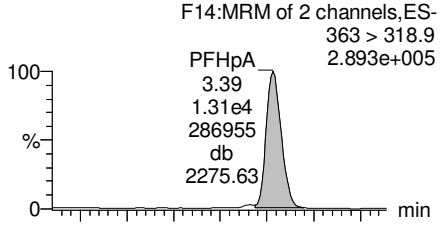



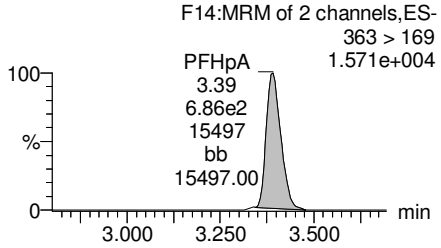

**PFHxA**



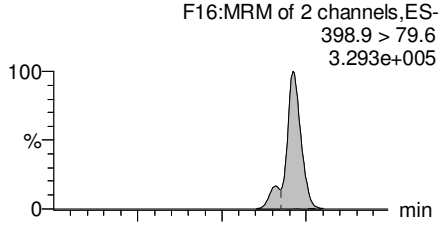



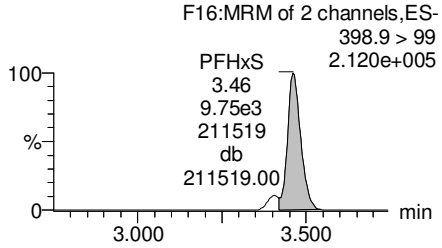

**PFHpA**



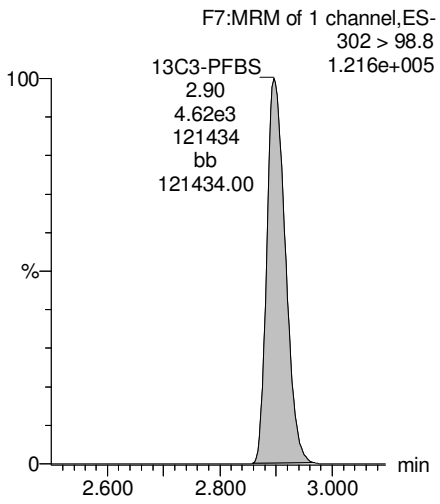




**Total PFHxS**

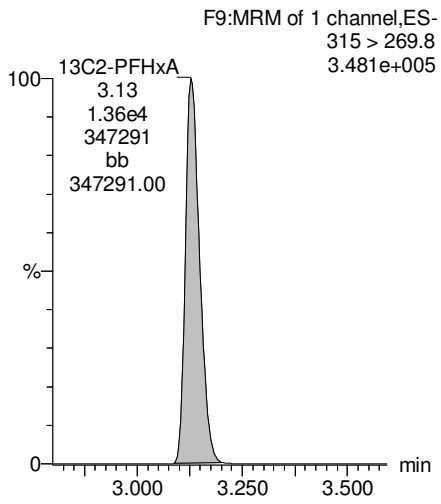


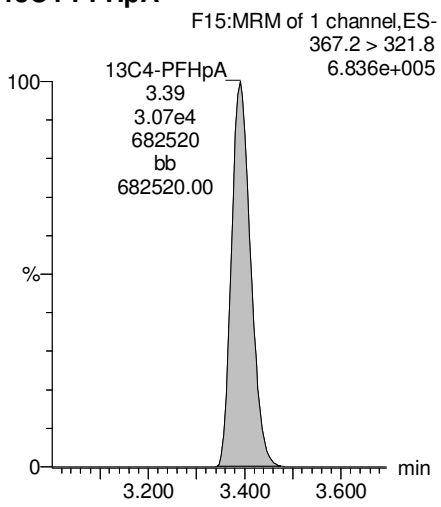

**13C3-PFBS**



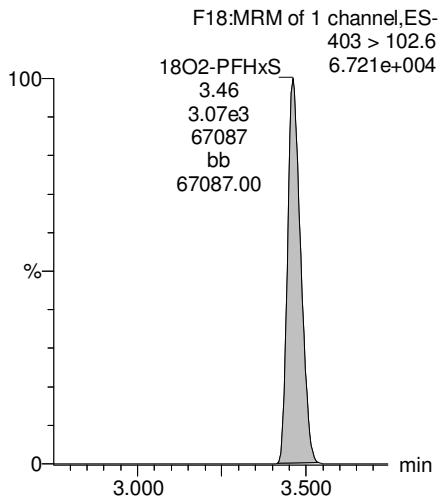

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

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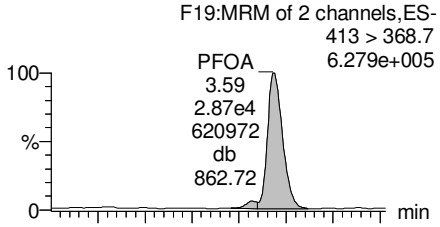
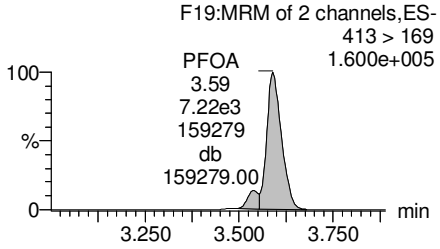
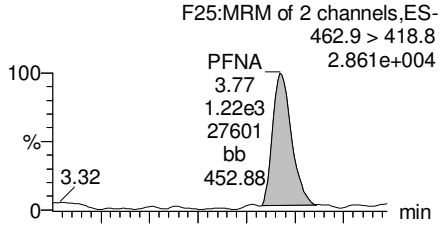
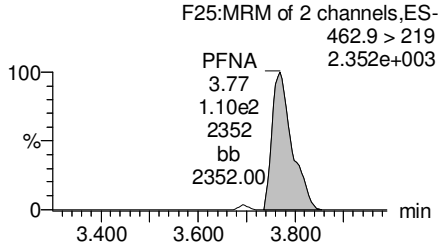
**Total PFOA**



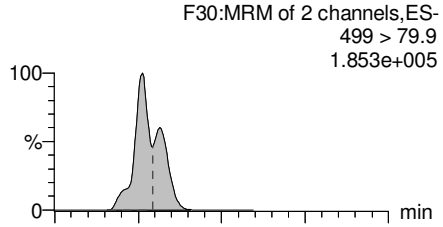



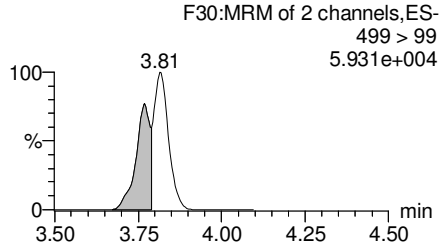

**PFNA**



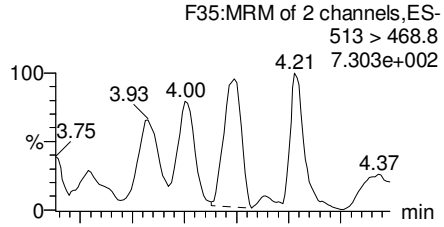



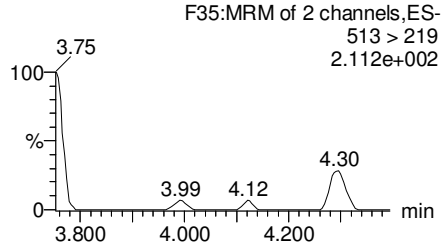

**Total PFOS**



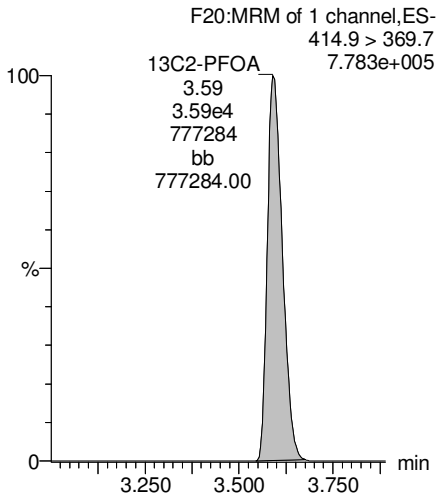




**PFDA**

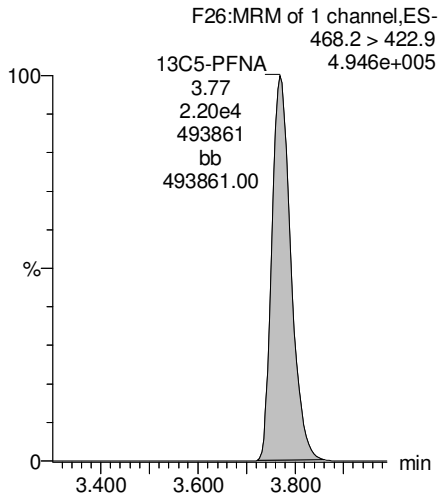


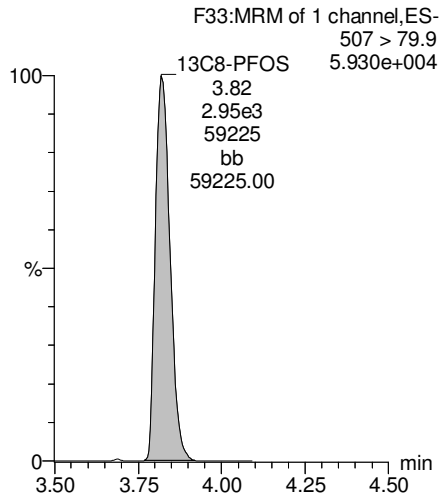

**13C2-PFOA**



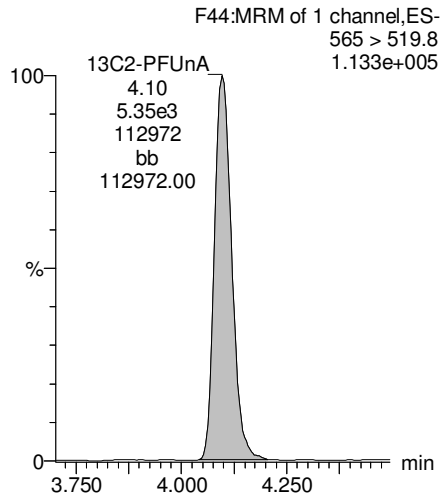

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-18.qld

Last Altered: Tuesday, July 18, 2017 15:01:19 Pacific Daylight Time
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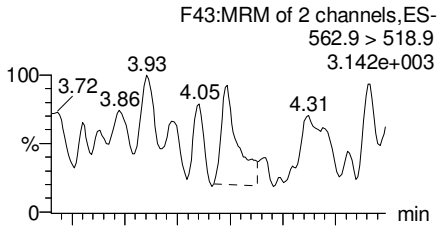
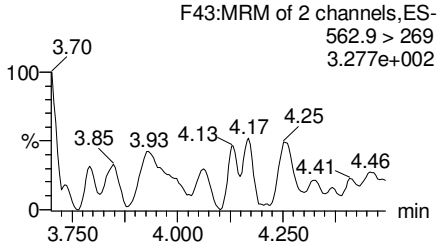
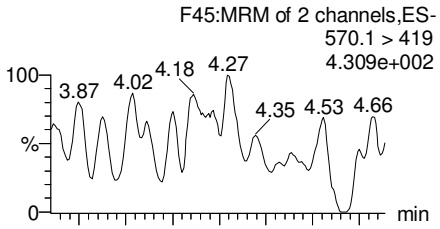
**Name: 170713M1_18, Date: 13-Jul-2017, Time: 19:09:16, ID: 1700804-10RE1 IRPSite7-GW-07GW102-20170629 0.12057, Description: IRPSite7-GW-07GW102-20170629**

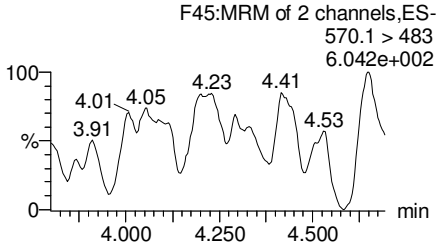
**PFUnA**



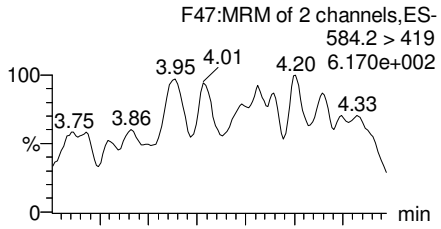



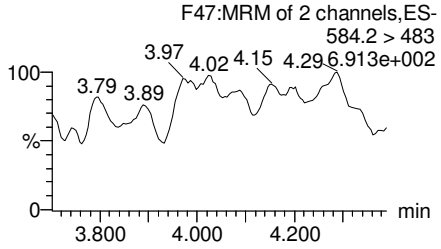

**N-MeFOSAA**




**N-EtFOSAA**

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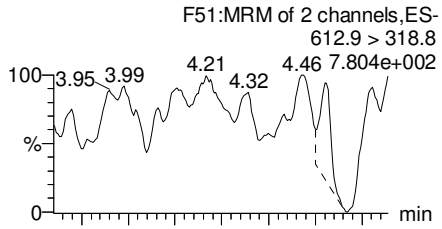
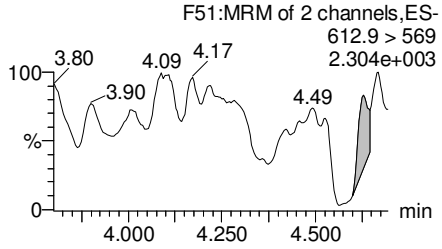
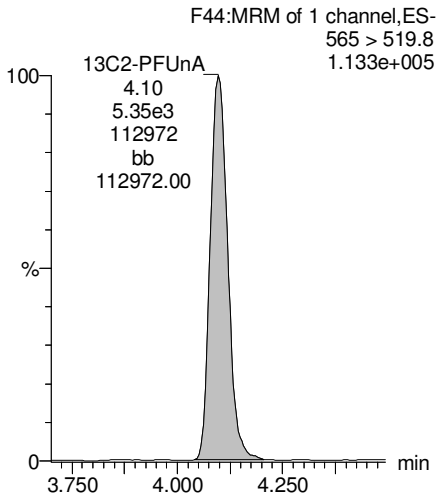
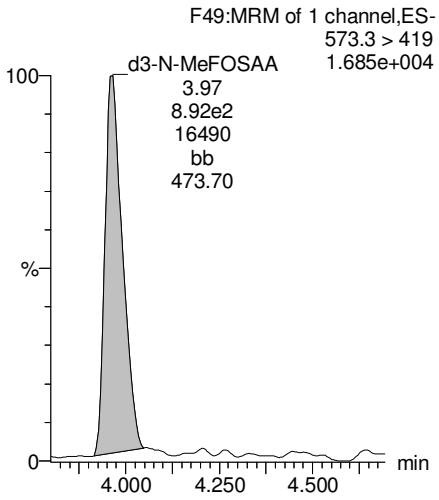


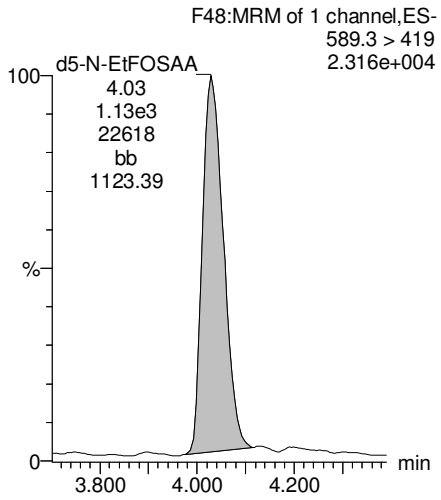

**13C2-PFUnA**



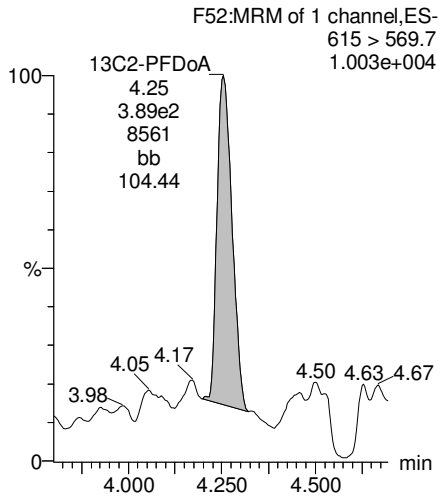

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

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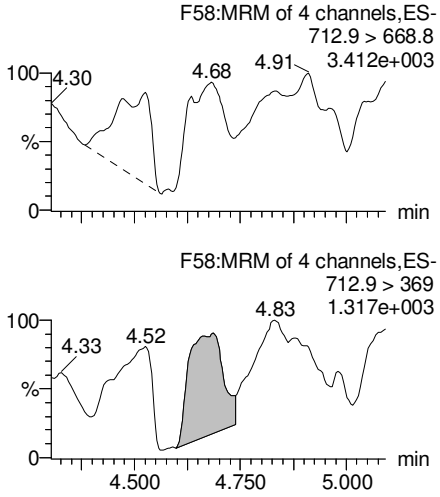
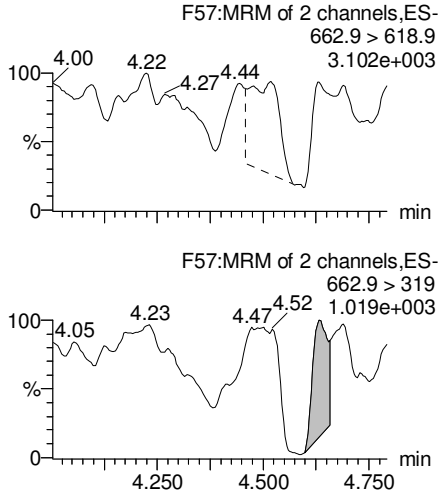
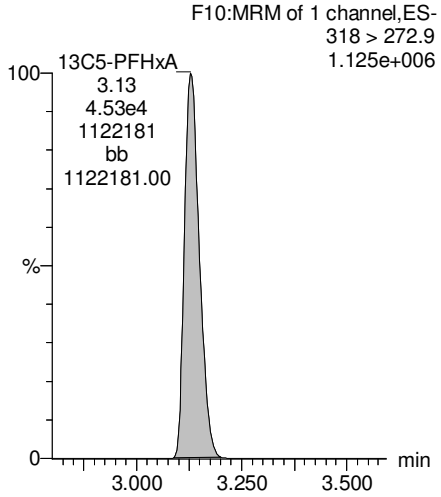
**PFTeDA**



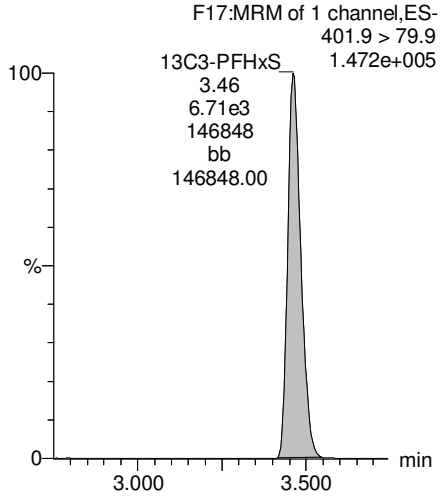

**PFTrDA**



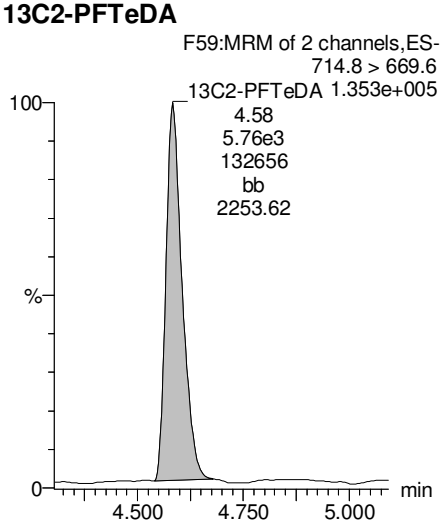

**13C5-PFHxA**



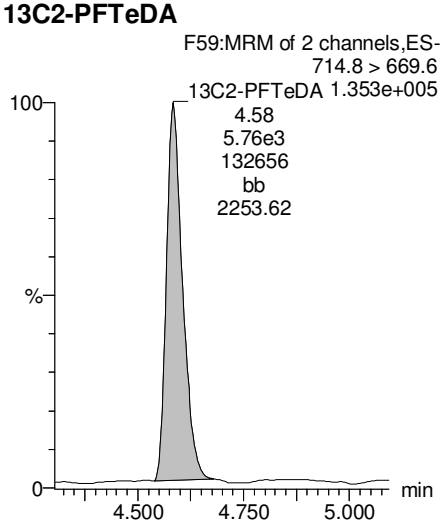

**13C3-PFHxS**



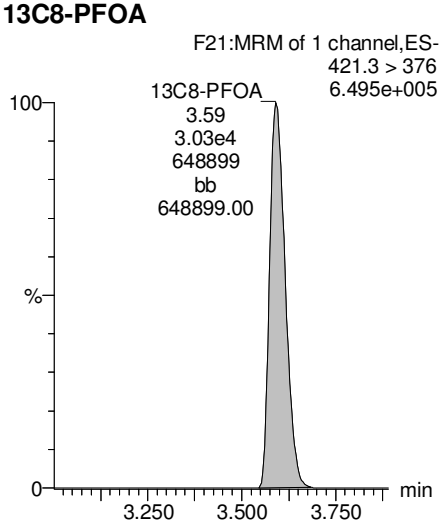

**13C2-PFTeDA**



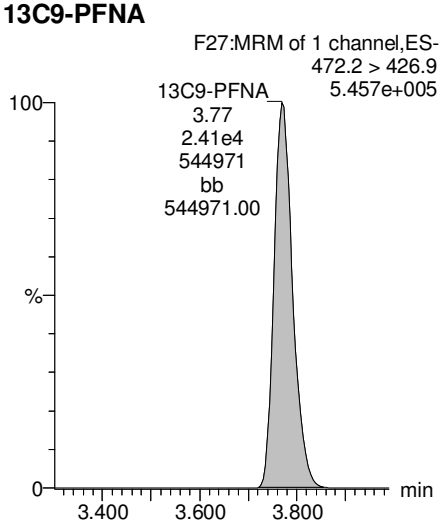

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

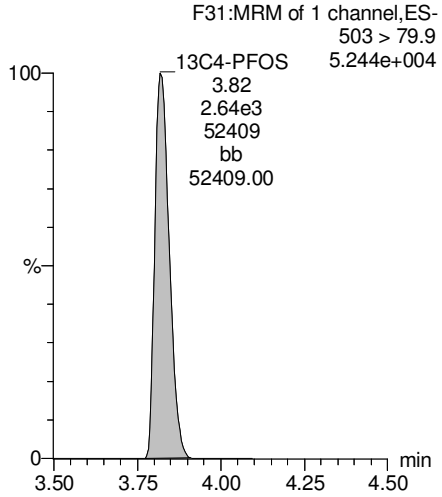
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-18.qld

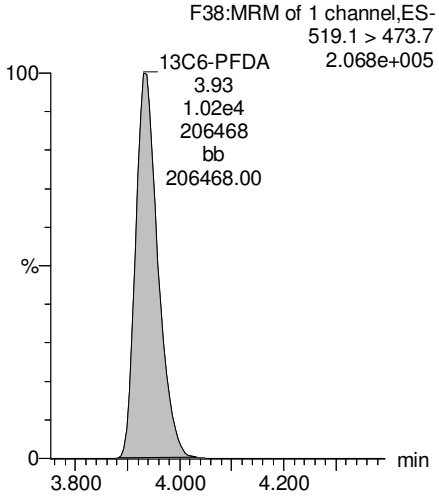
Last Altered: Tuesday, July 18, 2017 15:01:19 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:01:39 Pacific Daylight Time

**Name: 170713M1_18, Date: 13-Jul-2017, Time: 19:09:16, ID: 1700804-10RE1 IRPSite7-GW-07GW102-20170629 0.12057, Description: IRPSite7-GW-07GW102-20170629**

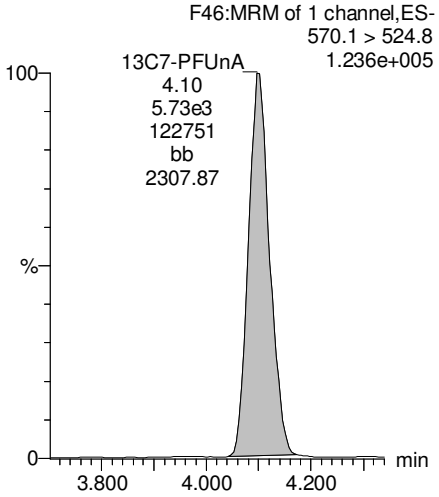
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-22.qld

Last Altered: Tuesday, July 18, 2017 15:03:20 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:03:34 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_22, Date: 13-Jul-2017, Time: 19:51:49, ID: 1700804-11RE1 IRPSite5-GW-04GW82-20170629 0.12427, Description: IRPSite5-GW-04GW82-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 1.57e2 | 3.79e3 | 0.117 | | 2.92 | 2.90 | 0.519 | 2.49 | |
| 2 | 2 | PFHxA | 313.2 > 268.9 | | 1.15e4 | 0.117 | | 3.16 | | | | |
| 3 | 3 | PFHpA | 363 > 318.9 | 3.05e2 | 2.57e4 | 0.117 | | 3.43 | 3.40 | 0.148 | 0.688 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 7.61e2 | 2.97e3 | 0.117 | | 3.55 | 3.47 | 3.20 | 15.4 | |
| 5 | 5 | PFOA | 413 > 368.7 | 1.01e3 | 3.13e4 | 0.117 | | 3.63 | 3.60 | 0.405 | 2.17 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | | 1.98e4 | 0.117 | | 3.82 | | | | |
| 7 | 7 | PFOS | 499 > 79.9 | 2.25e1 | 3.56e3 | 0.117 | | 3.86 | 3.77 | 0.0789 | 0.387 | |
| 8 | 8 | PFDA | 513 > 468.8 | | 8.29e3 | 0.117 | | 4.00 | | | | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | | 2.54e3 | 0.117 | | 4.16 | | | | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | | 8.00e2 | 0.117 | | 4.00 | | | | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | | 5.83e2 | 0.117 | | 4.08 | | | | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | | 1.33e2 | 0.117 | | 4.32 | | | | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | | 1.33e2 | 0.117 | | 4.50 | | | | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | | 2.33e3 | 0.117 | | 4.66 | | | | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 1.41e3 | 1.47e3 | 0.117 | 0.918 | 1.43 | 1.39 | 12.0 | 112 | 104.5 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 3.36e4 | 3.72e4 | 0.117 | 0.275 | 2.72 | 2.67 | 4.51 | 141 | 131.4 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 3.79e3 | 3.72e4 | 0.117 | 0.033 | 2.92 | 2.90 | 0.509 | 132 | 122.9 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 1.15e4 | 3.72e4 | 0.117 | 0.304 | 3.16 | 3.13 | 1.55 | 43.7 | 101.9 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 2.57e4 | 3.72e4 | 0.117 | 0.306 | 3.43 | 3.40 | 3.45 | 96.7 | 90.2 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.97e3 | 6.65e3 | 0.117 | 0.437 | 3.55 | 3.47 | 5.58 | 110 | 102.2 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.13e4 | 2.58e4 | 0.117 | 1.292 | 3.63 | 3.60 | 15.2 | 101 | 93.9 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 1.98e4 | 2.08e4 | 0.117 | 0.980 | 3.82 | 3.77 | 11.9 | 104 | 97.0 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 3.56e3 | 3.20e3 | 0.117 | 1.098 | 3.86 | 3.82 | 13.9 | 109 | 101.6 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 8.29e3 | 1.10e4 | 0.117 | 0.928 | 4.00 | 3.94 | 9.39 | 86.8 | 81.0 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 2.54e3 | 2.76e3 | 0.117 | 1.083 | 4.16 | 4.10 | 11.5 | 91.1 | 85.0 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 8.00e2 | 2.76e3 | 0.117 | 0.224 | 4.00 | 3.97 | 3.62 | 138 | 129.1 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 5.83e2 | 2.76e3 | 0.117 | 0.230 | 4.08 | 4.03 | 2.64 | 98.4 | 91.8 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 1.33e2 | 2.76e3 | 0.117 | 0.130 | 4.32 | 4.26 | 0.601 | 39.7 | 37.0 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 2.33e3 | 2.76e3 | 0.117 | 1.018 | 4.66 | 4.58 | 10.6 | 88.9 | 82.9 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.47e3 | 1.47e3 | 0.117 | 1.000 | 1.43 | 1.39 | 12.5 | 107 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 3.72e4 | 3.72e4 | 0.117 | 1.000 | 3.18 | 3.14 | 5.00 | 42.9 | 100.0 |
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 6.65e3 | 6.65e3 | 0.117 | 1.000 | 3.55 | 3.47 | 12.5 | 107 | 100.0 |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-22.qld

Last Altered: Tuesday, July 18, 2017 15:03:20 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:03:34 Pacific Daylight Time

**Name: 170713M1_22, Date: 13-Jul-2017, Time: 19:51:49, ID: 1700804-11RE1 IRPSite5-GW-04GW82-20170629 0.12427, Description: IRPSite5-GW-04GW82-20170629**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.58e4 | 2.58e4 | 0.117 | 1.000 | 3.63 | 3.59 | 12.5 | 107 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.08e4 | 2.08e4 | 0.117 | 1.000 | 3.82 | 3.77 | 12.5 | 107 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 3.20e3 | 3.20e3 | 0.117 | 1.000 | 3.86 | 3.82 | 12.5 | 107 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 1.10e4 | 1.10e4 | 0.117 | 1.000 | 4.00 | 3.94 | 12.5 | 107 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 2.76e3 | 2.76e3 | 0.117 | 1.000 | 4.16 | 4.10 | 12.5 | 107 | 100.0 |
| 38 | 38 | Total PFBS | 299 > 79.7 | 1.57e2 | 3.79e3 | 0.117 | | 2.92 | | 0.519 | 2.49 | |
| 39 | 39 | Total PFHxS | 398.9 > 79.6 | 7.61e2 | 2.97e3 | 0.117 | | 3.55 | | 3.20 | 15.4 | |
| 40 | 40 | Total PFOA | 413 > 368.7 | 1.01e3 | 3.13e4 | 0.117 | | 3.63 | | 0.405 | 2.17 | |
| 41 | 41 | Total PFOS | 499 > 79.9 | 2.25e1 | 3.56e3 | 0.117 | | 3.86 | | 0.0789 | 0.387 | |
| 42 | 42 | Total N-Me-FOSAA | 570.1 > 419 | 0.00e0 | 8.00e2 | 0.117 | | 4.20 | | 0.000 | | |
| 43 | 43 | Total N-EtFOSAA | 584.2 > 419 | 0.00e0 | 5.83e2 | 0.117 | | 4.30 | | 0.000 | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-22.qld

Last Altered: Tuesday, July 18, 2017 15:03:20 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:03:34 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_22, Date: 13-Jul-2017, Time: 19:51:49, ID: 1700804-11RE1 IRPSite5-GW-04GW82-20170629 0.12427, Description: IRPSite5-GW-04GW82-20170629**

**Total PFBS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.90 | 157.184 | 3787.993 | 0.519 | bb | 2.5 |

**Total PFHxS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | PFHxS | 398.9 > 79.6 | 3.47 | 761.470 | 2973.030 | 3.202 | MM | 15.4 |

**Total PFOA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | PFOA | 413 > 368.7 | 3.60 | 1012.555 | 31257.529 | 0.405 | MM | 2.2 |

**Total PFOS**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | PFOS | 499 > 79.9 | 3.77 | 22.491 | 3563.940 | 0.079 | MM | 0.4 |

**Total N-Me-FOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

**Total N-EtFOSAA**

| | # | Name | Trace | RT | Area | IS Area | Response | Primary Flags | Conc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |

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Vista Analytical Laboratory

Reviewed: WJL 7/19/2017

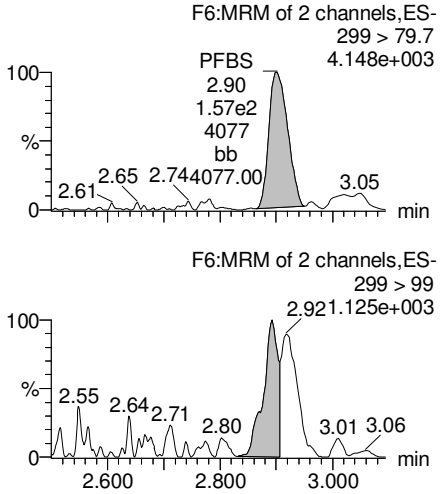
Dataset: U:\Q4.PRO\results\170713M1\170713M1-22.qld

Last Altered: Tuesday, July 18, 2017 15:03:20 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:03:34 Pacific Daylight Time

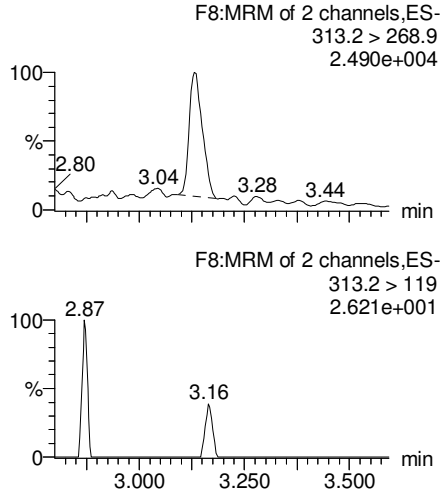
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_22, Date: 13-Jul-2017, Time: 19:51:49, ID: 1700804-11RE1 IRPSite5-GW-04GW82-20170629 0.12427, Description: IRPSite5-GW-04GW82-20170629**

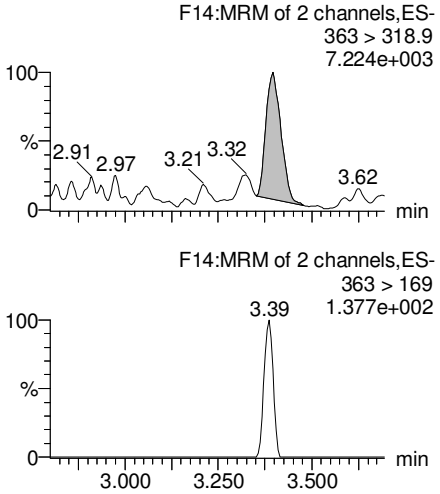
**Total PFBS**



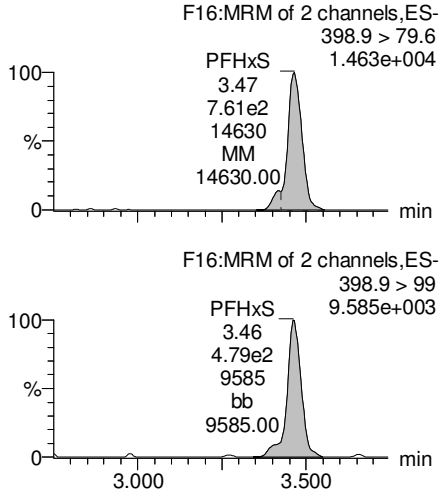

**PFHxA**



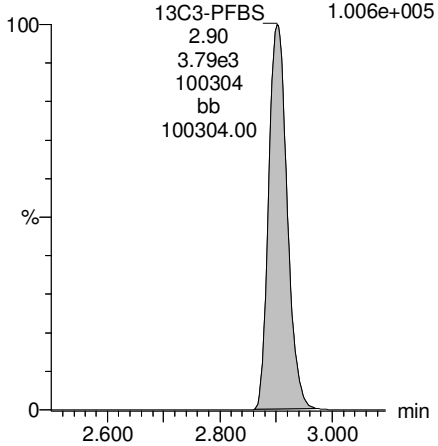

**PFHpA**



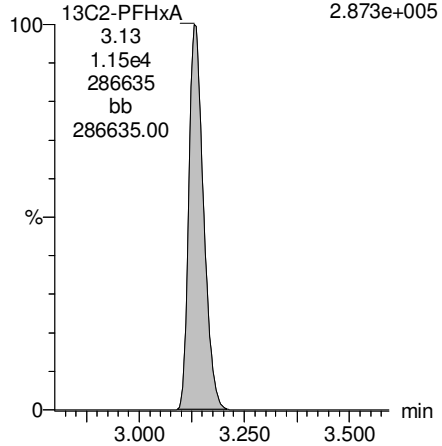

**Total PFHxS**



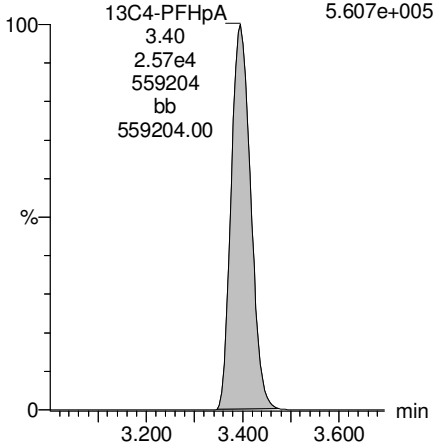

**13C3-PFBS**



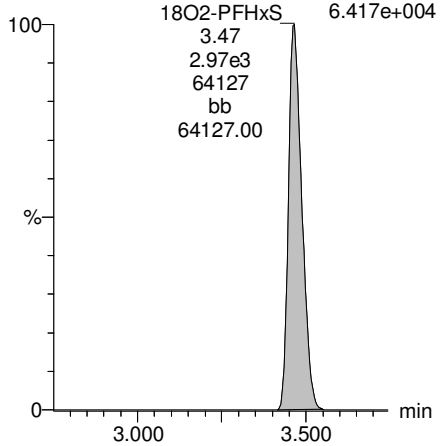

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

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Vista Analytical Laboratory

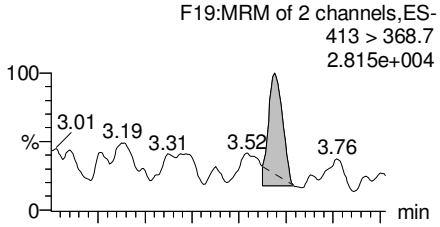
Reviewed: WJL 7/19/2017

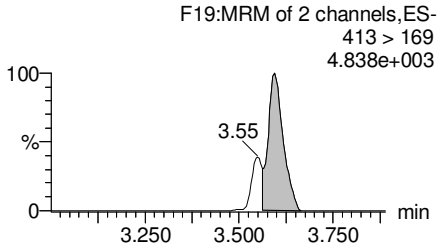
Dataset: U:\Q4.PRO\results\170713M1\170713M1-22.qld

Last Altered: Tuesday, July 18, 2017 15:03:20 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:03:34 Pacific Daylight Time

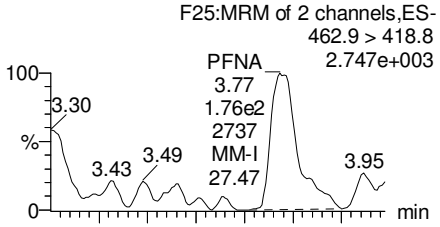
**Name: 170713M1_22, Date: 13-Jul-2017, Time: 19:51:49, ID: 1700804-11RE1 IRPSite5-GW-04GW82-20170629 0.12427, Description: IRPSite5-GW-04GW82-20170629**

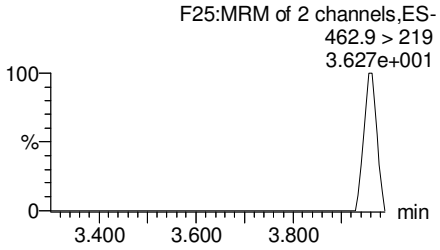
**Total PFOA**



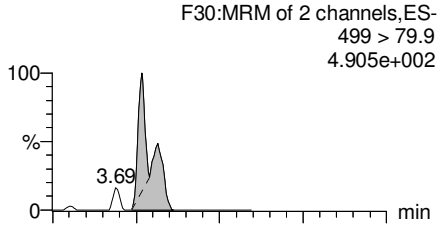



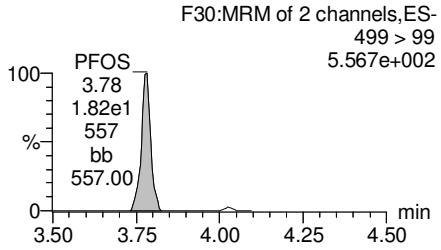

**PFNA**



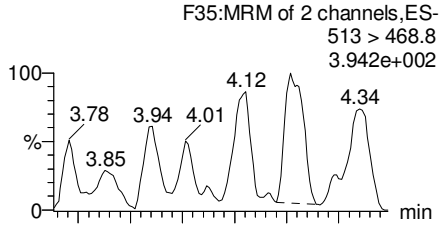



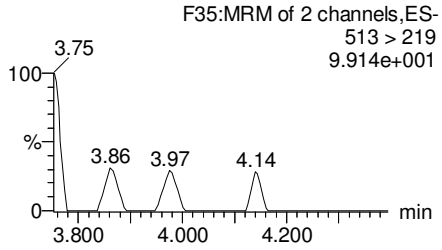

**Total PFOS**



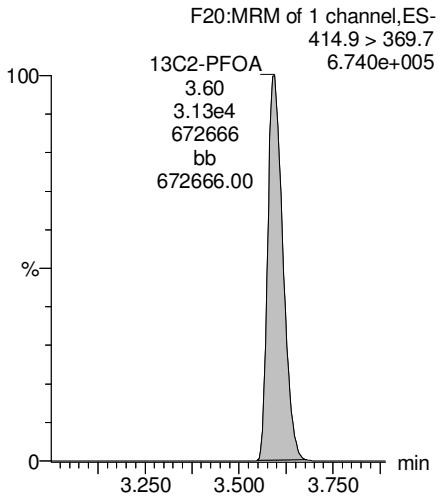




**PFDA**

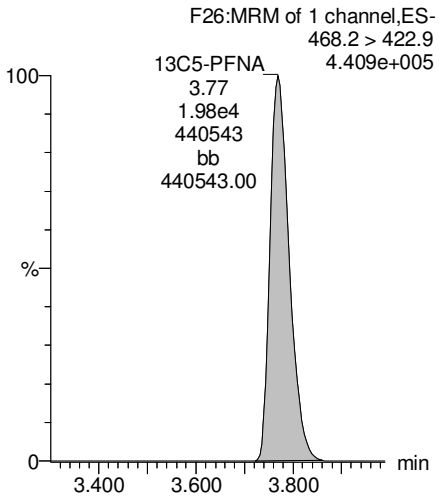


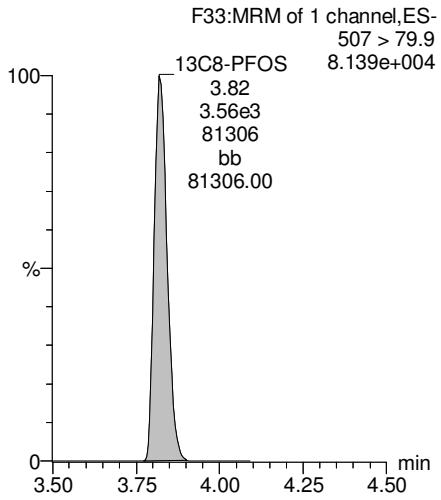

**13C2-PFOA**



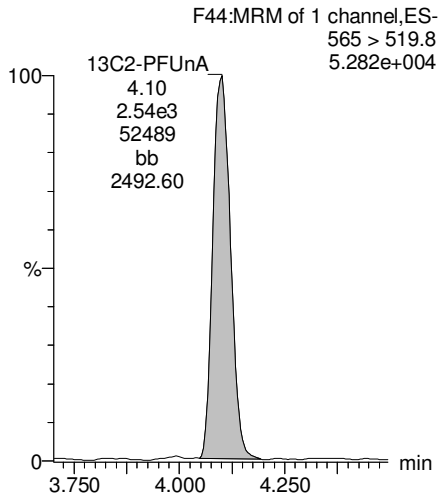

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**




AC 7/18/17

Vista Analytical Laboratory

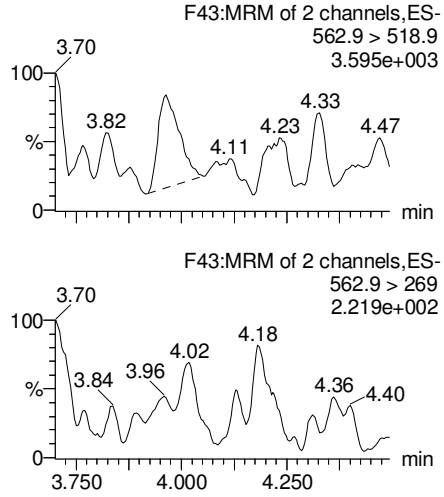
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-22.qld

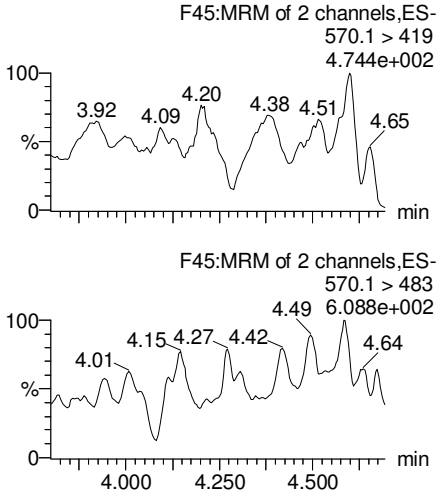
Last Altered: Tuesday, July 18, 2017 15:03:20 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:03:34 Pacific Daylight Time

**Name: 170713M1_22, Date: 13-Jul-2017, Time: 19:51:49, ID: 1700804-11RE1 IRPSite5-GW-04GW82-20170629 0.12427, Description: IRPSite5-GW-04GW82-20170629**

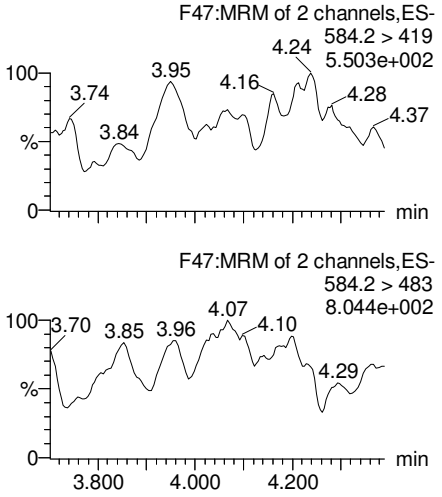
**PFUnA**



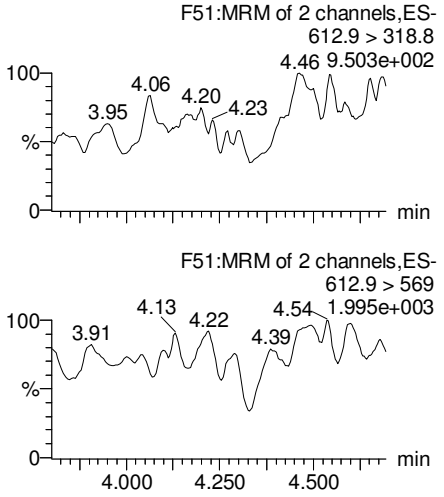

**N-MeFOSAA**



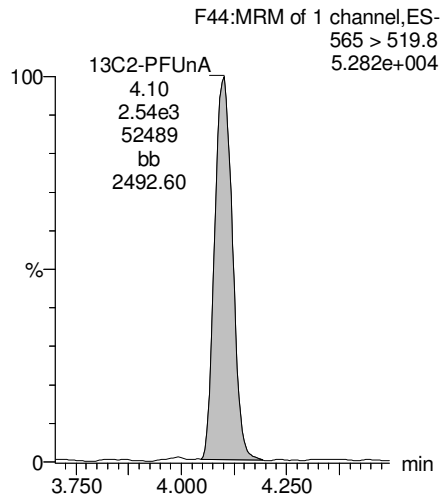

**N-EtFOSAA**



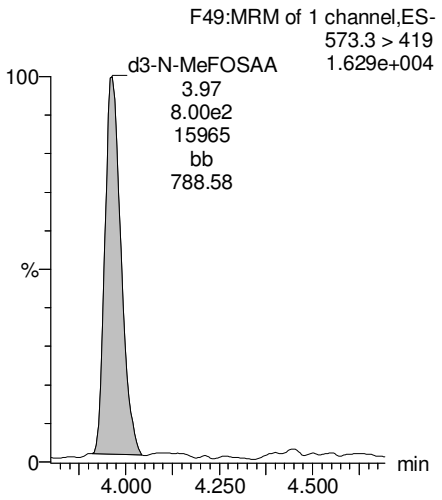

**PFDoA**



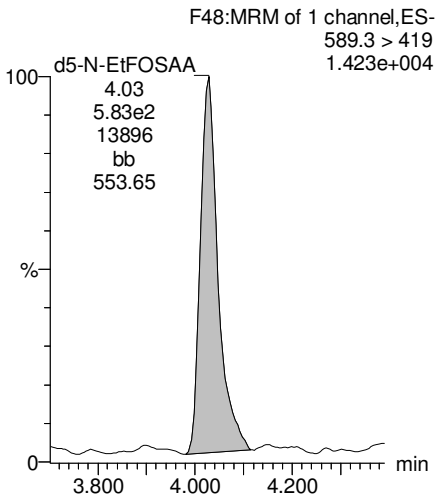

**13C2-PFUnA**



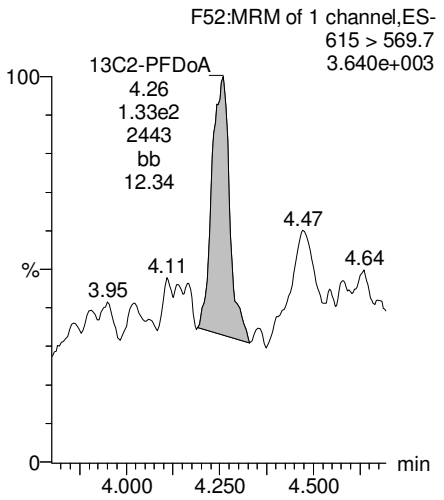

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

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Vista Analytical Laboratory

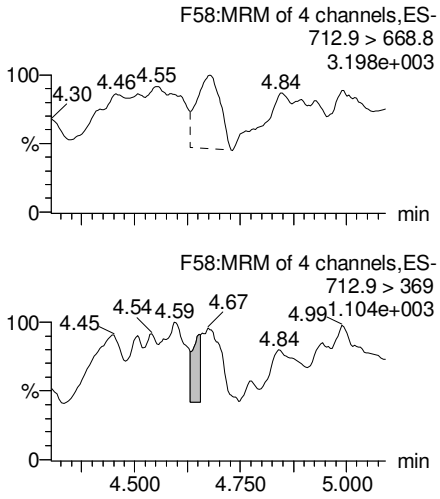
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-22.qld

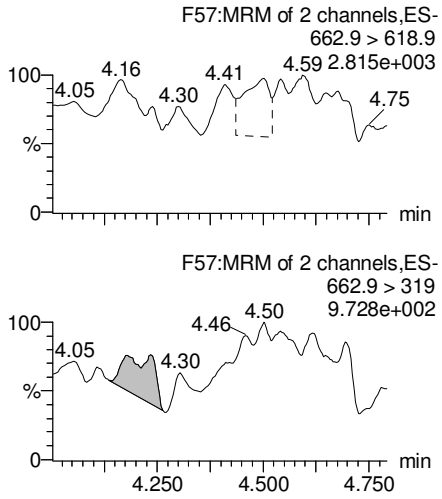
Last Altered: Tuesday, July 18, 2017 15:03:20 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:03:34 Pacific Daylight Time

**Name: 170713M1_22, Date: 13-Jul-2017, Time: 19:51:49, ID: 1700804-11RE1 IRPSite5-GW-04GW82-20170629 0.12427, Description: IRPSite5-GW-04GW82-20170629**

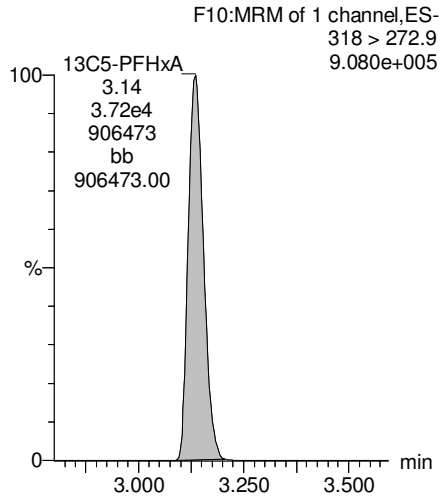
**PFTeDA**



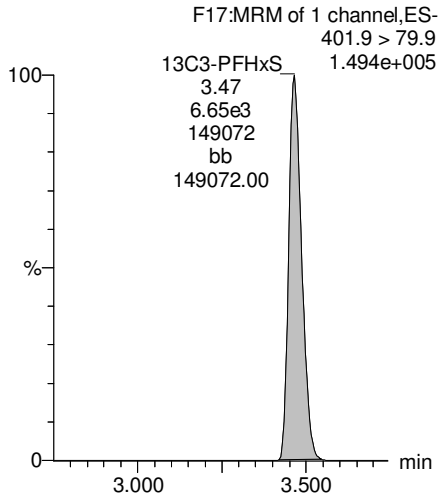

**PFTrDA**



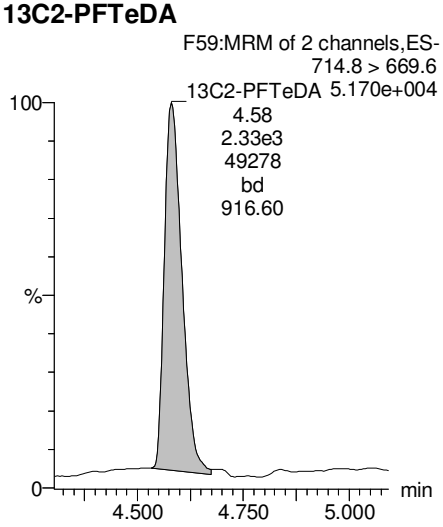

**13C5-PFHxA**



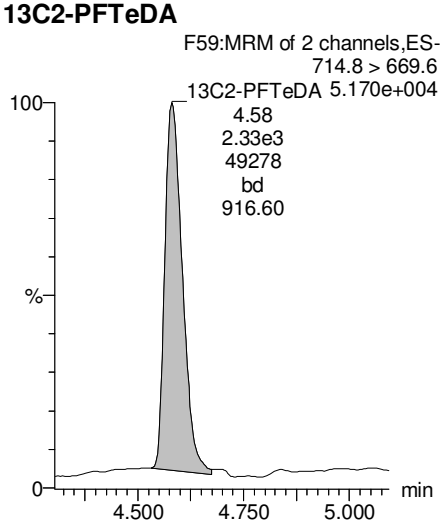

**13C3-PFHxS**



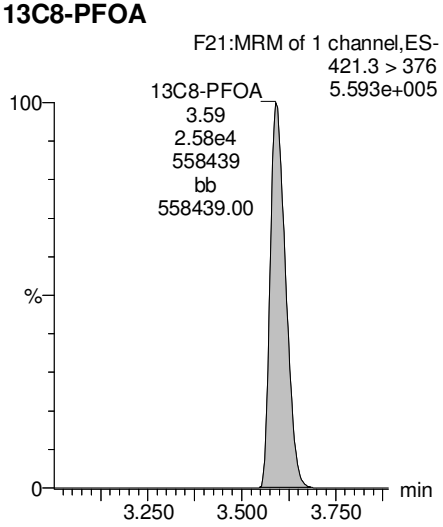

**13C2-PFTeDA**



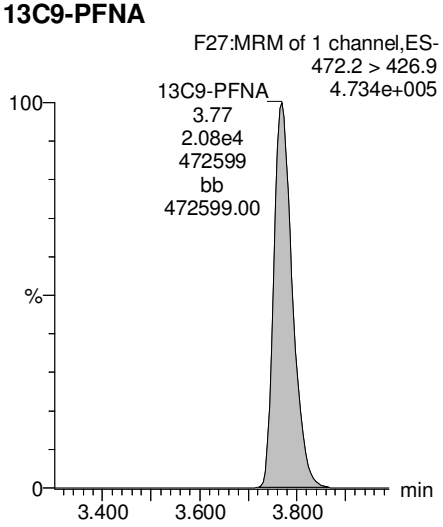

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

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Vista Analytical Laboratory

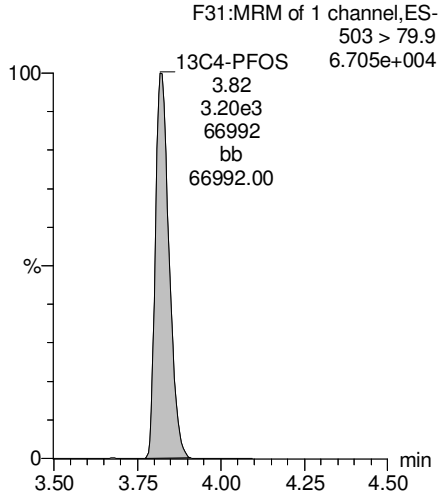
Reviewed: WJL 7/19/2017

Dataset: U:\Q4.PRO\results\170713M1\170713M1-22.qld

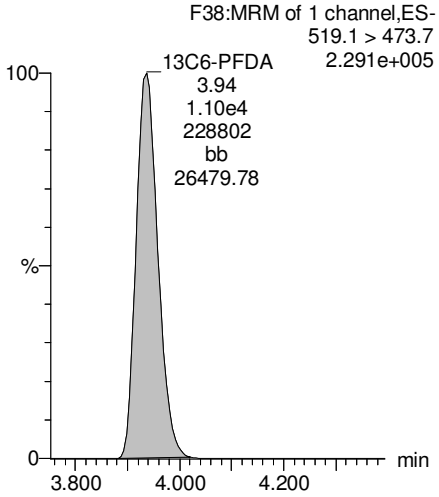
Last Altered: Tuesday, July 18, 2017 15:03:20 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 15:03:34 Pacific Daylight Time

**Name: 170713M1_22, Date: 13-Jul-2017, Time: 19:51:49, ID: 1700804-11RE1 IRPSite5-GW-04GW82-20170629 0.12427, Description: IRPSite5-GW-04GW82-20170629**

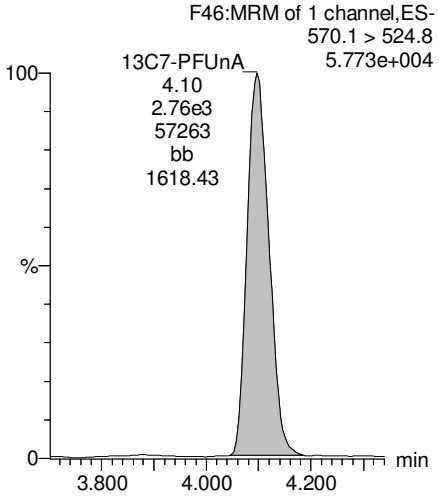
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**

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**CONTINUING CALIBRATION**

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170713M1\170713M1-2.qld

Last Altered: Tuesday, July 18, 2017 07:37:58 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:38:49 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

AC 7/18/17

**Name: 170713M1_2, Date: 13-Jul-2017, Time: 16:10:55, ID: ST170713M1-1 PFC CS-1 17G1230, Description: PFC CS-1 17G1230**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.13e2 | 2.13e3 | 1.0000 | | 2.92 | 2.87 | 1.25 | 0.610 | 122.0 |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 1.40e3 | 7.13e3 | 1.0000 | | 3.16 | 3.11 | 0.983 | 0.568 | 113.5 |
| 3 | 3 | PFHpA | 363 > 318.9 | 1.21e3 | 1.84e4 | 1.0000 | | 3.43 | 3.37 | 0.823 | 0.550 | 110.0 |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 1.87e2 | 2.18e3 | 1.0000 | | 3.55 | 3.44 | 1.07 | 0.636 | 127.2 |
| 5 | 5 | PFOA | 413 > 368.7 | 1.61e3 | 3.31e4 | 1.0000 | | 3.63 | 3.57 | 0.607 | 0.430 | 86.1 |
| 6 | 6 | PFNA | 462.9 > 418.8 | 2.27e3 | 3.99e4 | 1.0000 | | 3.82 | 3.75 | 0.712 | 0.478 | 95.7 |
| 7 | 7 | PFOS | 499 > 79.9 | 4.80e2 | 8.73e3 | 1.0000 | | 3.86 | 3.80 | 0.687 | 0.595 | 119.1 |
| 8 | 8 | PFDA | 513 > 468.8 | 1.97e3 | 3.72e4 | 1.0000 | | 4.00 | 3.91 | 0.662 | 0.485 | 97.0 |
| 9 | 9 | PFUnA | 562.9 > 518.9 | 1.92e3 | 3.93e4 | 1.0000 | | 4.16 | 4.08 | 0.611 | 0.453 | 90.6 |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | 7.33e2 | 9.71e3 | 1.0000 | | 4.00 | 3.95 | 0.944 | 0.561 | 112.1 |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | 6.43e2 | 1.11e4 | 1.0000 | | 4.08 | 4.01 | 0.723 | 0.533 | 106.6 |
| 12 | 12 | PFDoA | 612.9 > 318.8 | 1.65e2 | 3.86e3 | 1.0000 | | 4.32 | 4.23 | 0.535 | 0.634 | 126.8 |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | 2.60e3 | 3.86e3 | 1.0000 | | 4.50 | 4.39 | 8.42 | 0.615 | 123.0 |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | 1.84e3 | 2.95e4 | 1.0000 | | 4.66 | 4.55 | 0.778 | 0.552 | 110.3 |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 9.08e3 | 1.01e4 | 1.0000 | 0.918 | 1.43 | 1.35 | 11.2 | 12.2 | 97.5 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 1.63e4 | 2.29e4 | 1.0000 | 0.275 | 2.72 | 2.63 | 3.56 | 13.0 | 103.6 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 2.13e3 | 2.29e4 | 1.0000 | 0.033 | 2.92 | 2.87 | 0.465 | 14.0 | 112.2 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 7.13e3 | 2.29e4 | 1.0000 | 0.304 | 3.16 | 3.11 | 1.56 | 5.12 | 102.4 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 1.84e4 | 2.29e4 | 1.0000 | 0.306 | 3.43 | 3.37 | 4.01 | 13.1 | 104.9 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.18e3 | 4.93e3 | 1.0000 | 0.437 | 3.55 | 3.45 | 5.52 | 12.6 | 101.0 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.31e4 | 2.71e4 | 1.0000 | 1.292 | 3.63 | 3.57 | 15.3 | 11.8 | 94.4 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 3.99e4 | 3.81e4 | 1.0000 | 0.980 | 3.82 | 3.75 | 13.1 | 13.3 | 106.7 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 8.73e3 | 7.91e3 | 1.0000 | 1.098 | 3.86 | 3.80 | 13.8 | 12.6 | 100.6 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 3.72e4 | 3.67e4 | 1.0000 | 0.928 | 4.00 | 3.91 | 12.7 | 13.6 | 109.2 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 3.93e4 | 3.29e4 | 1.0000 | 1.083 | 4.16 | 4.07 | 14.9 | 13.8 | 110.3 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 9.71e3 | 3.29e4 | 1.0000 | 0.224 | 4.00 | 3.94 | 3.69 | 16.4 | 131.4 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.11e4 | 3.29e4 | 1.0000 | 0.230 | 4.08 | 4.01 | 4.22 | 18.4 | 146.9 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 3.86e3 | 3.29e4 | 1.0000 | 0.130 | 4.32 | 4.23 | 1.47 | 11.3 | 90.3 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 2.95e4 | 3.29e4 | 1.0000 | 1.018 | 4.66 | 4.55 | 11.2 | 11.0 | 87.9 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.01e4 | 1.01e4 | 1.0000 | 1.000 | 1.43 | 1.34 | 12.5 | 12.5 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 2.29e4 | 2.29e4 | 1.0000 | 1.000 | 3.18 | 3.11 | 5.00 | 5.00 | 100.0 |

70-130

50-150

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170713M1\170713M1-2.qld

Last Altered: Tuesday, July 18, 2017 07:37:58 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:38:49 Pacific Daylight Time

**Name: 170713M1_2, Date: 13-Jul-2017, Time: 16:10:55, ID: ST170713M1-1 PFC CS-1 17G1230, Description: PFC CS-1 17G1230**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 4.93e3 | 4.93e3 | 1.0000 | 1.000 | 3.55 | 3.45 | 12.5 | 12.5 | 100.0 |
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 2.71e4 | 2.71e4 | 1.0000 | 1.000 | 3.63 | 3.57 | 12.5 | 12.5 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 3.81e4 | 3.81e4 | 1.0000 | 1.000 | 3.82 | 3.75 | 12.5 | 12.5 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 7.91e3 | 7.91e3 | 1.0000 | 1.000 | 3.86 | 3.80 | 12.5 | 12.5 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 3.67e4 | 3.67e4 | 1.0000 | 1.000 | 4.00 | 3.91 | 12.5 | 12.5 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 3.29e4 | 3.29e4 | 1.0000 | 1.000 | 4.16 | 4.08 | 12.5 | 12.5 | 100.0 |

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 18, 2017 07:58:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:59:16 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Compound name: PFBS**

| | Name | ID | Acq.Date | Acq.Time |
|---|---|---|---|---|
| 1 | 170713M1_1 | IPA | 13-Jul-17 | 16:00:11 |
| 2 | 170713M1_2 | ST170713M1-1 PFC CS-1 17G1230 | 13-Jul-17 | 16:10:55 |
| 3 | 170713M1_3 | IPA | 13-Jul-17 | 16:21:34 |
| 4 | 170713M1_4 | B7G0049-BS1 OPR 0.125 | 13-Jul-17 | 16:38:24 |
| 5 | 170713M1_5 | B7G0054-BS1 OPR 0.125 | 13-Jul-17 | 16:49:10 |
| 6 | 170713M1_6 | IPA | 13-Jul-17 | 16:59:57 |
| 7 | 170713M1_7 | B7G0049-BLK1 Method Blank 0.125 | 13-Jul-17 | 17:10:36 |
| 8 | 170713M1_8 | B7G0054-BLK1 Method Blank 0.125 | 13-Jul-17 | 17:22:39 |
| 9 | 170713M1_9 | 1700804-01RE1 IRPSite7-GW-07GW41-2017... | 13-Jul-17 | 17:33:22 |
| 10 | 170713M1_10 | 1700804-02RE1 IRPSite5-GW-05GW01-2017... | 13-Jul-17 | 17:44:00 |
| 11 | 170713M1_11 | 1700804-03RE1 IRPSite5-GW-FD01-2017062... | 13-Jul-17 | 17:54:39 |
| 12 | 170713M1_12 | 1700804-04RE1 IRPSite33-GW-FRB01-2017... | 13-Jul-17 | 18:05:18 |
| 13 | 170713M1_13 | 1700804-05RE1 IRPSite33-GW-11MW204D-2... | 13-Jul-17 | 18:15:56 |
| 14 | 170713M1_14 | 1700804-06RE1 IRPSite33-GW-11MW204S-2... | 13-Jul-17 | 18:26:34 |
| 15 | 170713M1_15 | 1700804-07RE1 Bldg 110-GW-11MW205D-20... | 13-Jul-17 | 18:37:13 |
| 16 | 170713M1_16 | 1700804-08RE1 Bldg 110-GW-FRB01-201706... | 13-Jul-17 | 18:47:51 |
| 17 | 170713M1_17 | 1700804-09RE1 Bldg 110-GW-11MW205S-20... | 13-Jul-17 | 18:58:37 |
| 18 | 170713M1_18 | 1700804-10RE1 IRPSite7-GW-07GW102-201... | 13-Jul-17 | 19:09:16 |
| 19 | 170713M1_19 | IPA | 13-Jul-17 | 19:19:54 |
| 20 | 170713M1_20 | ST170713M1-2 PFC CS3 17G1231 | 13-Jul-17 | 19:30:32 |
| 21 | 170713M1_21 | IPA | 13-Jul-17 | 19:41:11 |
| 22 | 170713M1_22 | 1700804-11RE1 IRPSite5-GW-04GW82-2017... | 13-Jul-17 | 19:51:49 |
| 23 | 170713M1_23 | 1700803-01RE1 SB01 0.11986 | 13-Jul-17 | 20:02:28 |
| 24 | 170713M1_24 | 1700803-02RE1 EB01 0.12093 | 13-Jul-17 | 20:13:06 |
| 25 | 170713M1_25 | 1700803-03RE1 IRPSite7-GW-46GW205-201... | 13-Jul-17 | 20:23:44 |
| 26 | 170713M1_26 | 1700803-04RE1 IRPSite7-GW-FD01-2017062... | 13-Jul-17 | 20:34:23 |
| 27 | 170713M1_27 | 1700803-05RE1 IRPSite7-GW-07GW202-201... | 13-Jul-17 | 20:45:01 |
| 28 | 170713M1_28 | 1700803-06RE1 IRPSite7-GW-FRB01-20170... | 13-Jul-17 | 20:55:40 |
| 29 | 170713M1_29 | 1700803-07RE1 IRPSite5-GW-FRB01-20170... | 13-Jul-17 | 21:06:18 |
| 30 | 170713M1_30 | 1700803-08RE1 IRPSite5-GW-04GW81S-201... | 13-Jul-17 | 21:16:56 |
| 31 | 170713M1_31 | 1700803-09RE1 IRPSite5-GW-04GW80-2017... | 13-Jul-17 | 21:27:35 |

Dataset: Untitled

Last Altered: Tuesday, July 18, 2017 07:58:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:59:16 Pacific Daylight Time

**Compound name: PFBS**

| | Name | ID | Acq.Date | Acq.Time |
|---|---|---|---|---|
| 32 | 170713M1_32 | B7G0054-MS1 Matrix Spike 0.12064 | 13-Jul-17 | 21:38:13 |
| 33 | 170713M1_33 | B7G0054-MSD1 Matrix Spike Dup 0.11356 | 13-Jul-17 | 21:48:51 |
| 34 | 170713M1_34 | IPA | 13-Jul-17 | 21:59:30 |
| 35 | 170713M1_35 | ST170713M1-3 PFC CS3 17G1231 | 13-Jul-17 | 22:10:08 |
| 36 | 170713M1_36 | IPA | 13-Jul-17 | 22:20:47 |
| 37 | 170713M1_37 | 1700803-10RE1 EB02 0.12181 | 13-Jul-17 | 22:31:25 |
| 38 | 170713M1_38 | 1700836-01RE1 DPH-MW11 0.11781 | 13-Jul-17 | 22:42:03 |
| 39 | 170713M1_39 | 1700836-02RE1 DPH-B7 0.12115 | 13-Jul-17 | 22:52:42 |
| 40 | 170713M1_40 | 1700836-03RE1 DPH-MW3-17 0.11871 | 13-Jul-17 | 23:03:20 |
| 41 | 170713M1_41 | 1700836-04RE1 DPH-EX4 0.11551 | 13-Jul-17 | 23:13:59 |
| 42 | 170713M1_42 | 1700836-05RE1 DPH-MW6-17 0.11801 | 13-Jul-17 | 23:24:37 |
| 43 | 170713M1_43 | IPA | 13-Jul-17 | 23:35:15 |
| 44 | 170713M1_44 | ST170713M1-4 PFC CS3 17G1231 | 13-Jul-17 | 23:45:54 |

## LC Calibration Standards Review Checklist Q4

| | | ION Ratio | Concentration | C-Cals Name | Sign Date | Correct I-Cal | Manual Integrations | N/A |
|---|---|---|---|---|---|---|---|---|
| **Calibration ID:** STT07I3M1-1 | L (M) H | N/A | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ |
| **Calibration ID:** -2 | L (M) H | ☐ | (A) ☑ | ☑ | ☑ | ☑ | ☐ | ☐ |
| **Calibration ID:** -3 | L (M) H | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ |
| **Calibration ID:** -4 | L (M) H | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| **Calibration ID:** | L M H | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Calibration ID:** | L M H | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Calibration ID:** | L M H | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Calibration ID:** | L M H | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Calibration ID:** | L M H | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Calibration ID:** | L M H | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Full Mass Cal. Date:** 6/21/17

**Run Log Present:** ☑

**# of Samples per Sequence Checked:** ☑

**Reviewed By:** [signature] 7/18/17
Initials/Date

**Comments:**
(A) PFDoA exceeds method criteria. No PFDoA in samples. AC 7/18/17

Vista Analytical Laboratory

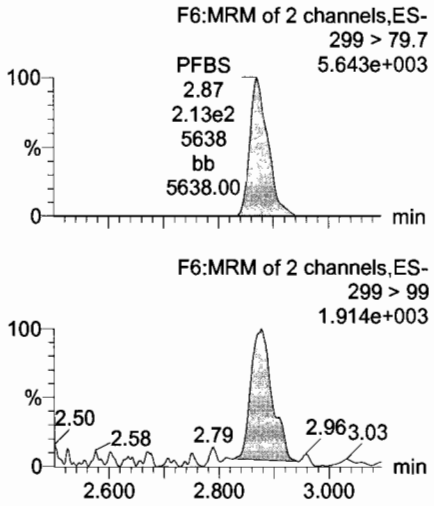
Dataset: U:\Q4.PRO\results\170713M1\170713M1-2.qld

Last Altered: Tuesday, July 18, 2017 07:37:58 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:38:49 Pacific Daylight Time

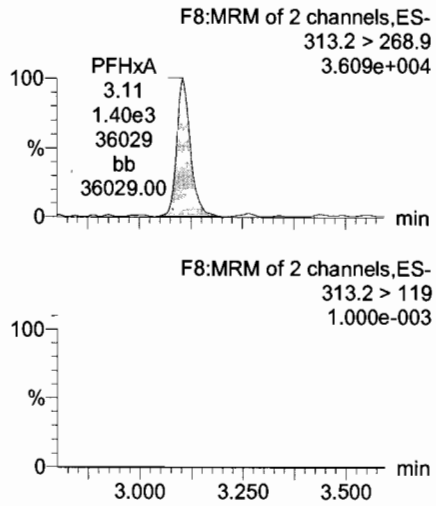
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_2, Date: 13-Jul-2017, Time: 16:10:55, ID: ST170713M1-1 PFC CS-1 17G1230, Description: PFC CS-1 17G1230**

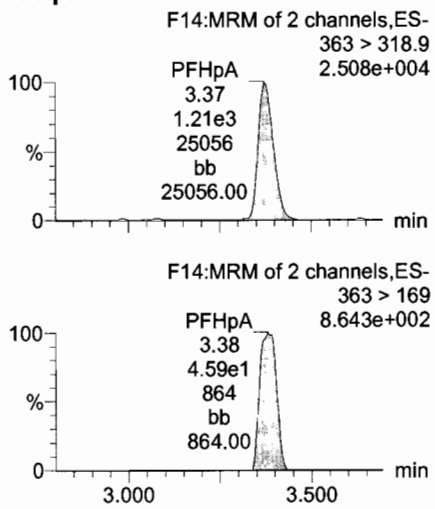
**Total PFBS**



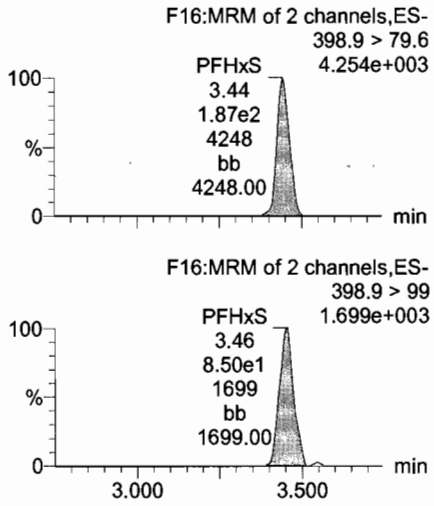

**PFHxA**



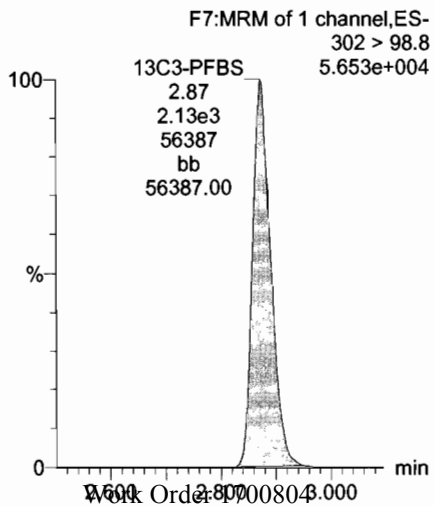

**PFHpA**



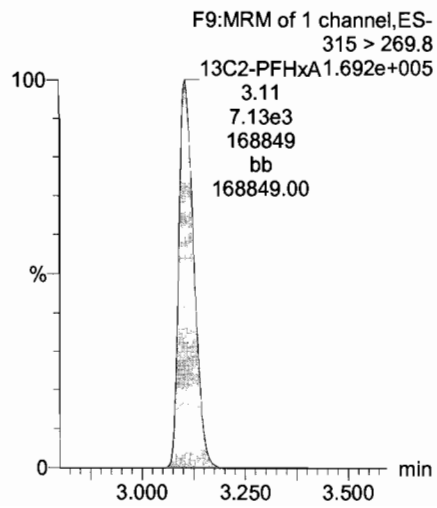

**Total PFHxS**



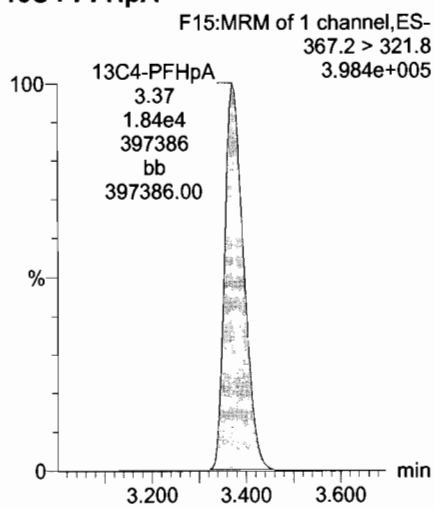

**13C3-PFBS**



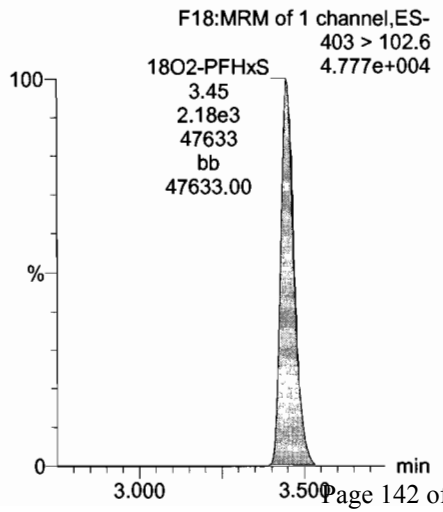

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

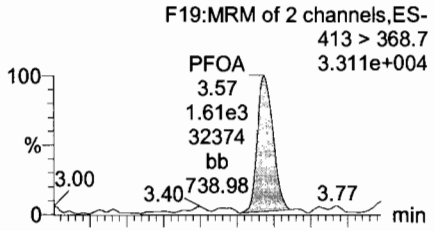


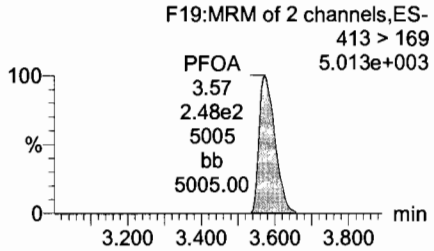
Dataset: U:\Q4.PRO\results\170713M1\170713M1-2.qld

Last Altered: Tuesday, July 18, 2017 07:37:58 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:38:49 Pacific Daylight Time

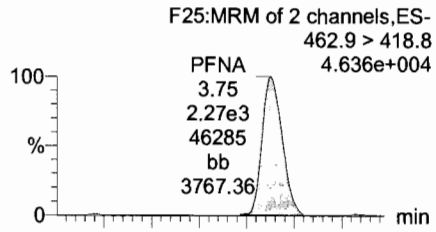
**Name: 170713M1_2, Date: 13-Jul-2017, Time: 16:10:55, ID: ST170713M1-1 PFC CS-1 17G1230, Description: PFC CS-1 17G1230**

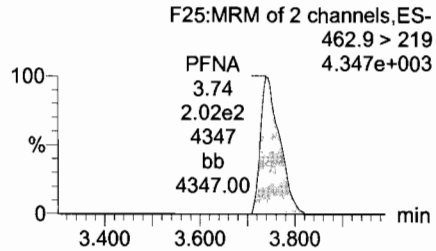
**Total PFOA**



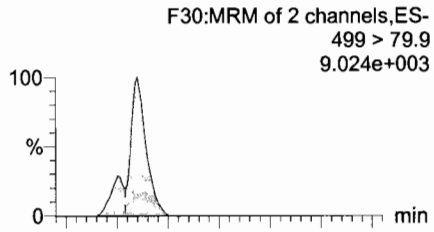



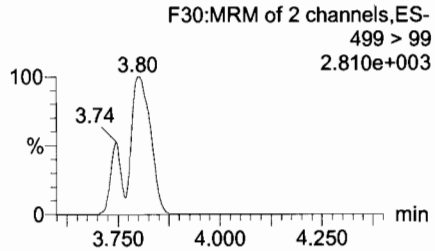

**PFNA**



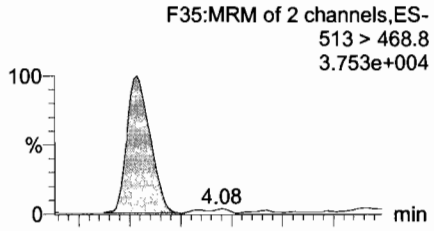



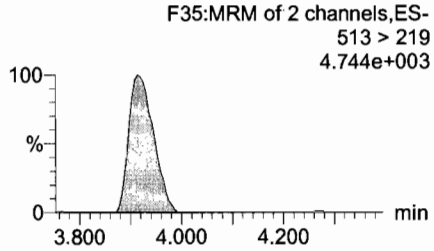

**Total PFOS**



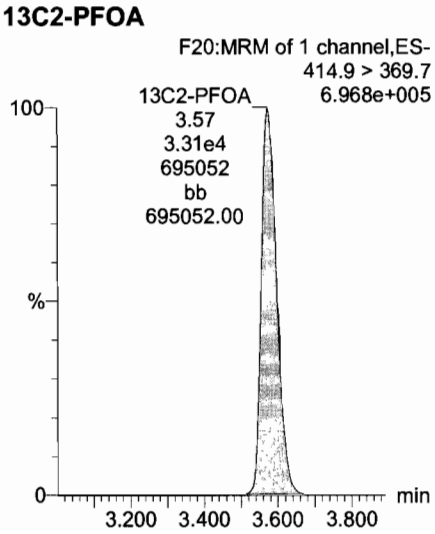




**PFDA**

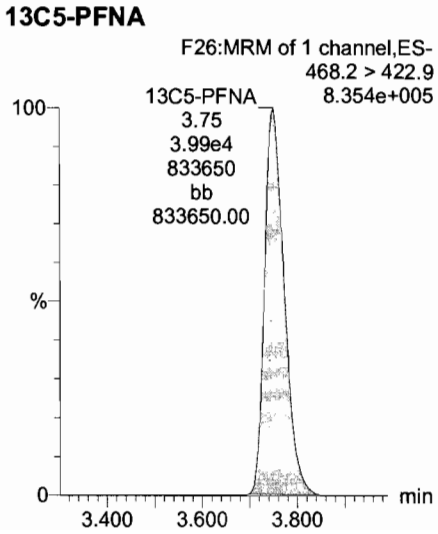


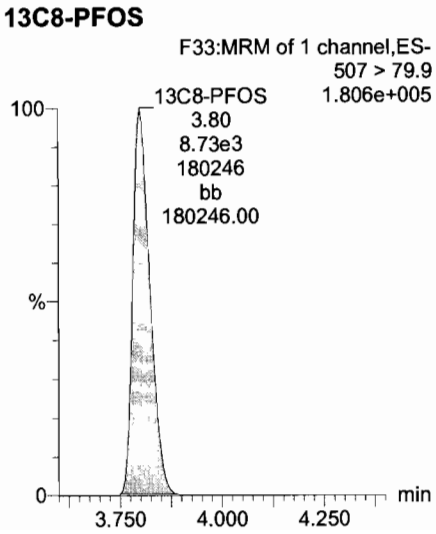

**13C2-PFOA**



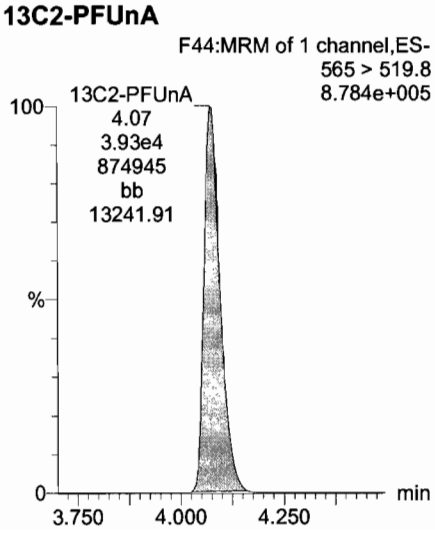

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**

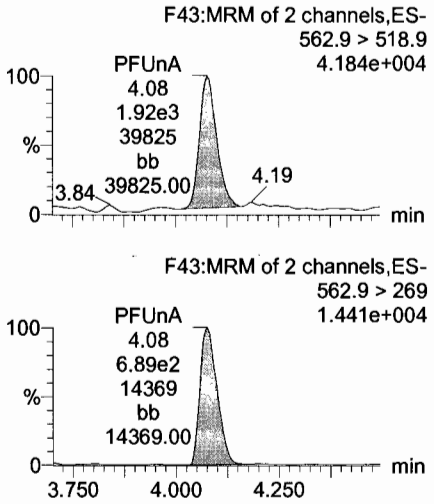


Dataset: U:\Q4.PRO\results\170713M1\170713M1-2.qld

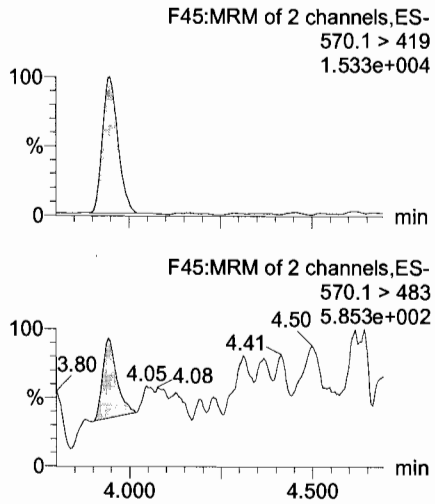
Last Altered: Tuesday, July 18, 2017 07:37:58 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:38:49 Pacific Daylight Time

**Name: 170713M1_2, Date: 13-Jul-2017, Time: 16:10:55, ID: ST170713M1-1 PFC CS-1 17G1230, Description: PFC CS-1 17G1230**

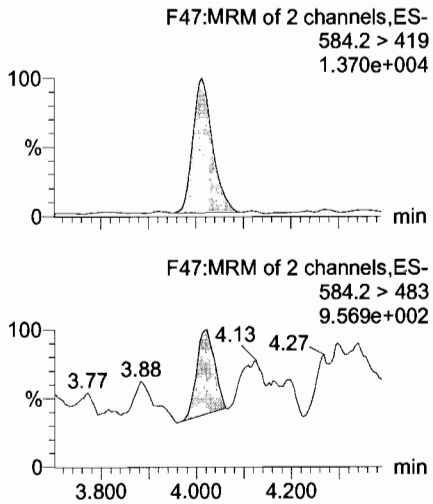
**PFUnA**



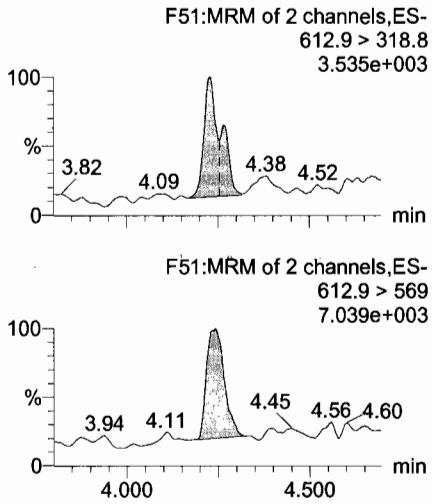

**N-MeFOSAA**



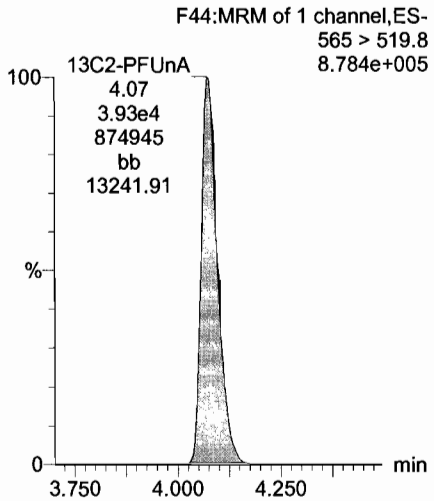

**N-EtFOSAA**



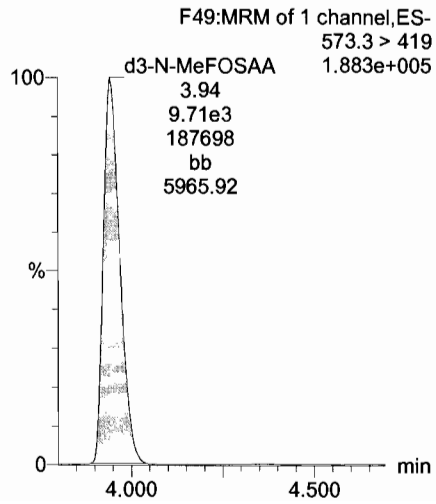

**PFDoA**



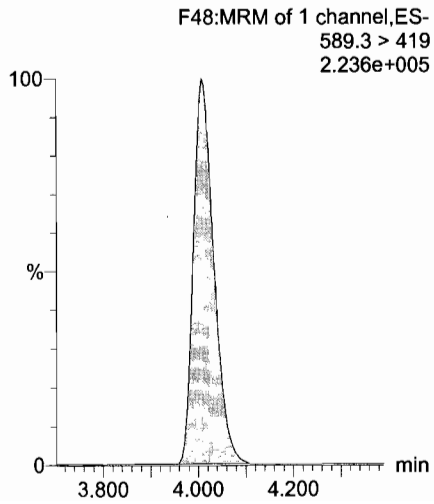

**13C2-PFUnA**



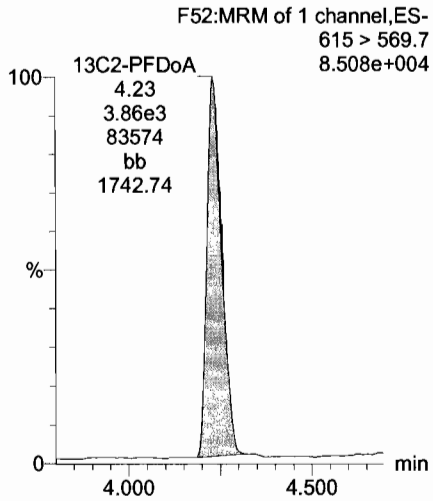

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**

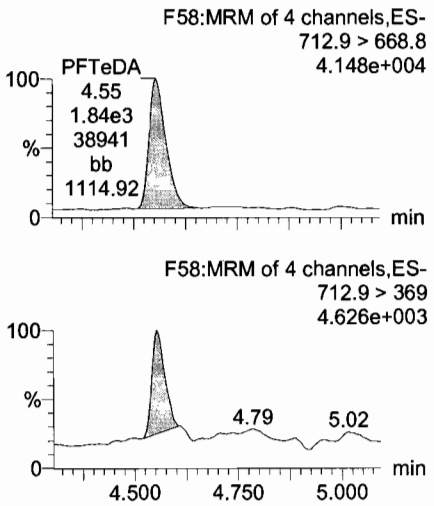


Dataset: U:\Q4.PRO\results\170713M1\170713M1-2.qld

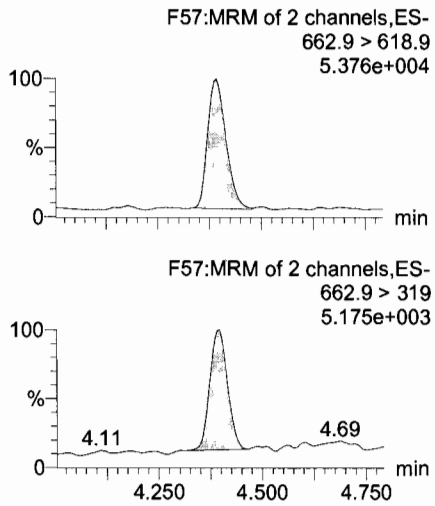
Last Altered: Tuesday, July 18, 2017 07:37:58 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:38:49 Pacific Daylight Time

**Name: 170713M1_2, Date: 13-Jul-2017, Time: 16:10:55, ID: ST170713M1-1 PFC CS-1 17G1230, Description: PFC CS-1 17G1230**

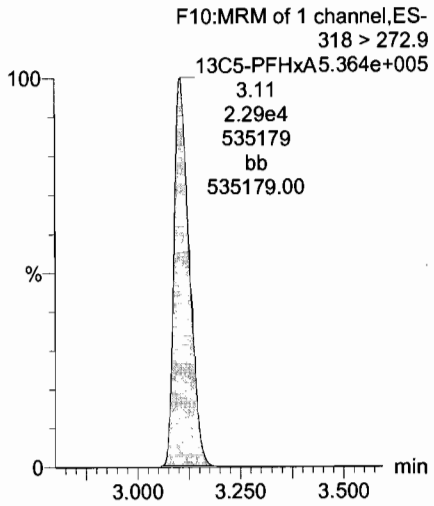
**PFTeDA**



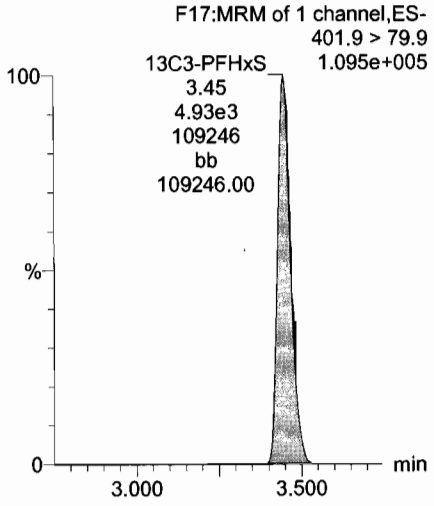

**PFTrDA**



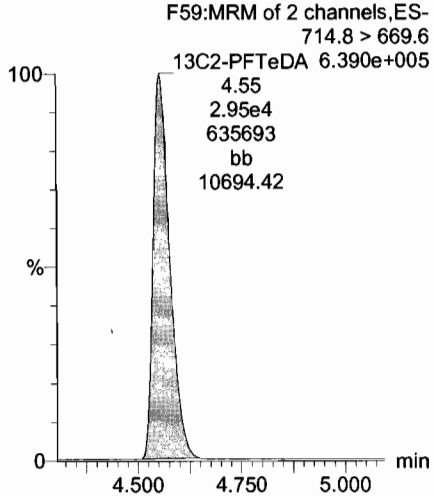

**13C5-PFHxA**



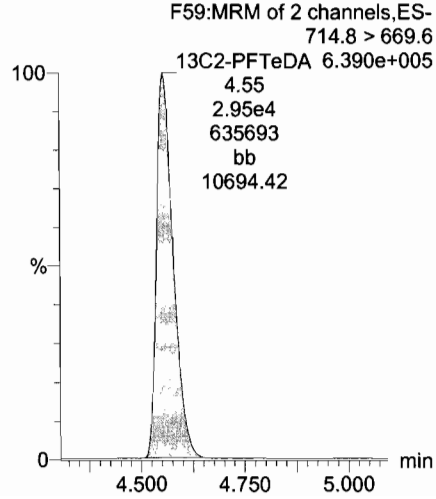

**13C3-PFHxS**



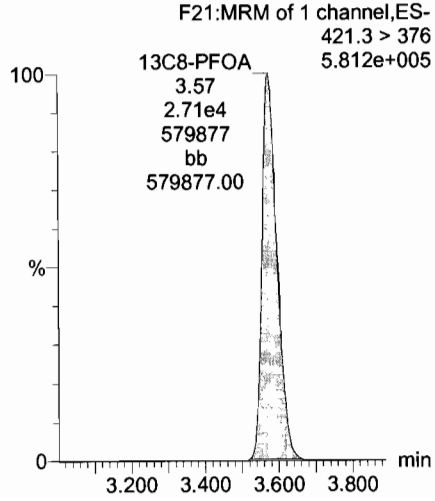

**13C2-PFTeDA**



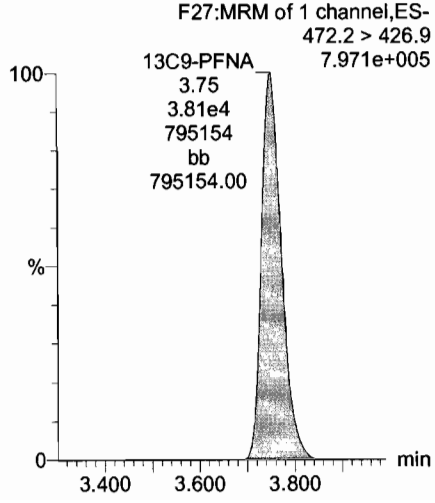

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

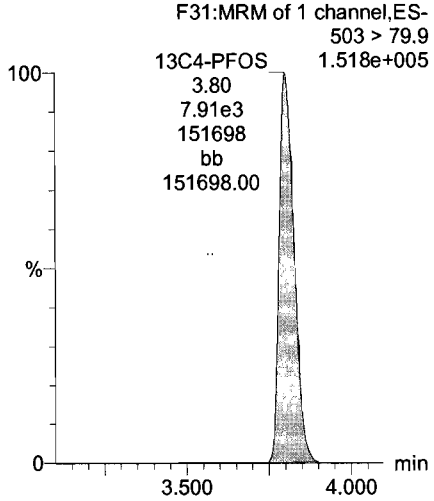


Dataset: U:\Q4.PRO\results\170713M1\170713M1-2.qld

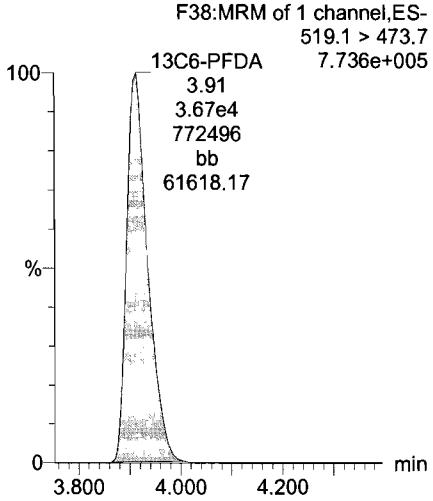
Last Altered: Tuesday, July 18, 2017 07:37:58 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:38:49 Pacific Daylight Time

**Name: 170713M1_2, Date: 13-Jul-2017, Time: 16:10:55, ID: ST170713M1-1 PFC CS-1 17G1230, Description: PFC CS-1 17G1230**

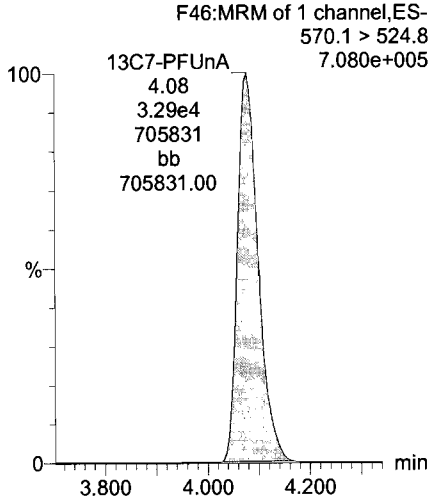
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



**Quantify Sample Summary Report** **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170713M1\170713M1-20.qld

Last Altered: Tuesday, July 18, 2017 07:41:57 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:48:39 Pacific Daylight Time

Ⓐ Exceeds method criteria.

AC
7/18/17

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_20, Date: 13-Jul-2017, Time: 19:30:32, ID: ST170713M1-2 PFC CS3 17G1231, Description: PFC CS3 17G1231**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 3.81e3 | 2.16e3 | 1.0000 | | 2.92 | 2.90 | 22.0 | 9.71 | 97.1 | 70-130 |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 2.67e4 | 6.72e3 | 1.0000 | | 3.16 | 3.13 | 19.9 | 12.1 | 121.2 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 1.97e4 | 1.82e4 | 1.0000 | | 3.43 | 3.40 | 13.5 | 9.39 | 93.9 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 3.27e3 | 2.18e3 | 1.0000 | | 3.55 | 3.47 | 18.7 | 10.2 | 101.9 | |
| 5 | 5 | PFOA | 413 > 368.7 | 3.40e4 | 3.88e4 | 1.0000 | | 3.63 | 3.59 | 11.0 | 9.54 | 95.4 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | 4.17e4 | 3.93e4 | 1.0000 | | 3.82 | 3.77 | 13.3 | 9.67 | 96.7 | |
| 7 | 7 | PFOS | 499 > 79.9 | 6.60e3 | 8.77e3 | 1.0000 | | 3.86 | 3.82 | 9.40 | 8.37 | 83.7 | |
| 8 | 8 | PFDA | 513 > 468.8 | 5.20e4 | 3.95e4 | 1.0000 | | 4.00 | 3.94 | 16.5 | 10.9 | 109.2 | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | 3.18e4 | 4.11e4 | 1.0000 | | 4.16 | 4.10 | 9.68 | 9.19 | 91.9 | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | 1.39e4 | 9.36e3 | 1.0000 | | 4.00 | 3.96 | 18.5 | 9.94 | 99.4 | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | 1.15e4 | 1.03e4 | 1.0000 | | 4.08 | 4.03 | 14.0 | 10.3 | 102.6 | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | 5.45e3 | 3.84e3 | 1.0000 | | 4.32 | 4.25 | 17.7 | 19.8 | Ⓐ 198.5 | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | 4.89e4 | 3.84e3 | 1.0000 | | 4.50 | 4.42 | 159 | 11.8 | 118.3 | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | 2.90e4 | 2.80e4 | 1.0000 | | 4.66 | 4.58 | 12.9 | 10.3 | 102.5 | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 9.12e3 | 1.00e4 | 1.0000 | 0.918 | 1.43 | 1.38 | 11.4 | 12.4 | 99.4 | 50-150 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 1.65e4 | 2.37e4 | 1.0000 | 0.275 | 2.72 | 2.68 | 3.47 | 12.6 | 101.1 | |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 2.16e3 | 2.37e4 | 1.0000 | 0.033 | 2.92 | 2.90 | 0.456 | 13.8 | 110.1 | |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 6.72e3 | 2.37e4 | 1.0000 | 0.304 | 3.16 | 3.13 | 1.42 | 4.67 | 93.3 | |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 1.82e4 | 2.37e4 | 1.0000 | 0.306 | 3.43 | 3.40 | 3.84 | 12.5 | 100.3 | |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.18e3 | 4.83e3 | 1.0000 | 0.437 | 3.55 | 3.47 | 5.64 | 12.9 | 103.2 | |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.88e4 | 3.03e4 | 1.0000 | 1.292 | 3.63 | 3.59 | 16.0 | 12.4 | 99.0 | |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 3.93e4 | 3.95e4 | 1.0000 | 0.980 | 3.82 | 3.77 | 12.4 | 12.7 | 101.4 | |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 8.77e3 | 7.99e3 | 1.0000 | 1.098 | 3.86 | 3.82 | 13.7 | 12.5 | 100.0 | |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 3.95e4 | 4.31e4 | 1.0000 | 0.928 | 4.00 | 3.94 | 11.5 | 12.4 | 98.8 | |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 4.11e4 | 4.51e4 | 1.0000 | 1.083 | 4.16 | 4.10 | 11.4 | 10.5 | 84.1 | |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 9.36e3 | 4.51e4 | 1.0000 | 0.224 | 4.00 | 3.97 | 2.59 | 11.6 | 92.4 | |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.03e4 | 4.51e4 | 1.0000 | 0.230 | 4.08 | 4.03 | 2.85 | 12.4 | 99.0 | |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 3.84e3 | 4.51e4 | 1.0000 | 0.130 | 4.32 | 4.25 | 1.06 | 8.19 | 65.5 | |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 2.80e4 | 4.51e4 | 1.0000 | 1.018 | 4.66 | 4.58 | 7.76 | 7.63 | 61.0 | |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 1.00e4 | 1.00e4 | 1.0000 | 1.000 | 1.43 | 1.39 | 12.5 | 12.5 | 100.0 | |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 2.37e4 | 2.37e4 | 1.0000 | 1.000 | 3.18 | 3.13 | 5.00 | 5.00 | 100.0 | |

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Dataset: U:\Q4.PRO\results\170713M1\170713M1-20.qld

Last Altered: Tuesday, July 18, 2017 07:41:57 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:48:39 Pacific Daylight Time

**Name: 170713M1_20, Date: 13-Jul-2017, Time: 19:30:32, ID: ST170713M1-2 PFC CS3 17G1231, Description: PFC CS3 17G1231**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 4.83e3 | 4.83e3 | 1.0000 | 1.000 | 3.55 | 3.47 | 12.5 | 12.5 | 100.0 |
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 3.03e4 | 3.03e4 | 1.0000 | 1.000 | 3.63 | 3.59 | 12.5 | 12.5 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 3.95e4 | 3.95e4 | 1.0000 | 1.000 | 3.82 | 3.77 | 12.5 | 12.5 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 7.99e3 | 7.99e3 | 1.0000 | 1.000 | 3.86 | 3.82 | 12.5 | 12.5 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 4.31e4 | 4.31e4 | 1.0000 | 1.000 | 4.00 | 3.94 | 12.5 | 12.5 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 4.51e4 | 4.51e4 | 1.0000 | 1.000 | 4.16 | 4.10 | 12.5 | 12.5 | 100.0 |

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 18, 2017 07:58:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:59:16 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Compound name: PFBS**

| | Name | ID | Acq.Date | Acq.Time |
|---|---|---|---|---|
| 1 | 170713M1_1 | IPA | 13-Jul-17 | 16:00:11 |
| 2 | 170713M1_2 | ST170713M1-1 PFC CS-1 17G1230 | 13-Jul-17 | 16:10:55 |
| 3 | 170713M1_3 | IPA | 13-Jul-17 | 16:21:34 |
| 4 | 170713M1_4 | B7G0049-BS1 OPR 0.125 | 13-Jul-17 | 16:38:24 |
| 5 | 170713M1_5 | B7G0054-BS1 OPR 0.125 | 13-Jul-17 | 16:49:10 |
| 6 | 170713M1_6 | IPA | 13-Jul-17 | 16:59:57 |
| 7 | 170713M1_7 | B7G0049-BLK1 Method Blank 0.125 | 13-Jul-17 | 17:10:36 |
| 8 | 170713M1_8 | B7G0054-BLK1 Method Blank 0.125 | 13-Jul-17 | 17:22:39 |
| 9 | 170713M1_9 | 1700804-01RE1 IRPSite7-GW-07GW41-2017... | 13-Jul-17 | 17:33:22 |
| 10 | 170713M1_10 | 1700804-02RE1 IRPSite5-GW-05GW01-2017... | 13-Jul-17 | 17:44:00 |
| 11 | 170713M1_11 | 1700804-03RE1 IRPSite5-GW-FD01-2017062... | 13-Jul-17 | 17:54:39 |
| 12 | 170713M1_12 | 1700804-04RE1 IRPSite33-GW-FRB01-2017... | 13-Jul-17 | 18:05:18 |
| 13 | 170713M1_13 | 1700804-05RE1 IRPSite33-GW-11MW204D-2... | 13-Jul-17 | 18:15:56 |
| 14 | 170713M1_14 | 1700804-06RE1 IRPSite33-GW-11MW204S-2... | 13-Jul-17 | 18:26:34 |
| 15 | 170713M1_15 | 1700804-07RE1 Bldg 110-GW-11MW205D-20... | 13-Jul-17 | 18:37:13 |
| 16 | 170713M1_16 | 1700804-08RE1 Bldg 110-GW-FRB01-201706... | 13-Jul-17 | 18:47:51 |
| 17 | 170713M1_17 | 1700804-09RE1 Bldg 110-GW-11MW205S-20... | 13-Jul-17 | 18:58:37 |
| 18 | 170713M1_18 | 1700804-10RE1 IRPSite7-GW-07GW102-201... | 13-Jul-17 | 19:09:16 |
| 19 | 170713M1_19 | IPA | 13-Jul-17 | 19:19:54 |
| 20 | 170713M1_20 | ST170713M1-2 PFC CS3 17G1231 | 13-Jul-17 | 19:30:32 |
| 21 | 170713M1_21 | IPA | 13-Jul-17 | 19:41:11 |
| 22 | 170713M1_22 | 1700804-11RE1 IRPSite5-GW-04GW82-2017... | 13-Jul-17 | 19:51:49 |
| 23 | 170713M1_23 | 1700803-01RE1 SB01 0.11986 | 13-Jul-17 | 20:02:28 |
| 24 | 170713M1_24 | 1700803-02RE1 EB01 0.12093 | 13-Jul-17 | 20:13:06 |
| 25 | 170713M1_25 | 1700803-03RE1 IRPSite7-GW-46GW205-201... | 13-Jul-17 | 20:23:44 |
| 26 | 170713M1_26 | 1700803-04RE1 IRPSite7-GW-FD01-2017062... | 13-Jul-17 | 20:34:23 |
| 27 | 170713M1_27 | 1700803-05RE1 IRPSite7-GW-07GW202-201... | 13-Jul-17 | 20:45:01 |
| 28 | 170713M1_28 | 1700803-06RE1 IRPSite7-GW-FRB01-20170... | 13-Jul-17 | 20:55:40 |
| 29 | 170713M1_29 | 1700803-07RE1 IRPSite5-GW-FRB01-20170... | 13-Jul-17 | 21:06:18 |
| 30 | 170713M1_30 | 1700803-08RE1 IRPSite5-GW-04GW81S-201... | 13-Jul-17 | 21:16:56 |
| 31 | 170713M1_31 | 1700803-09RE1 IRPSite5-GW-04GW80-2017... | 13-Jul-17 | 21:27:35 |

Dataset: Untitled

Last Altered: Tuesday, July 18, 2017 07:58:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:59:16 Pacific Daylight Time

**Compound name: PFBS**

| | Name | ID | Acq.Date | Acq.Time |
|---|---|---|---|---|
| 32 | 170713M1_32 | B7G0054-MS1 Matrix Spike 0.12064 | 13-Jul-17 | 21:38:13 |
| 33 | 170713M1_33 | B7G0054-MSD1 Matrix Spike Dup 0.11356 | 13-Jul-17 | 21:48:51 |
| 34 | 170713M1_34 | IPA | 13-Jul-17 | 21:59:30 |
| 35 | 170713M1_35 | ST170713M1-3 PFC CS3 17G1231 | 13-Jul-17 | 22:10:08 |
| 36 | 170713M1_36 | IPA | 13-Jul-17 | 22:20:47 |
| 37 | 170713M1_37 | 1700803-10RE1 EB02 0.12181 | 13-Jul-17 | 22:31:25 |
| 38 | 170713M1_38 | 1700836-01RE1 DPH-MW11 0.11781 | 13-Jul-17 | 22:42:03 |
| 39 | 170713M1_39 | 1700836-02RE1 DPH-B7 0.12115 | 13-Jul-17 | 22:52:42 |
| 40 | 170713M1_40 | 1700836-03RE1 DPH-MW3-17 0.11871 | 13-Jul-17 | 23:03:20 |
| 41 | 170713M1_41 | 1700836-04RE1 DPH-EX4 0.11551 | 13-Jul-17 | 23:13:59 |
| 42 | 170713M1_42 | 1700836-05RE1 DPH-MW6-17 0.11801 | 13-Jul-17 | 23:24:37 |
| 43 | 170713M1_43 | IPA | 13-Jul-17 | 23:35:15 |
| 44 | 170713M1_44 | ST170713M1-4 PFC CS3 17G1231 | 13-Jul-17 | 23:45:54 |

Vista Analytical Laboratory

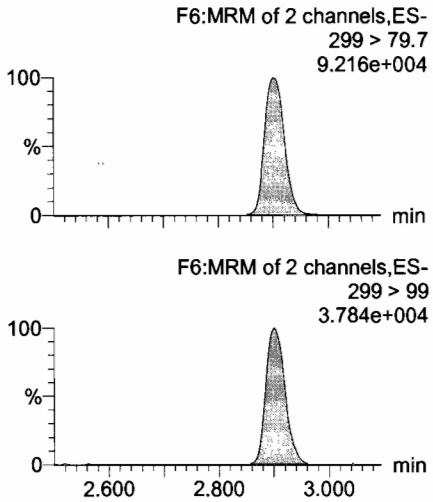
Dataset: U:\Q4.PRO\results\170713M1\170713M1-20.qld

Last Altered: Tuesday, July 18, 2017 07:41:57 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:48:39 Pacific Daylight Time

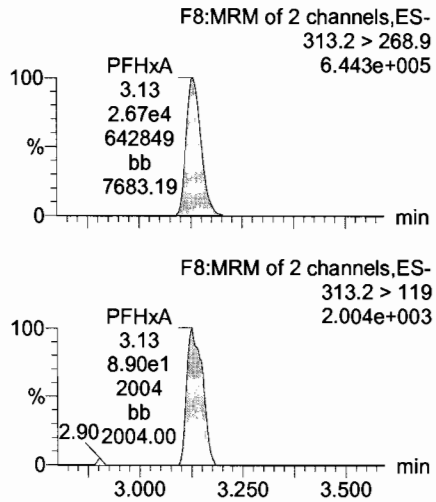
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_20, Date: 13-Jul-2017, Time: 19:30:32, ID: ST170713M1-2 PFC CS3 17G1231, Description: PFC CS3 17G1231**

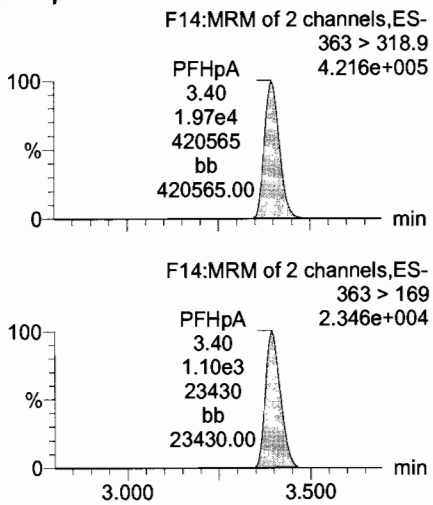
**Total PFBS**



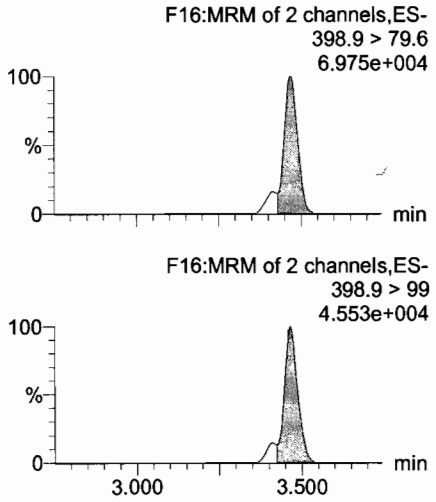

**PFHxA**



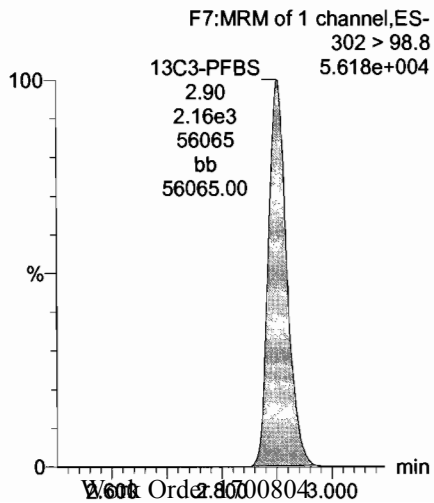

**PFHpA**



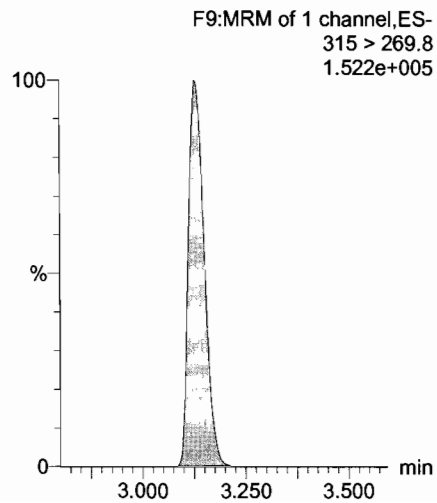

**Total PFHxS**



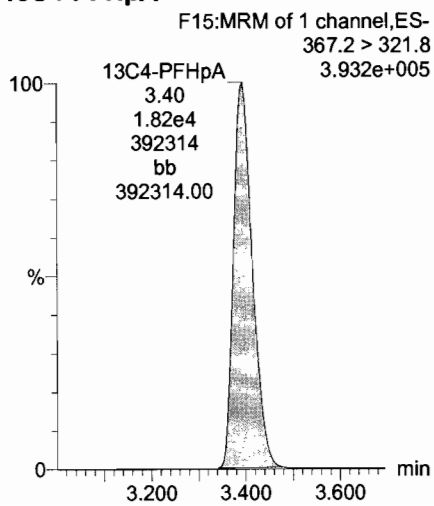

**13C3-PFBS**



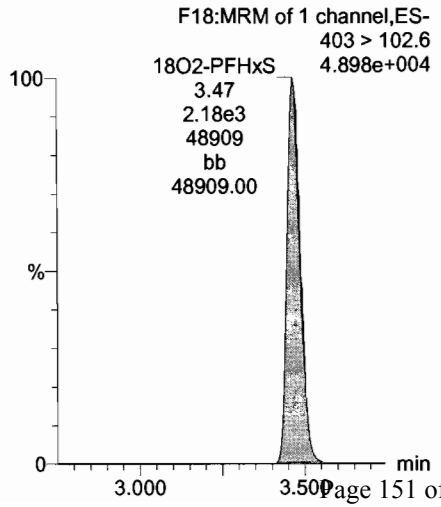

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**



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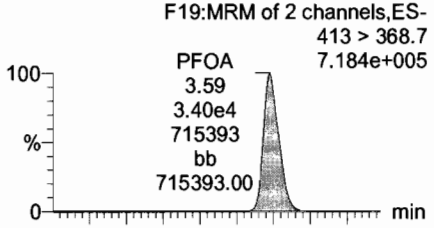
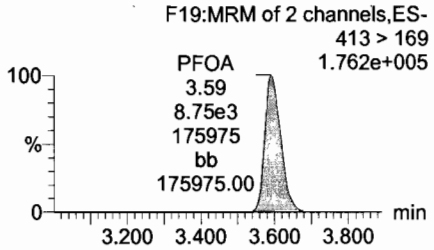
Printed: Tuesday, July 18, 2017 07:48:39 Pacific Daylight Time

**Name: 170713M1_20, Date: 13-Jul-2017, Time: 19:30:32, ID: ST170713M1-2 PFC CS3 17G1231, Description: PFC CS3 17G1231**

**Total PFOA**

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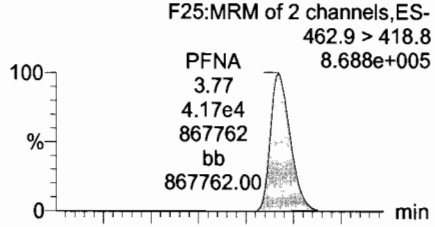


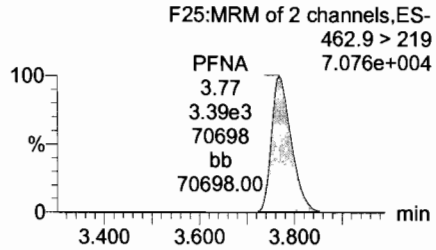


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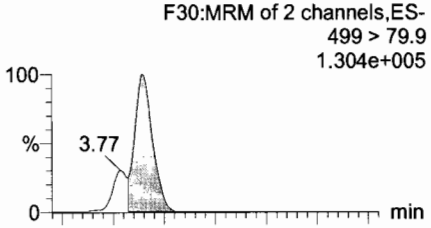
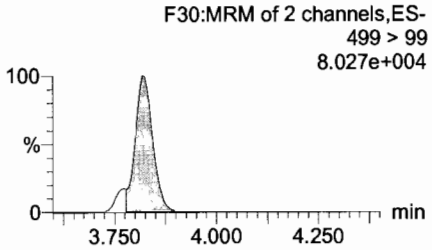
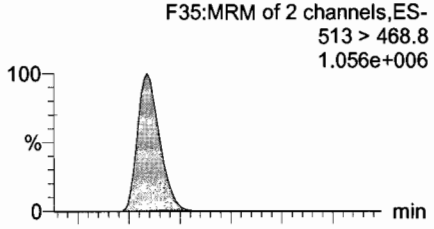
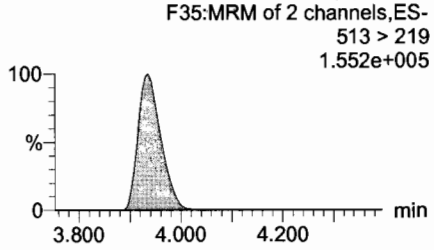


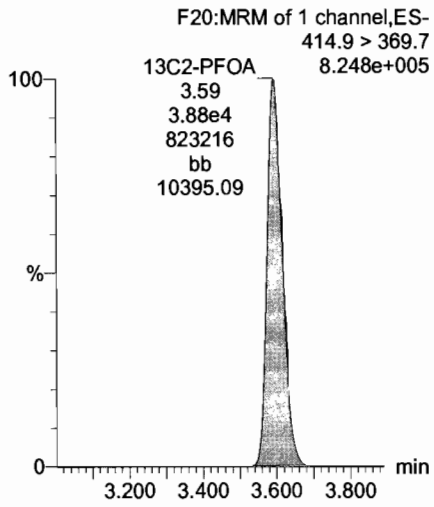




**PFDA**




**13C2-PFOA**

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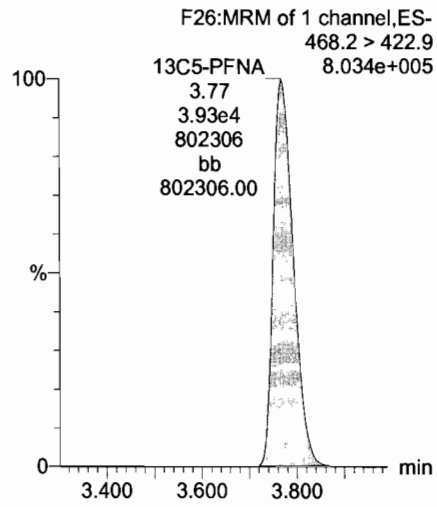


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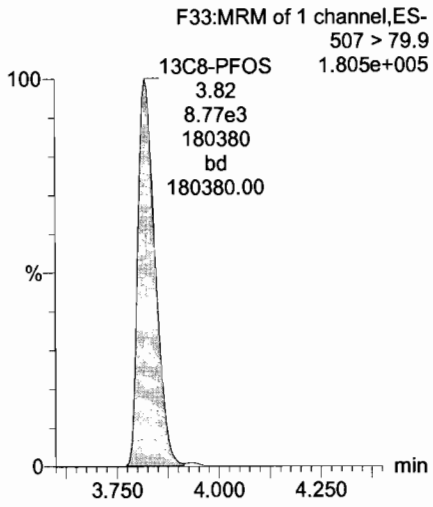
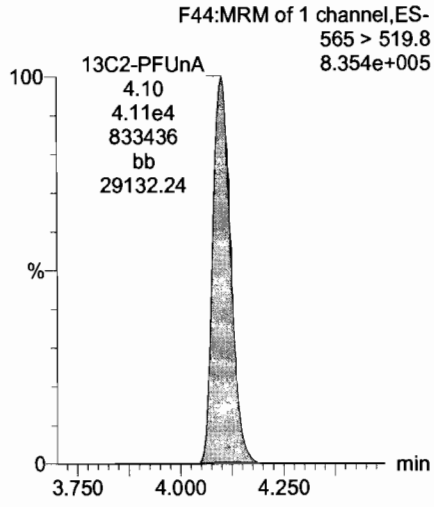



**13C2-PFUnA**



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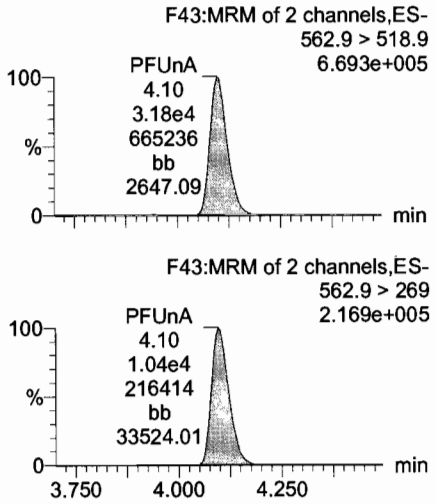
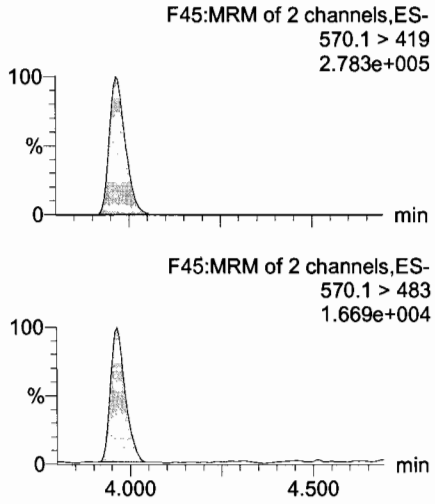
Printed: Tuesday, July 18, 2017 07:48:39 Pacific Daylight Time

**Name: 170713M1_20, Date: 13-Jul-2017, Time: 19:30:32, ID: ST170713M1-2 PFC CS3 17G1231, Description: PFC CS3 17G1231**

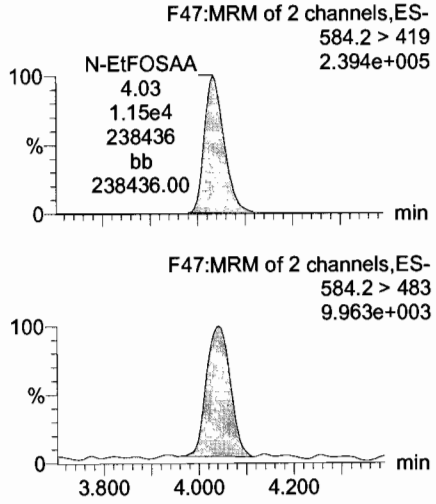
**PFUnA**



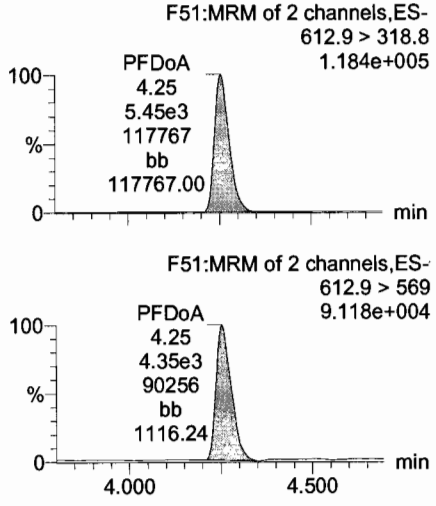

**N-MeFOSAA**



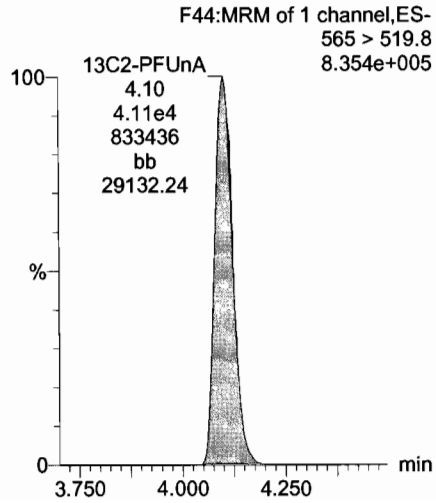

**N-EtFOSAA**



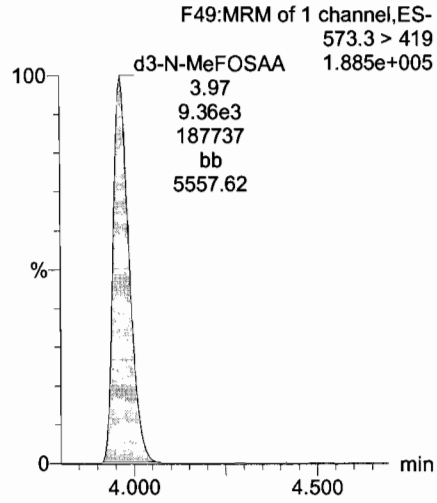

**PFDoA**



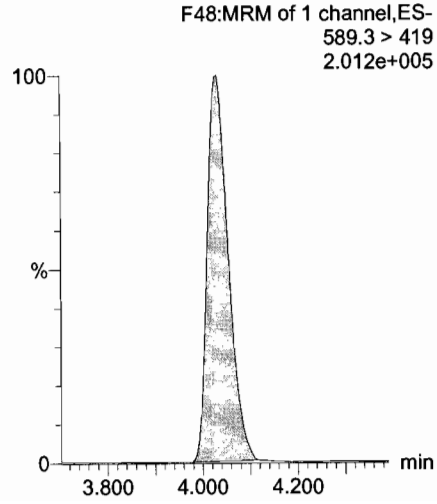

**13C2-PFUnA**



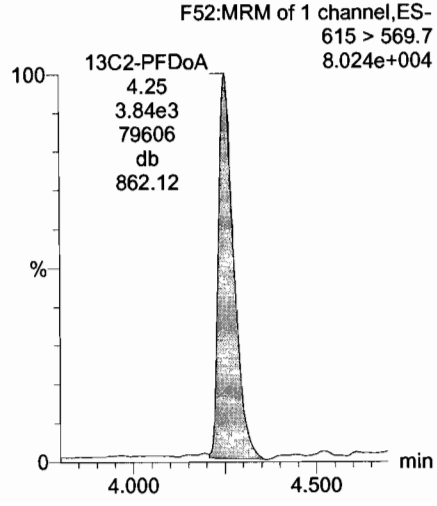

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**



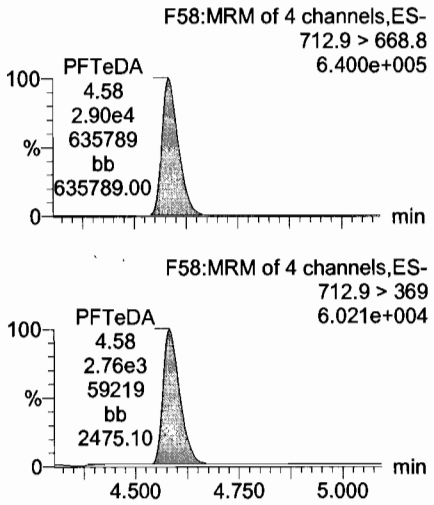
Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170713M1\170713M1-20.qld

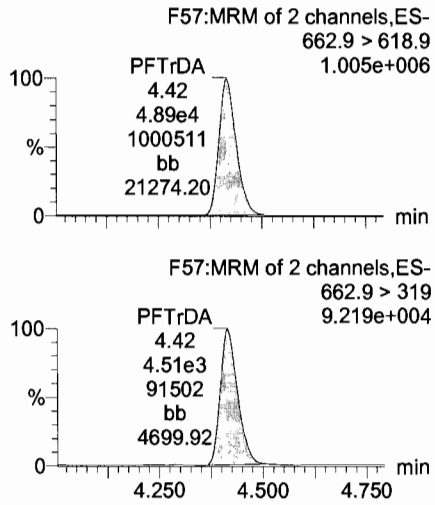
Last Altered: Tuesday, July 18, 2017 07:41:57 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:48:39 Pacific Daylight Time

**Name: 170713M1_20, Date: 13-Jul-2017, Time: 19:30:32, ID: ST170713M1-2 PFC CS3 17G1231, Description: PFC CS3 17G1231**

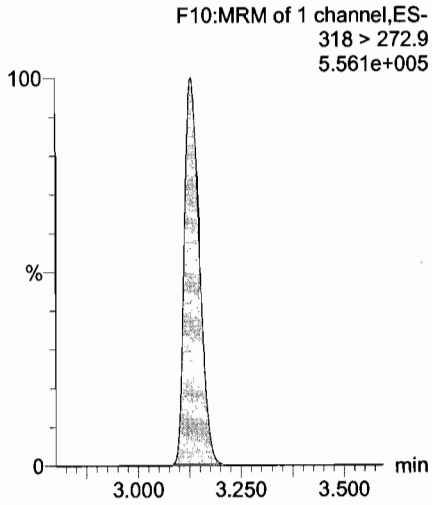
**PFTeDA**



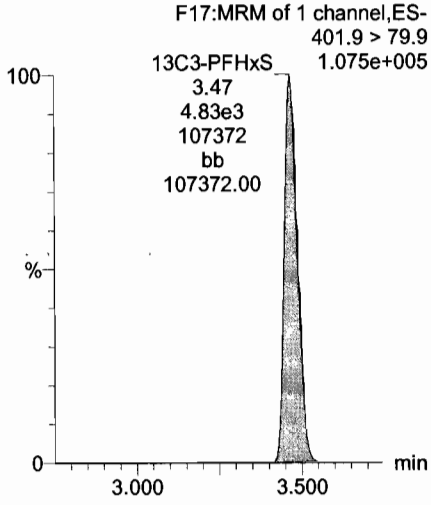

**PFTrDA**



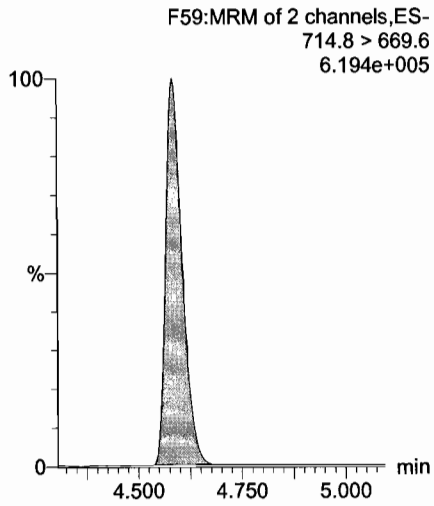

**13C5-PFHxA**



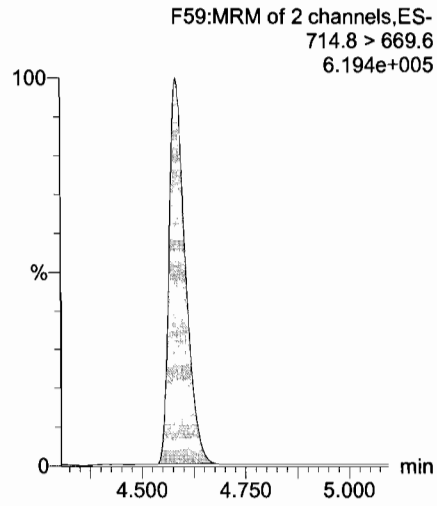

**13C3-PFHxS**



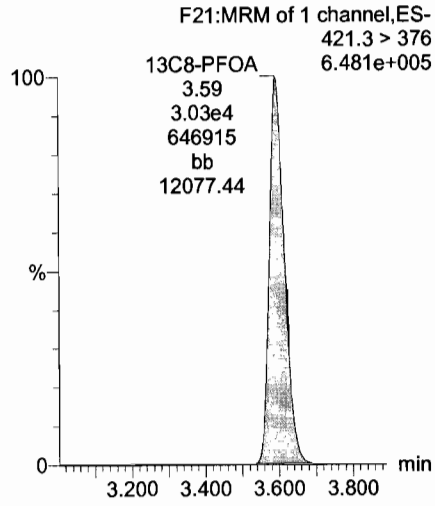

**13C2-PFTeDA**



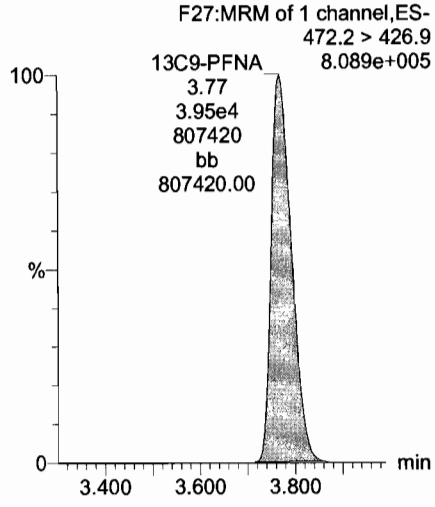

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

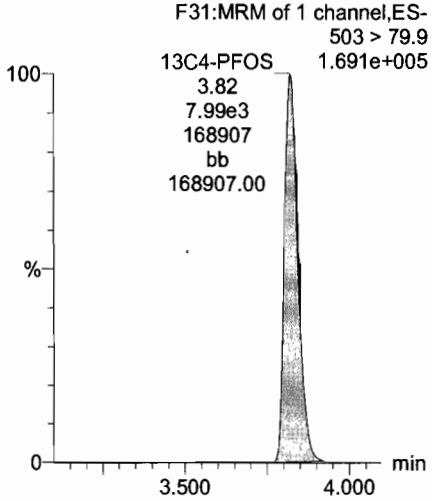


Dataset: U:\Q4.PRO\results\170713M1\170713M1-20.qld

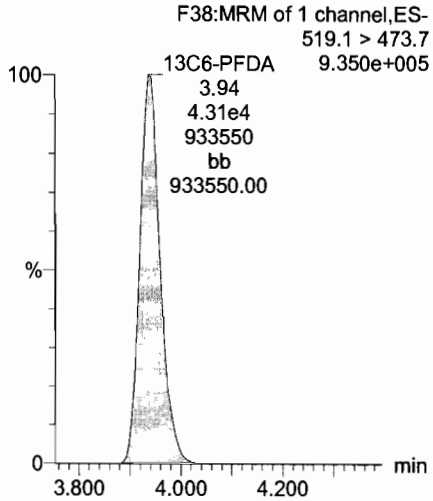
Last Altered: Tuesday, July 18, 2017 07:41:57 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:48:39 Pacific Daylight Time

**Name: 170713M1_20, Date: 13-Jul-2017, Time: 19:30:32, ID: ST170713M1-2 PFC CS3 17G1231, Description: PFC CS3 17G1231**

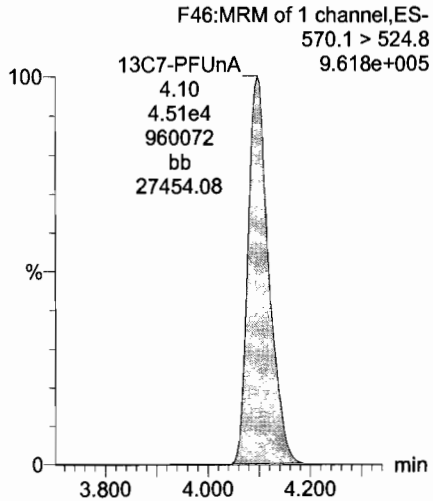
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170713M1\170713M1-35.qld

Last Altered: Tuesday, July 18, 2017 07:54:43 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:55:24 Pacific Daylight Time

(A) Exceeds method criteria AC 7/18/17

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_35, Date: 13-Jul-2017, Time: 22:10:08, ID: ST170713M1-3 PFC CS3 17G1231, Description: PFC CS3 17G1231**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 3.70e3 | 2.08e3 | 1.0000 | | 2.92 | 2.91 | 22.2 | 9.80 | 98.0 | 70-130 |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 2.54e4 | 7.25e3 | 1.0000 | | 3.16 | 3.14 | 17.5 | 10.7 | 106.7 | |
| 3 | 3 | PFHpA | 363 > 318.9 | 2.04e4 | 1.82e4 | 1.0000 | | 3.43 | 3.40 | 14.0 | 9.74 | 97.4 | |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 3.48e3 | 2.19e3 | 1.0000 | | 3.55 | 3.47 | 19.8 | 10.8 | 107.7 | |
| 5 | 5 | PFOA | 413 > 368.7 | 3.32e4 | 3.59e4 | 1.0000 | | 3.63 | 3.60 | 11.6 | 10.1 | 100.7 | |
| 6 | 6 | PFNA | 462.9 > 418.8 | 4.04e4 | 3.84e4 | 1.0000 | | 3.82 | 3.77 | 13.2 | 9.59 | 95.9 | |
| 7 | 7 | PFOS | 499 > 79.9 | 8.14e3 | 7.80e3 | 1.0000 | | 3.86 | 3.82 | 13.0 | 11.6 | 115.5 | |
| 8 | 8 | PFDA | 513 > 468.8 | 4.51e4 | 3.48e4 | 1.0000 | | 4.00 | 3.94 | 16.2 | 10.8 | 107.7 | |
| 9 | 9 | PFUnA | 562.9 > 518.9 | 2.89e4 | 3.79e4 | 1.0000 | | 4.16 | 4.10 | 9.53 | 9.05 | 90.5 | |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | 1.36e4 | 9.96e3 | 1.0000 | | 4.00 | 3.97 | 17.0 | 9.11 | 91.1 | |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | 1.14e4 | 1.05e4 | 1.0000 | | 4.08 | 4.04 | 13.6 | 9.96 | 99.6 | |
| 12 | 12 | PFDoA | 612.9 > 318.8 | 5.67e3 | 3.27e3 | 1.0000 | | 4.32 | 4.26 | 21.6 | 23.5 | (A) 234.5 | |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | 4.36e4 | 3.27e3 | 1.0000 | | 4.50 | 4.42 | 166 | 12.4 | 123.8 | |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | 2.39e4 | 2.26e4 | 1.0000 | | 4.66 | 4.59 | 13.2 | 10.5 | 104.7 | |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 8.88e3 | 9.73e3 | 1.0000 | 0.918 | 1.43 | 1.40 | 11.4 | 12.4 | 99.4 | 65-150 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 1.56e4 | 2.23e4 | 1.0000 | 0.275 | 2.72 | 2.68 | 3.48 | 12.7 | 101.4 | AC 7/18/17 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 2.08e3 | 2.23e4 | 1.0000 | 0.033 | 2.92 | 2.91 | 0.465 | 14.0 | 112.4 | |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 7.25e3 | 2.23e4 | 1.0000 | 0.304 | 3.16 | 3.14 | 1.62 | 5.34 | 106.9 | |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 1.82e4 | 2.23e4 | 1.0000 | 0.306 | 3.43 | 3.40 | 4.06 | 13.3 | 106.2 | |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 2.19e3 | 4.73e3 | 1.0000 | 0.437 | 3.55 | 3.47 | 5.80 | 13.3 | 106.1 | |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 3.59e4 | 3.00e4 | 1.0000 | 1.292 | 3.63 | 3.60 | 15.0 | 11.6 | 92.8 | |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 3.84e4 | 3.92e4 | 1.0000 | 0.980 | 3.82 | 3.77 | 12.2 | 12.5 | 99.7 | |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 7.80e3 | 7.96e3 | 1.0000 | 1.098 | 3.86 | 3.82 | 12.3 | 11.2 | 89.3 | |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 3.48e4 | 3.67e4 | 1.0000 | 0.928 | 4.00 | 3.94 | 11.8 | 12.8 | 102.1 | |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 3.79e4 | 4.06e4 | 1.0000 | 1.083 | 4.16 | 4.10 | 11.7 | 10.8 | 86.2 | |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 9.96e3 | 4.06e4 | 1.0000 | 0.224 | 4.00 | 3.97 | 3.06 | 13.7 | 109.3 | |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 1.05e4 | 4.06e4 | 1.0000 | 0.230 | 4.08 | 4.03 | 3.24 | 14.1 | 113.0 | |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 3.27e3 | 4.06e4 | 1.0000 | 0.130 | 4.32 | 4.26 | 1.01 | 7.76 | 62.0 | |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 2.26e4 | 4.06e4 | 1.0000 | 1.018 | 4.66 | 4.59 | 6.95 | 6.83 | 54.6 | |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 9.73e3 | 9.73e3 | 1.0000 | 1.000 | 1.43 | 1.40 | 12.5 | 12.5 | 100.0 | |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 2.23e4 | 2.23e4 | 1.0000 | 1.000 | 3.18 | 3.14 | 5.00 | 5.00 | 100.4 | |

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170713M1\170713M1-35.qld

Last Altered: Tuesday, July 18, 2017 07:54:43 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:55:24 Pacific Daylight Time

**Name: 170713M1_35, Date: 13-Jul-2017, Time: 22:10:08, ID: ST170713M1-3 PFC CS3 17G1231, Description: PFC CS3 17G1231**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 4.73e3 | 4.73e3 | 1.0000 | 1.000 | 3.55 | 3.47 | 12.5 | 12.5 | 100.0 |
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 3.00e4 | 3.00e4 | 1.0000 | 1.000 | 3.63 | 3.60 | 12.5 | 12.5 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 3.92e4 | 3.92e4 | 1.0000 | 1.000 | 3.82 | 3.77 | 12.5 | 12.5 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 7.96e3 | 7.96e3 | 1.0000 | 1.000 | 3.86 | 3.82 | 12.5 | 12.5 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 3.67e4 | 3.67e4 | 1.0000 | 1.000 | 4.00 | 3.94 | 12.5 | 12.5 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 4.06e4 | 4.06e4 | 1.0000 | 1.000 | 4.16 | 4.10 | 12.5 | 12.5 | 100.0 |

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 18, 2017 07:58:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:59:16 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Compound name: PFBS**

| | Name | ID | Acq.Date | Acq.Time |
|---|---|---|---|---|
| 1 | 170713M1_1 | IPA | 13-Jul-17 | 16:00:11 |
| 2 | 170713M1_2 | ST170713M1-1 PFC CS-1 17G1230 | 13-Jul-17 | 16:10:55 |
| 3 | 170713M1_3 | IPA | 13-Jul-17 | 16:21:34 |
| 4 | 170713M1_4 | B7G0049-BS1 OPR 0.125 | 13-Jul-17 | 16:38:24 |
| 5 | 170713M1_5 | B7G0054-BS1 OPR 0.125 | 13-Jul-17 | 16:49:10 |
| 6 | 170713M1_6 | IPA | 13-Jul-17 | 16:59:57 |
| 7 | 170713M1_7 | B7G0049-BLK1 Method Blank 0.125 | 13-Jul-17 | 17:10:36 |
| 8 | 170713M1_8 | B7G0054-BLK1 Method Blank 0.125 | 13-Jul-17 | 17:22:39 |
| 9 | 170713M1_9 | 1700804-01RE1 IRPSite7-GW-07GW41-2017... | 13-Jul-17 | 17:33:22 |
| 10 | 170713M1_10 | 1700804-02RE1 IRPSite5-GW-05GW01-2017... | 13-Jul-17 | 17:44:00 |
| 11 | 170713M1_11 | 1700804-03RE1 IRPSite5-GW-FD01-2017062... | 13-Jul-17 | 17:54:39 |
| 12 | 170713M1_12 | 1700804-04RE1 IRPSite33-GW-FRB01-2017... | 13-Jul-17 | 18:05:18 |
| 13 | 170713M1_13 | 1700804-05RE1 IRPSite33-GW-11MW204D-2... | 13-Jul-17 | 18:15:56 |
| 14 | 170713M1_14 | 1700804-06RE1 IRPSite33-GW-11MW204S-2... | 13-Jul-17 | 18:26:34 |
| 15 | 170713M1_15 | 1700804-07RE1 Bldg 110-GW-11MW205D-20... | 13-Jul-17 | 18:37:13 |
| 16 | 170713M1_16 | 1700804-08RE1 Bldg 110-GW-FRB01-201706... | 13-Jul-17 | 18:47:51 |
| 17 | 170713M1_17 | 1700804-09RE1 Bldg 110-GW-11MW205S-20... | 13-Jul-17 | 18:58:37 |
| 18 | 170713M1_18 | 1700804-10RE1 IRPSite7-GW-07GW102-201... | 13-Jul-17 | 19:09:16 |
| 19 | 170713M1_19 | IPA | 13-Jul-17 | 19:19:54 |
| 20 | 170713M1_20 | ST170713M1-2 PFC CS3 17G1231 | 13-Jul-17 | 19:30:32 |
| 21 | 170713M1_21 | IPA | 13-Jul-17 | 19:41:11 |
| 22 | 170713M1_22 | 1700804-11RE1 IRPSite5-GW-04GW82-2017... | 13-Jul-17 | 19:51:49 |
| 23 | 170713M1_23 | 1700803-01RE1 SB01 0.11986 | 13-Jul-17 | 20:02:28 |
| 24 | 170713M1_24 | 1700803-02RE1 EB01 0.12093 | 13-Jul-17 | 20:13:06 |
| 25 | 170713M1_25 | 1700803-03RE1 IRPSite7-GW-46GW205-201... | 13-Jul-17 | 20:23:44 |
| 26 | 170713M1_26 | 1700803-04RE1 IRPSite7-GW-FD01-2017062... | 13-Jul-17 | 20:34:23 |
| 27 | 170713M1_27 | 1700803-05RE1 IRPSite7-GW-07GW202-201... | 13-Jul-17 | 20:45:01 |
| 28 | 170713M1_28 | 1700803-06RE1 IRPSite7-GW-FRB01-20170... | 13-Jul-17 | 20:55:40 |
| 29 | 170713M1_29 | 1700803-07RE1 IRPSite5-GW-FRB01-20170... | 13-Jul-17 | 21:06:18 |
| 30 | 170713M1_30 | 1700803-08RE1 IRPSite5-GW-04GW81S-201... | 13-Jul-17 | 21:16:56 |
| 31 | 170713M1_31 | 1700803-09RE1 IRPSite5-GW-04GW80-2017... | 13-Jul-17 | 21:27:35 |

Dataset: Untitled

Last Altered: Tuesday, July 18, 2017 07:58:37 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:59:16 Pacific Daylight Time

**Compound name: PFBS**

| | Name | ID | Acq.Date | Acq.Time |
|---|---|---|---|---|
| 32 | 170713M1_32 | B7G0054-MS1 Matrix Spike 0.12064 | 13-Jul-17 | 21:38:13 |
| 33 | 170713M1_33 | B7G0054-MSD1 Matrix Spike Dup 0.11356 | 13-Jul-17 | 21:48:51 |
| 34 | 170713M1_34 | IPA | 13-Jul-17 | 21:59:30 |
| 35 | 170713M1_35 | ST170713M1-3 PFC CS3 17G1231 | 13-Jul-17 | 22:10:08 |
| 36 | 170713M1_36 | IPA | 13-Jul-17 | 22:20:47 |
| 37 | 170713M1_37 | 1700803-10RE1 EB02 0.12181 | 13-Jul-17 | 22:31:25 |
| 38 | 170713M1_38 | 1700836-01RE1 DPH-MW11 0.11781 | 13-Jul-17 | 22:42:03 |
| 39 | 170713M1_39 | 1700836-02RE1 DPH-B7 0.12115 | 13-Jul-17 | 22:52:42 |
| 40 | 170713M1_40 | 1700836-03RE1 DPH-MW3-17 0.11871 | 13-Jul-17 | 23:03:20 |
| 41 | 170713M1_41 | 1700836-04RE1 DPH-EX4 0.11551 | 13-Jul-17 | 23:13:59 |
| 42 | 170713M1_42 | 1700836-05RE1 DPH-MW6-17 0.11801 | 13-Jul-17 | 23:24:37 |
| 43 | 170713M1_43 | IPA | 13-Jul-17 | 23:35:15 |
| 44 | 170713M1_44 | ST170713M1-4 PFC CS3 17G1231 | 13-Jul-17 | 23:45:54 |

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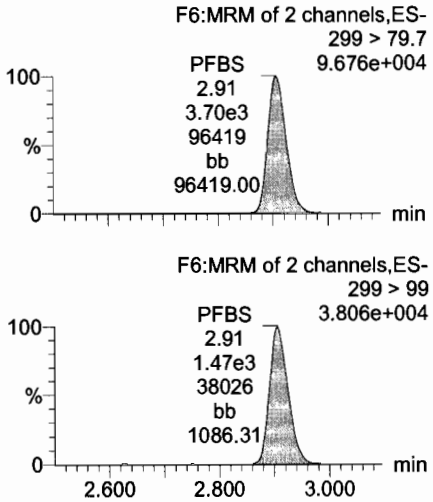
Dataset: U:\Q4.PRO\results\170713M1\170713M1-35.qld

Last Altered: Tuesday, July 18, 2017 07:54:43 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:55:24 Pacific Daylight Time

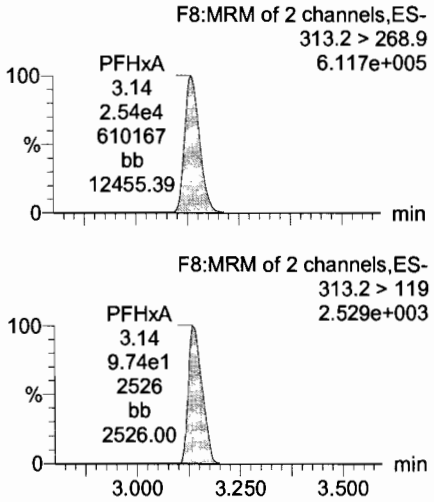
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Name: 170713M1_35, Date: 13-Jul-2017, Time: 22:10:08, ID: ST170713M1-3 PFC CS3 17G1231, Description: PFC CS3 17G1231**

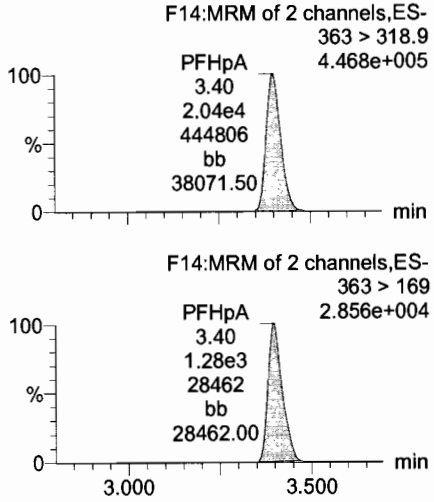
**Total PFBS**



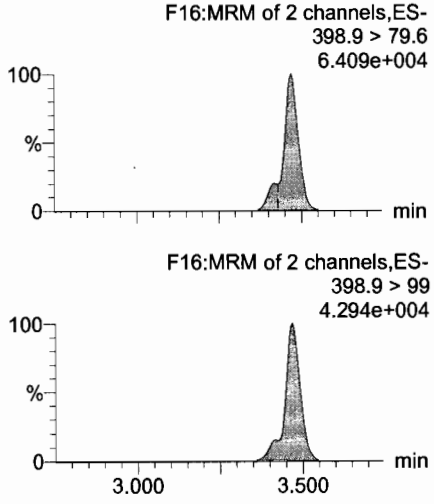

**PFHxA**



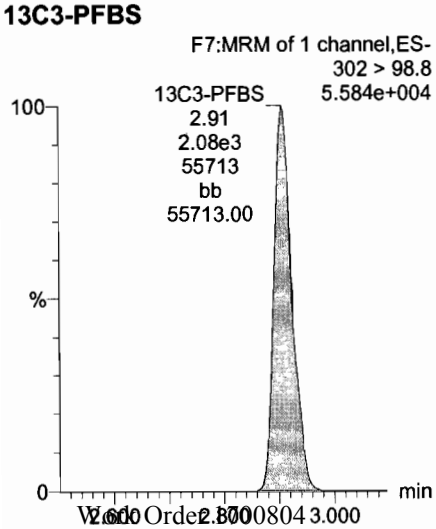

**PFHpA**



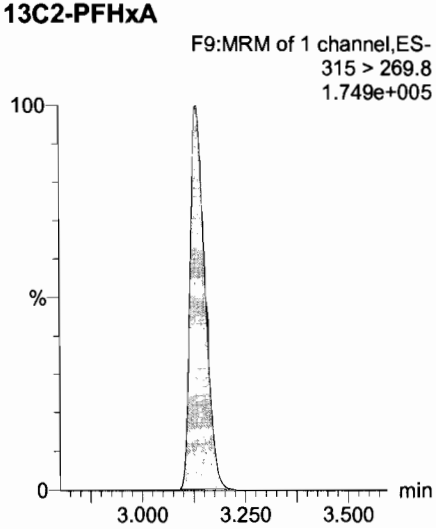

**Total PFHxS**



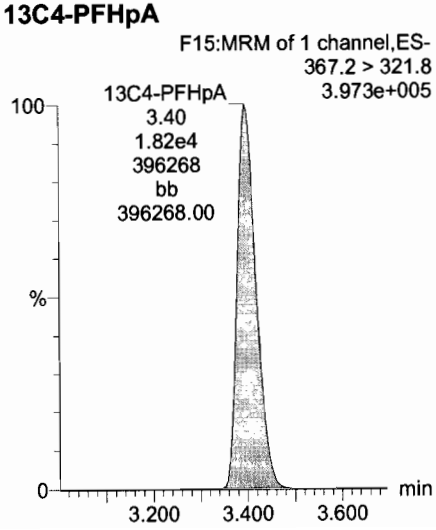

**13C3-PFBS**



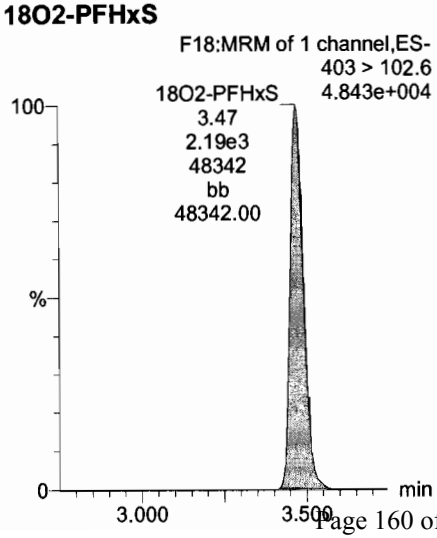

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

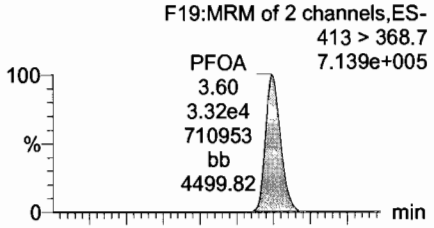


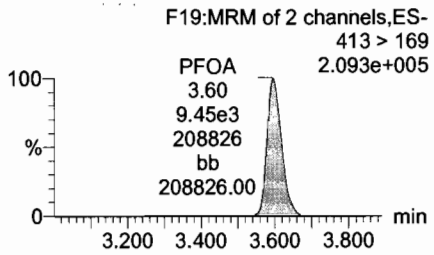
Dataset: U:\Q4.PRO\results\170713M1\170713M1-35.qld

Last Altered: Tuesday, July 18, 2017 07:54:43 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:55:24 Pacific Daylight Time

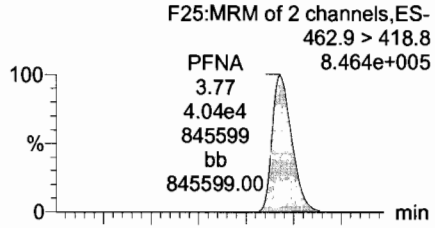
**Name: 170713M1_35, Date: 13-Jul-2017, Time: 22:10:08, ID: ST170713M1-3 PFC CS3 17G1231, Description: PFC CS3 17G1231**

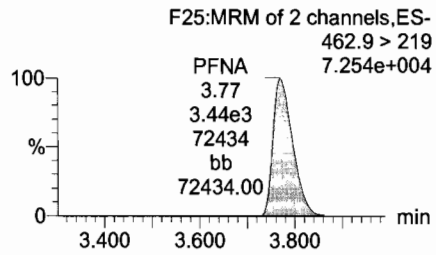
**Total PFOA**



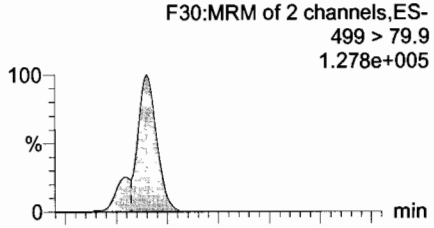



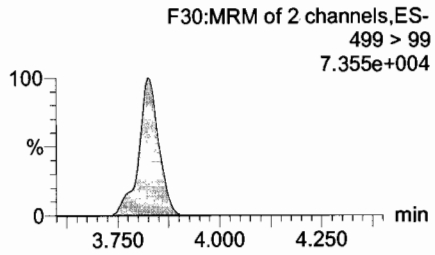

**PFNA**



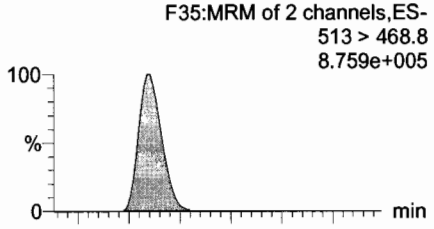



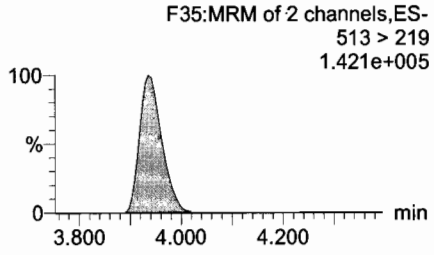

**Total PFOS**



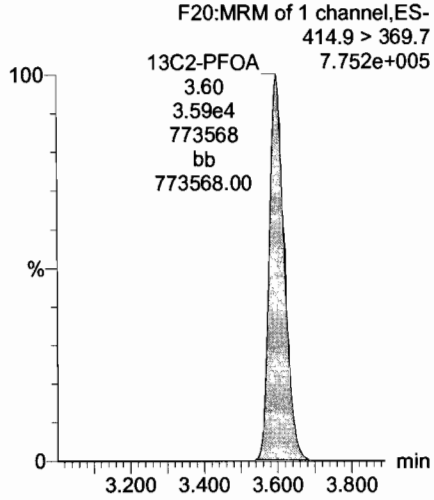




**PFDA**

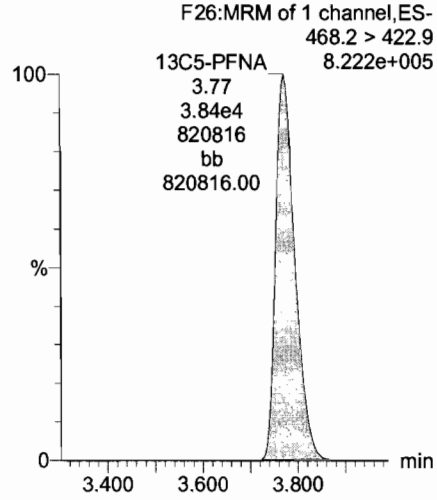


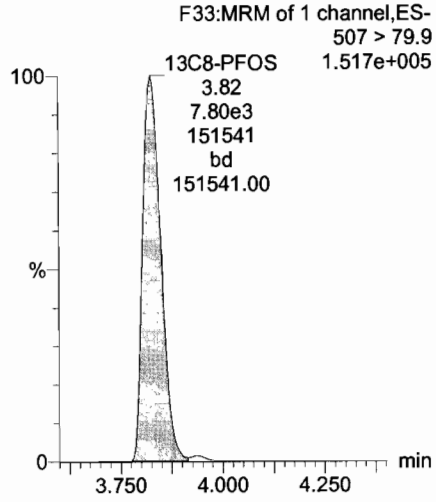

**13C2-PFOA**



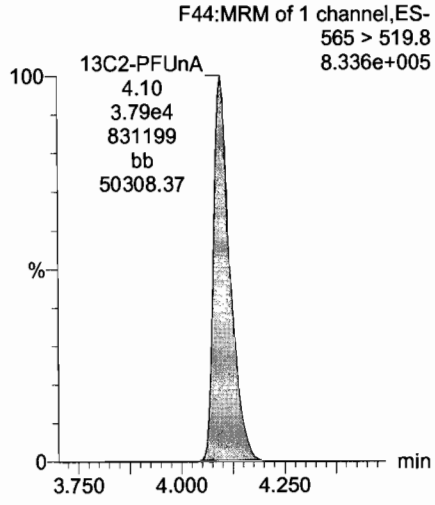

**13C5-PFNA**




**13C8-PFOS**




**13C2-PFUnA**

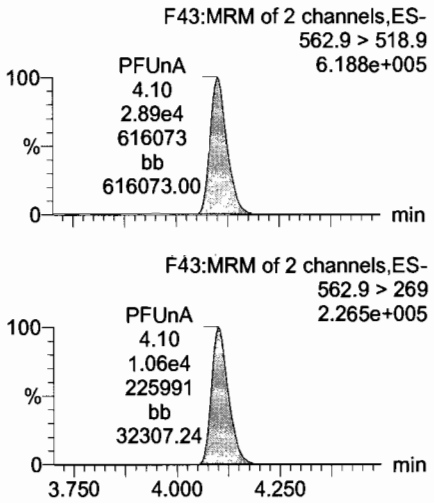


Dataset: U:\Q4.PRO\results\170713M1\170713M1-35.qld

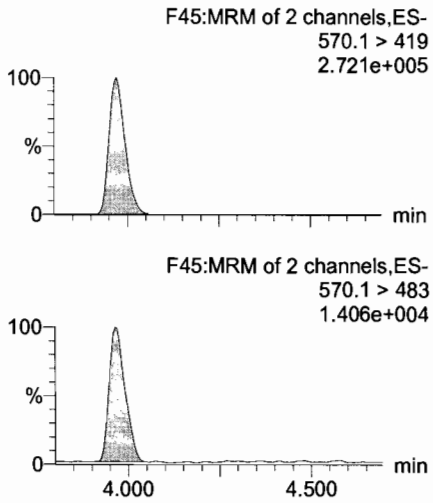
Last Altered: Tuesday, July 18, 2017 07:54:43 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:55:24 Pacific Daylight Time

**Name: 170713M1_35, Date: 13-Jul-2017, Time: 22:10:08, ID: ST170713M1-3 PFC CS3 17G1231, Description: PFC CS3 17G1231**

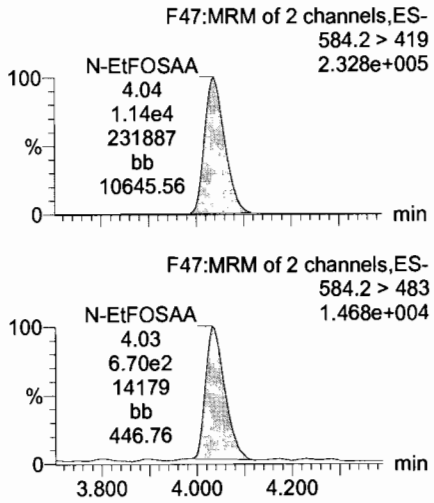
**PFUnA**



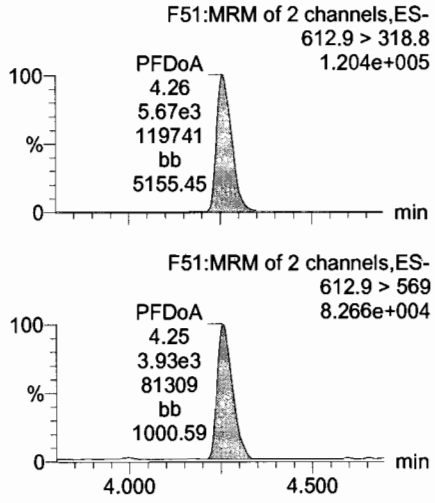

**N-MeFOSAA**



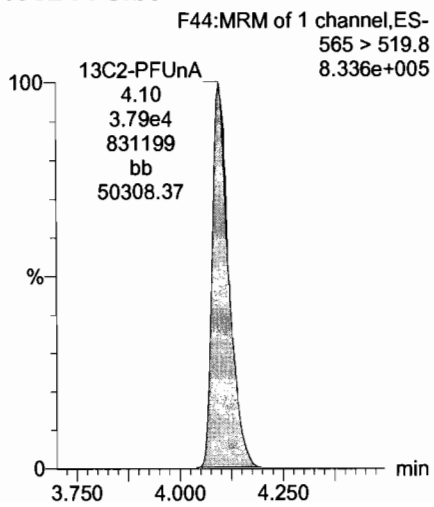

**N-EtFOSAA**



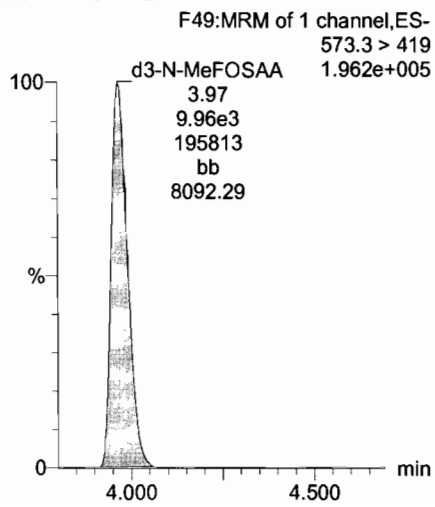

**PFDoA**



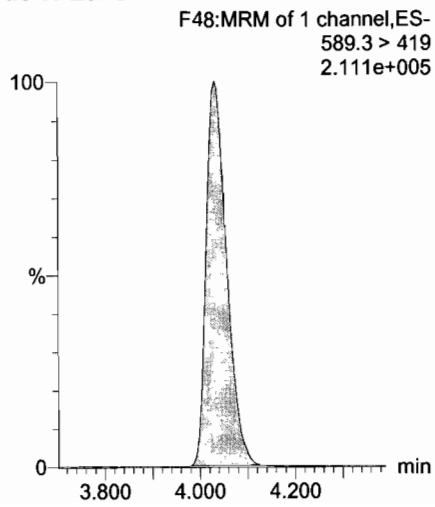

**13C2-PFUnA**



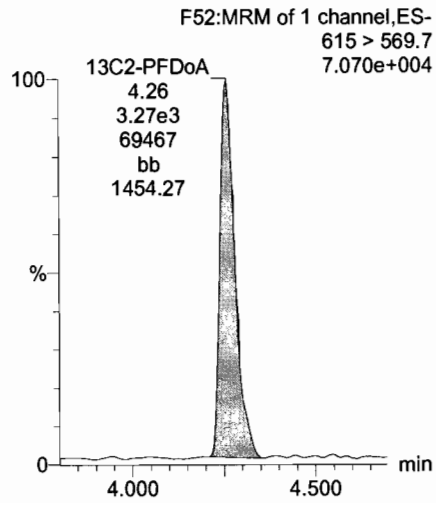

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**



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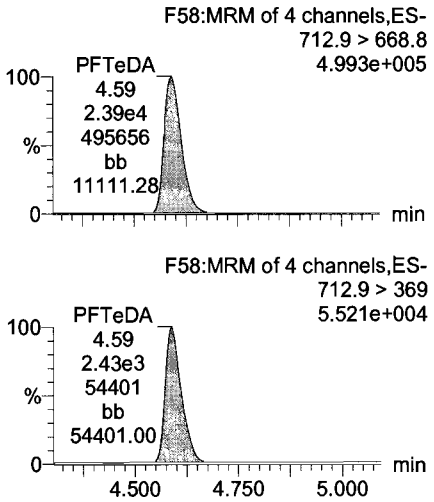
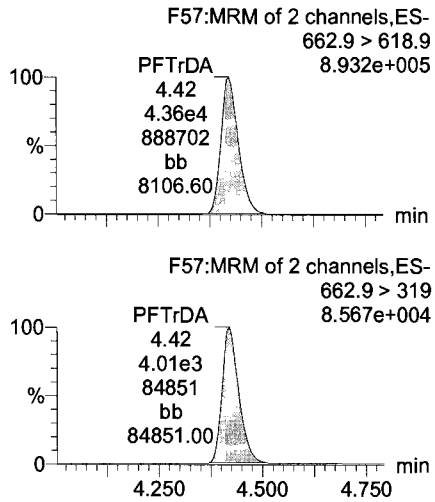
Last Altered: Tuesday, July 18, 2017 07:54:43 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:55:24 Pacific Daylight Time

**Name: 170713M1_35, Date: 13-Jul-2017, Time: 22:10:08, ID: ST170713M1-3 PFC CS3 17G1231, Description: PFC CS3 17G1231**

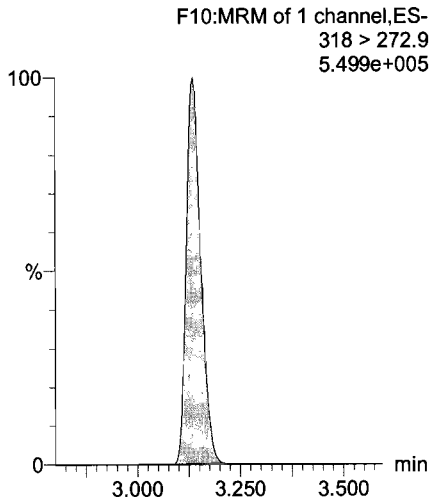
**PFTeDA**



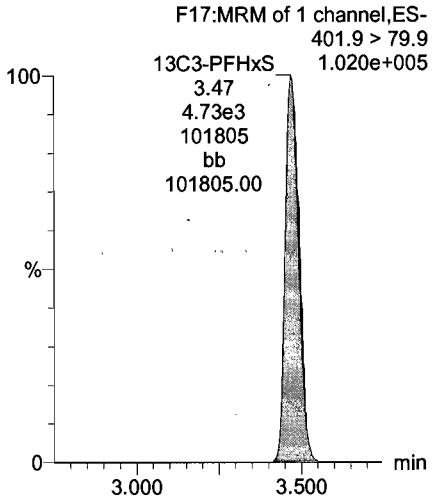

**PFTrDA**



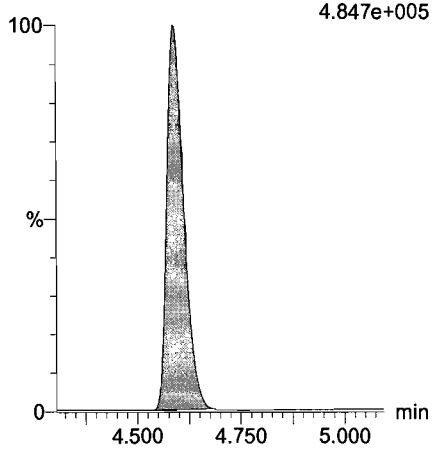

**13C5-PFHxA**



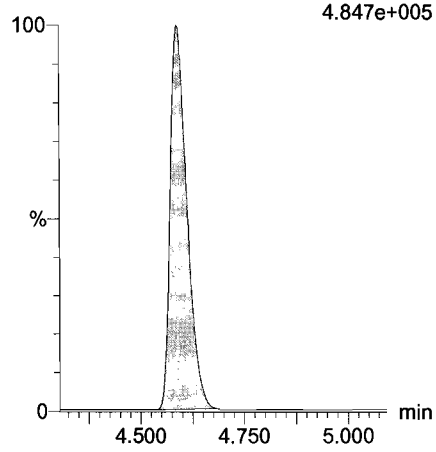

**13C3-PFHxS**



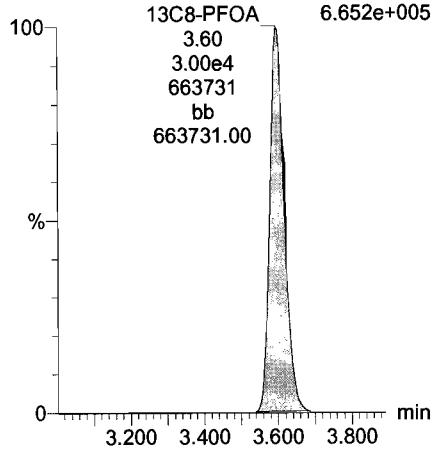

**13C2-PFTeDA**



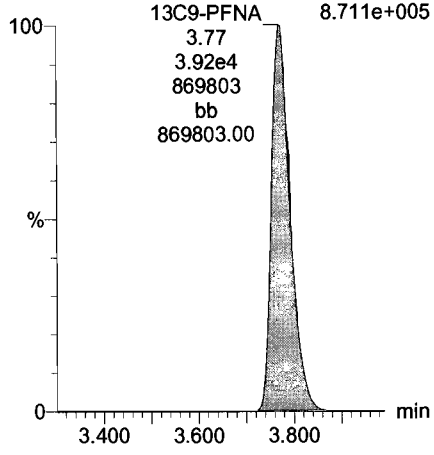

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

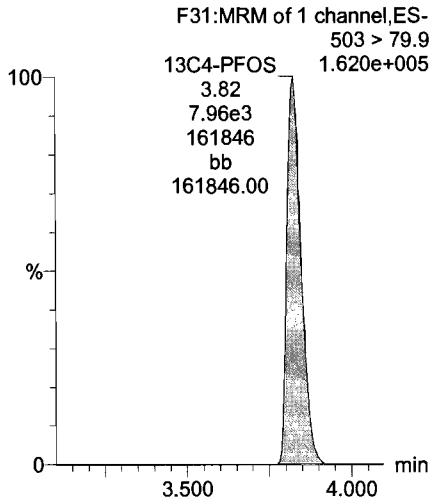


Dataset: U:\Q4.PRO\results\170713M1\170713M1-35.qld

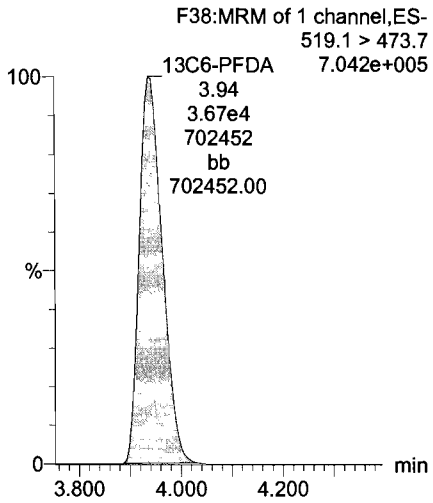
Last Altered: Tuesday, July 18, 2017 07:54:43 Pacific Daylight Time
Printed: Tuesday, July 18, 2017 07:55:24 Pacific Daylight Time

**Name: 170713M1_35, Date: 13-Jul-2017, Time: 22:10:08, ID: ST170713M1-3 PFC CS3 17G1231, Description: PFC CS3 17G1231**

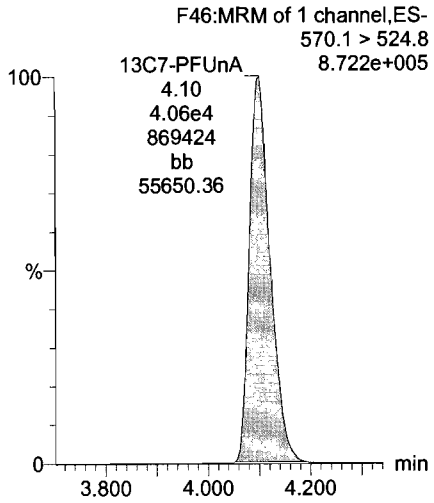
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



**INITIAL CALIBRATION**

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-5-17.mdb 10 Jul 2017 08:06:14**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

AC 7/14/17 7/14/17

**Compound name: PFBS**
Correlation coefficient: r = 0.999476, r^2 = 0.998952
Calibration curve: 2.28219 * x + -0.143808
Response type: Internal Std ( Ref 17 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 2.97 | 64.107 | 1829.255 | 0.438 | 0.3 | 2.0 | NO | 0.999 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 2.96 | 174.822 | 1889.439 | 1.157 | 0.6 | 14.0 | NO | 0.999 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 2.95 | 250.827 | 1680.475 | 1.866 | 0.9 | -11.9 | NO | 0.999 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 2.95 | 664.245 | 1675.008 | 4.957 | 2.2 | 11.8 | NO | 0.999 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 2.95 | 1423.155 | 1827.422 | 9.735 | 4.3 | -13.4 | NO | 0.999 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 2.95 | 3293.945 | 1863.759 | 22.092 | 9.7 | -2.6 | NO | 0.999 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 2.95 | 14448.479 | 1600.534 | 112.841 | 49.5 | -1.0 | NO | 0.999 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 2.95 | 31826.346 | 1723.074 | 230.883 | 101.2 | 1.2 | NO | 0.999 | NO | bb |

**Compound name: PFHxA**
Correlation coefficient: r = 0.999913, r^2 = 0.999826
Calibration curve: 1.63833 * x + 0.053424
Response type: Internal Std ( Ref 18 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 3.19 | 518.924 | 6599.234 | 0.393 | 0.2 | -17.1 | NO | 1.000 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 3.19 | 1190.925 | 6260.955 | 0.951 | 0.5 | 9.6 | NO | 1.000 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 3.18 | 2031.727 | 5844.579 | 1.738 | 1.0 | 2.8 | NO | 1.000 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 3.18 | 4143.116 | 6095.467 | 3.399 | 2.0 | 2.1 | NO | 1.000 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 3.18 | 11189.350 | 6584.623 | 8.497 | 5.2 | 3.1 | NO | 1.000 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 3.19 | 22422.309 | 6880.506 | 16.294 | 9.9 | -0.9 | NO | 1.000 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 3.19 | 107894.484 | 6517.125 | 82.778 | 50.5 | 1.0 | NO | 1.000 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 3.18 | 224318.094 | 6887.408 | 162.847 | 99.4 | -0.6 | NO | 1.000 | NO | bb |

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: PFHpA**
Correlation coefficient: r = 0.999627, r^2 = 0.999254
Calibration curve: 1.43595 * x + 0.0332012
Response type: Internal Std ( Ref 19 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 3.46 | 484.804 | 16912.918 | 0.358 | 0.2 | -9.4 | NO | 0.999 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 3.45 | 1094.714 | 15983.809 | 0.856 | 0.6 | 14.6 | NO | 0.999 | NO | db |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 3.44 | 1816.426 | 14729.492 | 1.541 | 1.1 | 5.0 | NO | 0.999 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 3.44 | 3368.228 | 16736.117 | 2.516 | 1.7 | -13.6 | NO | 0.999 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 3.44 | 9552.159 | 16831.109 | 7.094 | 4.9 | -1.7 | NO | 0.999 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 3.45 | 19620.016 | 16406.695 | 14.948 | 10.4 | 3.9 | NO | 0.999 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 3.45 | 91102.258 | 15463.272 | 73.644 | 51.3 | 2.5 | NO | 0.999 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 3.45 | 193055.844 | 17039.475 | 141.624 | 98.6 | -1.4 | NO | 0.999 | NO | bb |

**Compound name: PFHxS**
Coefficient of Determination: R^2 = 0.997055
Calibration curve: 0.00158619 * x^2 + 1.83332 * x + -0.0924995
Response type: Internal Std ( Ref 20 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 3.52 | 58.724 | 1651.524 | 0.444 | 0.3 | 17.1 | NO | 0.997 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 3.51 | 92.843 | 1720.000 | 0.675 | 0.4 | -16.3 | NO | 0.997 | NO | MM |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 3.51 | 174.046 | 1350.057 | 1.611 | 0.9 | -7.1 | NO | 0.997 | NO | db |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 3.51 | 444.710 | 1600.253 | 3.474 | 1.9 | -2.9 | NO | 0.997 | NO | MM |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 3.51 | 1145.275 | 1665.698 | 8.595 | 4.7 | -5.6 | NO | 0.997 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 3.51 | 2600.573 | 1486.850 | 21.863 | 11.9 | 18.5 | NO | 0.997 | NO | MM |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 3.51 | 10991.491 | 1511.473 | 90.900 | 47.7 | -4.7 | NO | 0.997 | NO | MM |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 3.51 | 25585.689 | 1590.326 | 201.104 | 100.9 | 0.9 | NO | 0.997 | NO | MM |

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Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: PFOA**
Correlation coefficient: r = 0.999752, r^2 = 0.999504
Calibration curve: 1.13698 * x + 0.117502
Response type: Internal Std ( Ref 21 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 3.65 | 719.562 | 24338.092 | 0.370 | 0.2 | -11.3 | NO | 1.000 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 3.65 | 1500.520 | 25154.738 | 0.746 | 0.6 | 10.5 | NO | 1.000 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 3.65 | 2177.131 | 22319.385 | 1.219 | 1.0 | -3.1 | NO | 1.000 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 3.65 | 4933.051 | 25531.586 | 2.415 | 2.0 | 1.0 | NO | 1.000 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 3.64 | 12429.696 | 27012.830 | 5.752 | 5.0 | -0.9 | NO | 1.000 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 3.65 | 25517.219 | 27058.725 | 11.788 | 10.3 | 2.6 | NO | 1.000 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 3.64 | 123694.688 | 26424.334 | 58.514 | 51.4 | 2.7 | NO | 1.000 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 3.65 | 248919.391 | 27780.598 | 112.002 | 98.4 | -1.6 | NO | 1.000 | NO | bb |

**Compound name: PFNA**
Correlation coefficient: r = 0.999771, r^2 = 0.999542
Calibration curve: 1.36517 * x + 0.0586296
Response type: Internal Std ( Ref 22 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 3.83 | 809.352 | 23133.879 | 0.437 | 0.3 | 11.0 | NO | 1.000 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 3.82 | 1465.662 | 25510.555 | 0.718 | 0.5 | -3.4 | NO | 1.000 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 3.82 | 2763.543 | 25152.525 | 1.373 | 1.0 | -3.7 | NO | 1.000 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 3.82 | 6805.311 | 27896.482 | 3.049 | 2.2 | 9.5 | NO | 1.000 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 3.82 | 16015.691 | 27575.711 | 7.260 | 5.3 | 5.5 | NO | 1.000 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 3.82 | 32890.461 | 30707.572 | 13.389 | 9.8 | -2.4 | NO | 1.000 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 3.82 | 146644.188 | 26401.301 | 69.430 | 50.8 | 1.6 | NO | 1.000 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 3.82 | 313277.875 | 28967.555 | 135.185 | 99.0 | -1.0 | NO | 1.000 | NO | bb |

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Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
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**Compound name: PFOS**
Coefficient of Determination: R^2 = 0.999061
Calibration curve: 0.00185446 * x^2 + 1.10476 * x + 0.0290336
Response type: Internal Std ( Ref 23 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 3.88 | 115.763 | 5370.698 | 0.269 | 0.2 | -13.0 | NO | 0.999 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 3.87 | 241.388 | 5419.104 | 0.557 | 0.5 | -4.5 | NO | 0.999 | NO | MM |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 3.88 | 500.986 | 5346.955 | 1.171 | 1.0 | 3.2 | NO | 0.999 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 3.88 | 1168.767 | 5508.184 | 2.652 | 2.4 | 18.3 | NO | 0.999 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 3.87 | 2478.524 | 5282.377 | 5.865 | 5.2 | 4.7 | NO | 0.999 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 3.88 | 5348.684 | 5677.549 | 11.776 | 10.4 | 4.5 | NO | 0.999 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 3.88 | 26226.332 | 5678.869 | 57.728 | 48.3 | -3.4 | NO | 0.999 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 3.88 | 56412.301 | 5421.565 | 130.065 | 100.7 | 0.7 | NO | 0.999 | NO | bb |

**Compound name: PFDA**
Coefficient of Determination: R^2 = 0.998836
Calibration curve: 0.000679513 * x^2 + 1.50572 * x + -0.0681733
Response type: Internal Std ( Ref 24 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 3.99 | 972.213 | 28930.936 | 0.420 | 0.3 | 29.7 | NO | 0.999 | NO | db |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 4.00 | 1382.475 | 29747.686 | 0.581 | 0.4 | -13.8 | NO | 0.999 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 3.99 | 3557.009 | 31897.771 | 1.394 | 1.0 | -2.9 | NO | 0.999 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 3.99 | 7354.864 | 31493.791 | 2.919 | 2.0 | -0.9 | NO | 0.999 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 4.00 | 16044.657 | 29596.766 | 6.776 | 4.5 | -9.3 | NO | 0.999 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 3.99 | 37473.484 | 33043.109 | 14.176 | 9.4 | -5.8 | NO | 0.999 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 3.99 | 195941.813 | 30631.795 | 79.959 | 51.9 | 3.9 | NO | 0.999 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 3.99 | 392413.031 | 31463.066 | 155.902 | 99.1 | -0.9 | NO | 0.999 | NO | bb |

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Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
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**Compound name: PFUnA**
Correlation coefficient: r = 0.998876, r^2 = 0.997753
Calibration curve: 1.03711 * x + 0.141151
Response type: Internal Std ( Ref 25 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 4.15 | 1000.258 | 28511.633 | 0.439 | 0.3 | 14.7 | NO | 0.998 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 4.15 | 1613.189 | 35214.363 | 0.573 | 0.4 | -16.8 | NO | 0.998 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 4.15 | 3030.180 | 29618.668 | 1.279 | 1.1 | 9.7 | NO | 0.998 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 4.15 | 5814.139 | 32452.291 | 2.239 | 2.0 | 1.2 | NO | 0.998 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 4.15 | 14655.979 | 32879.375 | 5.572 | 5.2 | 4.7 | NO | 0.998 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 4.15 | 29217.963 | 39593.965 | 9.224 | 8.8 | -12.4 | NO | 0.998 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 4.15 | 137931.563 | 34542.293 | 49.914 | 48.0 | -4.0 | NO | 0.998 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 4.15 | 285394.844 | 33371.344 | 106.901 | 102.9 | 2.9 | NO | 0.998 | NO | bb |

**Compound name: N-MeFOSAA**
Coefficient of Determination: R^2 = 0.999758
Calibration curve: -0.000725393 * x^2 + 1.88459 * x + -0.112345
Response type: Internal Std ( Ref 26 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 4.01 | 186.794 | 7235.550 | 0.323 | 0.2 | -7.7 | NO | 1.000 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 4.02 | 464.219 | 7333.048 | 0.791 | 0.5 | -4.1 | NO | 1.000 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 4.02 | 800.254 | 6481.465 | 1.543 | 0.9 | -12.1 | NO | 1.000 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 4.02 | 1945.937 | 6639.098 | 3.664 | 2.0 | 0.3 | NO | 1.000 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 4.02 | 5107.766 | 6875.079 | 9.287 | 5.0 | -0.1 | NO | 1.000 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 4.02 | 10428.781 | 7052.758 | 18.484 | 9.9 | -0.9 | NO | 1.000 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 4.02 | 47146.820 | 6322.343 | 93.215 | 50.5 | 1.0 | NO | 1.000 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 4.02 | 100772.484 | 6972.632 | 180.657 | 99.7 | -0.3 | NO | 1.000 | NO | bb |

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**Compound name: N-EtFOSAA**
Coefficient of Determination: R^2 = 0.998485
Calibration curve: 0.00300948 * x^2 + 1.32985 * x + 0.0134202
Response type: Internal Std ( Ref 27 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 4.09 | 234.930 | 7680.203 | 0.382 | 0.3 | 10.9 | NO | 0.998 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 4.09 | 302.139 | 7756.188 | 0.487 | 0.4 | -28.8 | NO | 0.998 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 4.09 | 661.819 | 6483.096 | 1.276 | 0.9 | -5.3 | NO | 0.998 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 4.09 | 1767.924 | 6911.000 | 3.198 | 2.4 | 19.1 | NO | 0.998 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 4.09 | 4013.729 | 7309.417 | 6.864 | 5.1 | 1.9 | NO | 0.998 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 4.09 | 8229.293 | 6897.159 | 14.914 | 10.9 | 9.3 | NO | 0.998 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 4.09 | 40260.930 | 7098.953 | 70.892 | 48.1 | -3.9 | NO | 0.998 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 4.09 | 81647.523 | 6203.575 | 164.517 | 100.7 | 0.7 | NO | 0.998 | NO | bb |

**Compound name: PFDoA**
Coefficient of Determination: R^2 = 0.996663
Calibration curve: 0.00839285 * x^2 + 0.722755 * x + 0.0737712
Response type: Internal Std ( Ref 28 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 4.31 | 48.922 | 4029.594 | 0.152 | 0.1 | -56.9 | YES | 0.997 | NO | MMX |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 4.30 | 130.253 | 4364.951 | 0.373 | 0.4 | -17.6 | NO | 0.997 | NO | MM |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 4.31 | 250.646 | 3671.525 | 0.853 | 1.1 | 6.5 | NO | 0.997 | NO | MM |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 4.31 | 576.522 | 3407.532 | 2.115 | 2.7 | 36.9 | YES | 0.997 | NO | MM |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 4.31 | 1409.589 | 4397.531 | 4.007 | 5.1 | 2.7 | NO | 0.997 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 4.31 | 2715.122 | 4609.228 | 7.363 | 9.1 | -8.8 | NO | 0.997 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 4.31 | 16155.003 | 3523.270 | 57.315 | 50.1 | 0.2 | NO | 0.997 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 4.31 | 30002.807 | 3866.813 | 96.988 | 72.7 | -27.3 | NO | 0.997 | NO | bbX |

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**Compound name: PFTrDA**
Coefficient of Determination: R^2 = 0.998284
Calibration curve: -0.0031383 * x^2 + 13.4645 * x + 0.137265
Response type: Internal Std ( Ref 28 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 4.47 | 1075.260 | 4029.594 | 3.336 | 0.2 | -5.0 | NO | 0.998 | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 4.47 | 2399.472 | 4364.951 | 6.871 | 0.5 | 0.0 | NO | 0.998 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 4.47 | 4107.874 | 3671.525 | 13.986 | 1.0 | 2.9 | NO | 0.998 | NO | bd |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 4.47 | 8625.419 | 3407.532 | 31.641 | 2.3 | 17.1 | NO | 0.998 | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 4.47 | 21857.848 | 4397.531 | 62.131 | 4.6 | -7.8 | NO | 0.998 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 4.47 | 44589.504 | 4609.228 | 120.925 | 9.0 | -10.1 | NO | 0.998 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 4.47 | 194608.984 | 3523.270 | 690.442 | 51.9 | 3.8 | NO | 0.998 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 4.47 | 403466.813 | 3866.813 | 1304.261 | 99.1 | -0.9 | NO | 0.998 | NO | bb |

**Compound name: PFTeDA**
Coefficient of Determination: R^2 = 0.999913
Calibration curve: -0.000928994 * x^2 + 1.26436 * x + 0.081381
Response type: Internal Std ( Ref 29 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 0.250 | 4.65 | 1083.578 | 33198.340 | 0.408 | 0.3 | 3.3 | NO | 1.000 | NO | MM |
| 2 | 2 | 170710M3_3 | Standard | 0.500 | 4.64 | 1820.870 | 32091.508 | 0.709 | 0.5 | -0.6 | NO | 1.000 | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 1.000 | 4.64 | 2825.587 | 26986.623 | 1.309 | 1.0 | -2.9 | NO | 1.000 | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 2.000 | 4.64 | 6951.492 | 32219.420 | 2.697 | 2.1 | 3.6 | NO | 1.000 | NO | bd |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 4.64 | 15829.568 | 31939.072 | 6.195 | 4.9 | -2.9 | NO | 1.000 | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 10.000 | 4.64 | 32960.660 | 32979.863 | 12.493 | 9.9 | -1.1 | NO | 1.000 | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 50.000 | 4.64 | 144863.203 | 29463.150 | 61.459 | 50.4 | 0.8 | NO | 1.000 | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 100.000 | 4.64 | 289834.000 | 30963.135 | 117.008 | 99.8 | -0.2 | NO | 1.000 | NO | bb |

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**Compound name: 13C3-PFBA**
Response Factor: 0.917788
RRF SD: 0.0220833, Relative SD: 2.40614
Response type: Internal Std ( Ref 30 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 12.500 | 1.53 | 7397.170 | 8045.280 | 11.493 | 12.5 | 0.2 | NO | | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 12.500 | 1.53 | 7319.772 | 8103.498 | 11.291 | 12.3 | -1.6 | NO | | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 12.500 | 1.52 | 6882.142 | 7483.426 | 11.496 | 12.5 | 0.2 | NO | | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 12.500 | 1.53 | 7838.344 | 8401.936 | 11.662 | 12.7 | 1.6 | NO | | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 12.500 | 1.53 | 7407.220 | 8412.924 | 11.006 | 12.0 | -4.1 | NO | | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 12.500 | 1.52 | 7861.154 | 8228.657 | 11.942 | 13.0 | 4.1 | NO | | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 12.500 | 1.53 | 7586.854 | 8207.246 | 11.555 | 12.6 | 0.7 | NO | | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 12.500 | 1.53 | 7829.357 | 8634.025 | 11.335 | 12.4 | -1.2 | NO | | NO | bb |

**Compound name: 13C3-PFPeA**
Response Factor: 0.274834
RRF SD: 0.00525449, Relative SD: 1.91188
Response type: Internal Std ( Ref 31 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 12.500 | 2.77 | 14987.434 | 21818.400 | 3.435 | 12.5 | -0.0 | NO | | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 12.500 | 2.75 | 14679.565 | 21557.213 | 3.405 | 12.4 | -0.9 | NO | | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 12.500 | 2.75 | 13179.834 | 19500.141 | 3.379 | 12.3 | -1.6 | NO | | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 12.500 | 2.75 | 14388.955 | 20840.465 | 3.452 | 12.6 | 0.5 | NO | | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 12.500 | 2.75 | 14900.713 | 22435.646 | 3.321 | 12.1 | -3.3 | NO | | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 12.500 | 2.75 | 14839.357 | 21282.260 | 3.486 | 12.7 | 1.5 | NO | | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 12.500 | 2.75 | 14494.135 | 20826.820 | 3.480 | 12.7 | 1.3 | NO | | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 12.500 | 2.75 | 15390.460 | 21826.197 | 3.526 | 12.8 | 2.6 | NO | | NO | bb |

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
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**Compound name: 13C3-PFBS**
Response Factor: 0.0331429
RRF SD: 0.00163339, Relative SD: 4.92831
Response type: Internal Std ( Ref 31 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 12.500 | 2.97 | 1829.255 | 21818.400 | 0.419 | 12.6 | 1.2 | NO | | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 12.500 | 2.96 | 1889.439 | 21557.213 | 0.438 | 13.2 | 5.8 | NO | | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 12.500 | 2.96 | 1680.475 | 19500.141 | 0.431 | 13.0 | 4.0 | NO | | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 12.500 | 2.95 | 1675.008 | 20840.465 | 0.402 | 12.1 | -3.0 | NO | | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 12.500 | 2.95 | 1827.422 | 22435.646 | 0.407 | 12.3 | -1.7 | NO | | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 12.500 | 2.95 | 1863.759 | 21282.260 | 0.438 | 13.2 | 5.7 | NO | | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 12.500 | 2.95 | 1600.534 | 20826.820 | 0.384 | 11.6 | -7.3 | NO | | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 12.500 | 2.95 | 1723.074 | 21826.197 | 0.395 | 11.9 | -4.7 | NO | | NO | bb |

**Compound name: 13C2-PFHxA**
Response Factor: 0.303795
RRF SD: 0.0121481, Relative SD: 3.99878
Response type: Internal Std ( Ref 31 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 5.000 | 3.20 | 6599.234 | 21818.400 | 1.512 | 5.0 | -0.4 | NO | | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 5.000 | 3.19 | 6260.955 | 21557.213 | 1.452 | 4.8 | -4.4 | NO | | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 5.000 | 3.19 | 5844.579 | 19500.141 | 1.499 | 4.9 | -1.3 | NO | | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 5.000 | 3.18 | 6095.467 | 20840.465 | 1.462 | 4.8 | -3.7 | NO | | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 5.000 | 3.18 | 6584.623 | 22435.646 | 1.467 | 4.8 | -3.4 | NO | | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 5.000 | 3.19 | 6880.506 | 21282.260 | 1.616 | 5.3 | 6.4 | NO | | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 5.000 | 3.19 | 6517.125 | 20826.820 | 1.565 | 5.2 | 3.0 | NO | | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 5.000 | 3.18 | 6887.408 | 21826.197 | 1.578 | 5.2 | 3.9 | NO | | NO | bb |

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Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: 13C4-PFHpA**
Response Factor: 0.305965
RRF SD: 0.00856155, Relative SD: 2.79821
Response type: Internal Std ( Ref 31 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 12.500 | 3.45 | 16912.918 | 21818.400 | 3.876 | 12.7 | 1.3 | NO | | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 12.500 | 3.45 | 15983.809 | 21557.213 | 3.707 | 12.1 | -3.1 | NO | | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 12.500 | 3.45 | 14729.492 | 19500.141 | 3.777 | 12.3 | -1.2 | NO | | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 12.500 | 3.45 | 16736.117 | 20840.465 | 4.015 | 13.1 | 5.0 | NO | | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 12.500 | 3.44 | 16831.109 | 22435.646 | 3.751 | 12.3 | -1.9 | NO | | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 12.500 | 3.45 | 16406.695 | 21282.260 | 3.855 | 12.6 | 0.8 | NO | | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 12.500 | 3.44 | 15463.272 | 20826.820 | 3.712 | 12.1 | -2.9 | NO | | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 12.500 | 3.45 | 17039.475 | 21826.197 | 3.903 | 12.8 | 2.1 | NO | | NO | bb |

**Compound name: 18O2-PFHxS**
Response Factor: 0.437301
RRF SD: 0.0226112, Relative SD: 5.17063
Response type: Internal Std ( Ref 32 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 12.500 | 3.52 | 1651.524 | 3795.795 | 5.439 | 12.4 | -0.5 | NO | | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 12.500 | 3.52 | 1720.000 | 3856.194 | 5.575 | 12.7 | 2.0 | NO | | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 12.500 | 3.52 | 1350.057 | 3265.055 | 5.169 | 11.8 | -5.4 | NO | | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 12.500 | 3.52 | 1600.253 | 3796.757 | 5.268 | 12.0 | -3.6 | NO | | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 12.500 | 3.52 | 1665.698 | 3472.170 | 5.997 | 13.7 | 9.7 | NO | | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 12.500 | 3.51 | 1486.850 | 3371.803 | 5.512 | 12.6 | 0.8 | NO | | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 12.500 | 3.51 | 1511.473 | 3354.416 | 5.632 | 12.9 | 3.0 | NO | | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 12.500 | 3.52 | 1590.326 | 3869.111 | 5.138 | 11.7 | -6.0 | NO | | NO | bb |

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Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: 13C2-PFOA**
Response Factor: 1.29206
RRF SD: 0.0648147, Relative SD: 5.01639
Response type: Internal Std ( Ref 33 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 3.65 | 24338.092 | 17959.266 | 16.940 | 13.1 | 4.9 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 3.65 | 25154.738 | 19184.902 | 16.390 | 12.7 | 1.5 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 3.65 | 22319.385 | 18247.898 | 15.289 | 11.8 | -5.3 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 3.65 | 25531.586 | 20935.916 | 15.244 | 11.8 | -5.6 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 3.64 | 27012.830 | 21746.758 | 15.527 | 12.0 | -3.9 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 3.65 | 27058.725 | 19624.896 | 17.235 | 13.3 | 6.7 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 3.65 | 26424.334 | 21065.352 | 15.680 | 12.1 | -2.9 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 3.65 | 27780.598 | 20545.762 | 16.902 | 13.1 | 4.6 | NO | | NO | bb |

**Compound name: 13C5-PFNA**
Response Factor: 0.980095
RRF SD: 0.0617584, Relative SD: 6.30126
Response type: Internal Std ( Ref 34 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 3.83 | 23133.879 | 24826.572 | 11.648 | 11.9 | -4.9 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 3.82 | 25510.555 | 25407.900 | 12.551 | 12.8 | 2.4 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 3.82 | 25152.525 | 26987.840 | 11.650 | 11.9 | -4.9 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 3.82 | 27896.482 | 30615.023 | 11.390 | 11.6 | -7.0 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 3.82 | 27575.711 | 27704.439 | 12.442 | 12.7 | 1.6 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 3.82 | 30707.572 | 28246.664 | 13.589 | 13.9 | 10.9 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 3.82 | 26401.301 | 25411.732 | 12.987 | 13.3 | 6.0 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 3.82 | 28967.555 | 30807.039 | 11.754 | 12.0 | -4.1 | NO | | NO | bb |

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: 13C8-PFOS**
Response Factor: 1.09812
RRF SD: 0.106578, Relative SD: 9.7055
Response type: Internal Std ( Ref 35 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 3.88 | 5370.698 | 4072.196 | 16.486 | 15.0 | 20.1 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 3.88 | 5419.104 | 5130.696 | 13.203 | 12.0 | -3.8 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 3.87 | 5346.955 | 4837.479 | 13.816 | 12.6 | 0.7 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 3.88 | 5508.184 | 5669.458 | 12.144 | 11.1 | -11.5 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 3.87 | 5282.377 | 5068.695 | 13.027 | 11.9 | -5.1 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 3.88 | 5677.549 | 5023.010 | 14.129 | 12.9 | 2.9 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 3.87 | 5678.869 | 4963.667 | 14.301 | 13.0 | 4.2 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 3.88 | 5421.565 | 5333.926 | 12.705 | 11.6 | -7.4 | NO | | NO | bd |

**Compound name: 13C2-PFDA**
Response Factor: 0.927939
RRF SD: 0.0650889, Relative SD: 7.01435
Response type: Internal Std ( Ref 36 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 3.99 | 28930.936 | 30066.424 | 12.028 | 13.0 | 3.7 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 3.99 | 29747.686 | 34644.785 | 10.733 | 11.6 | -7.5 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 3.99 | 31897.771 | 35483.492 | 11.237 | 12.1 | -3.1 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 3.99 | 31493.791 | 33241.297 | 11.843 | 12.8 | 2.1 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 4.00 | 29596.766 | 34417.320 | 10.749 | 11.6 | -7.3 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 3.99 | 33043.109 | 37874.355 | 10.906 | 11.8 | -6.0 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 3.99 | 30631.795 | 30816.412 | 12.425 | 13.4 | 7.1 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 3.99 | 31463.066 | 30550.707 | 12.873 | 13.9 | 11.0 | NO | | NO | bb |

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
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**Compound name: 13C2-PFUnA**
Response Factor: 1.08252
RRF SD: 0.0785153, Relative SD: 7.25299
Response type: Internal Std ( Ref 37 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 4.15 | 28511.633 | 29392.709 | 12.125 | 11.2 | -10.4 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 4.15 | 35214.363 | 33292.914 | 13.221 | 12.2 | -2.3 | NO | | NO | db |
| 3 | 3 170710M3_4 | Standard | 12.500 | 4.15 | 29618.668 | 25046.889 | 14.782 | 13.7 | 9.2 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 4.15 | 32452.291 | 31311.639 | 12.955 | 12.0 | -4.3 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 4.15 | 32879.375 | 32131.605 | 12.791 | 11.8 | -5.5 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 4.15 | 39593.965 | 33095.688 | 14.954 | 13.8 | 10.5 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 4.15 | 34542.293 | 32101.432 | 13.450 | 12.4 | -0.6 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 4.15 | 33371.344 | 29853.807 | 13.973 | 12.9 | 3.3 | NO | | NO | bb |

**Compound name: d3-N-MeFOSAA**
Response Factor: 0.224351
RRF SD: 0.0203519, Relative SD: 9.07147
Response type: Internal Std ( Ref 37 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 4.02 | 7235.550 | 29392.709 | 3.077 | 13.7 | 9.7 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 4.02 | 7333.048 | 33292.914 | 2.753 | 12.3 | -1.8 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 4.02 | 6481.465 | 25046.889 | 3.235 | 14.4 | 15.3 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 4.02 | 6639.098 | 31311.639 | 2.650 | 11.8 | -5.5 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 4.02 | 6875.079 | 32131.605 | 2.675 | 11.9 | -4.6 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 4.02 | 7052.758 | 33095.688 | 2.664 | 11.9 | -5.0 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 4.02 | 6322.343 | 32101.432 | 2.462 | 11.0 | -12.2 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 4.02 | 6972.632 | 29853.807 | 2.919 | 13.0 | 4.1 | NO | | NO | bb |

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Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: d5-N-EtFOSAA**
Response Factor: 0.22983
RRF SD: 0.0205291, Relative SD: 8.9323
Response type: Internal Std ( Ref 37 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 12.500 | 4.09 | 7680.203 | 29392.709 | 3.266 | 14.2 | 13.7 | NO | | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 12.500 | 4.09 | 7756.188 | 33292.914 | 2.912 | 12.7 | 1.4 | NO | | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 12.500 | 4.09 | 6483.096 | 25046.889 | 3.235 | 14.1 | 12.6 | NO | | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 12.500 | 4.09 | 6911.000 | 31311.639 | 2.759 | 12.0 | -4.0 | NO | | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 12.500 | 4.09 | 7309.417 | 32131.605 | 2.844 | 12.4 | -1.0 | NO | | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 12.500 | 4.09 | 6897.159 | 33095.688 | 2.605 | 11.3 | -9.3 | NO | | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 12.500 | 4.09 | 7098.953 | 32101.432 | 2.764 | 12.0 | -3.8 | NO | | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 12.500 | 4.09 | 6203.575 | 29853.807 | 2.597 | 11.3 | -9.6 | NO | | NO | bb |

**Compound name: 13C2-PFDoA**
Response Factor: 0.129878
RRF SD: 0.0137216, Relative SD: 10.565
Response type: Internal Std ( Ref 37 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 12.500 | 4.31 | 4029.594 | 29392.709 | 1.714 | 13.2 | 5.6 | NO | | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 12.500 | 4.31 | 4364.951 | 33292.914 | 1.639 | 12.6 | 0.9 | NO | | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 12.500 | 4.30 | 3671.525 | 25046.889 | 1.832 | 14.1 | 12.9 | NO | | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 12.500 | 4.31 | 3407.532 | 31311.639 | 1.360 | 10.5 | -16.2 | NO | | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 12.500 | 4.30 | 4397.531 | 32131.605 | 1.711 | 13.2 | 5.4 | NO | | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 12.500 | 4.31 | 4609.228 | 33095.688 | 1.741 | 13.4 | 7.2 | NO | | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 12.500 | 4.30 | 3523.270 | 32101.432 | 1.372 | 10.6 | -15.5 | NO | | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 12.500 | 4.31 | 3866.813 | 29853.807 | 1.619 | 12.5 | -0.3 | NO | | NO | bb |

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: 13C2-PFTeDA**
Response Factor: 1.01816
RRF SD: 0.0659527, Relative SD: 6.47762
Response type: Internal Std ( Ref 37 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 4.65 | 33198.340 | 29392.709 | 14.118 | 13.9 | 10.9 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 4.65 | 32091.508 | 33292.914 | 12.049 | 11.8 | -5.3 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 4.64 | 26986.623 | 25046.889 | 13.468 | 13.2 | 5.8 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 4.65 | 32219.420 | 31311.639 | 12.862 | 12.6 | 1.1 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 4.65 | 31939.072 | 32131.605 | 12.425 | 12.2 | -2.4 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 4.65 | 32979.863 | 33095.688 | 12.456 | 12.2 | -2.1 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 4.64 | 29463.150 | 32101.432 | 11.473 | 11.3 | -9.9 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 4.65 | 30963.135 | 29853.807 | 12.964 | 12.7 | 1.9 | NO | | NO | bb |

**Compound name: 13C4-PFBA**
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std ( Ref 30 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 1.53 | 8045.280 | 8045.280 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 1.53 | 8103.498 | 8103.498 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 1.52 | 7483.426 | 7483.426 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 1.53 | 8401.936 | 8401.936 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 1.53 | 8412.924 | 8412.924 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 1.52 | 8228.657 | 8228.657 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 1.53 | 8207.246 | 8207.246 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 1.53 | 8634.025 | 8634.025 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: 13C5-PFHxA**
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std ( Ref 31 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 5.000 | 3.19 | 21818.400 | 21818.400 | 5.000 | 5.0 | 0.0 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 5.000 | 3.19 | 21557.213 | 21557.213 | 5.000 | 5.0 | 0.0 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 5.000 | 3.18 | 19500.141 | 19500.141 | 5.000 | 5.0 | 0.0 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 5.000 | 3.19 | 20840.465 | 20840.465 | 5.000 | 5.0 | 0.0 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 5.000 | 3.18 | 22435.646 | 22435.646 | 5.000 | 5.0 | 0.0 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 5.000 | 3.19 | 21282.260 | 21282.260 | 5.000 | 5.0 | 0.0 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 5.000 | 3.19 | 20826.820 | 20826.820 | 5.000 | 5.0 | 0.0 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 5.000 | 3.18 | 21826.197 | 21826.197 | 5.000 | 5.0 | 0.0 | NO | | NO | bb |

**Compound name: 13C3-PFHxS**
Response Factor: 1
RRF SD: 1.11022e-016, Relative SD: 1.11022e-014
Response type: Internal Std ( Ref 32 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 3.52 | 3795.795 | 3795.795 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 3.52 | 3856.194 | 3856.194 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 3.51 | 3265.055 | 3265.055 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 3.52 | 3796.757 | 3796.757 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 3.51 | 3472.170 | 3472.170 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 3.52 | 3371.803 | 3371.803 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 3.52 | 3354.416 | 3354.416 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 3.52 | 3869.111 | 3869.111 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: 13C8-PFOA**
Response Factor: 1
RRF SD: 4.19625e-017, Relative SD: 4.19625e-015
Response type: Internal Std ( Ref 33 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 3.65 | 17959.266 | 17959.266 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 3.65 | 19184.902 | 19184.902 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 3.64 | 18247.898 | 18247.898 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 3.65 | 20935.916 | 20935.916 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 3.64 | 21746.758 | 21746.758 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 3.65 | 19624.896 | 19624.896 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 3.65 | 21065.352 | 21065.352 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 3.65 | 20545.762 | 20545.762 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |

**Compound name: 13C9-PFNA**
Response Factor: 1
RRF SD: 1.25887e-016, Relative SD: 1.25887e-014
Response type: Internal Std ( Ref 34 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 3.82 | 24826.572 | 24826.572 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 3.82 | 25407.900 | 25407.900 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 3.82 | 26987.840 | 26987.840 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 3.82 | 30615.023 | 30615.023 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 3.82 | 27704.439 | 27704.439 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 3.82 | 28246.664 | 28246.664 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 3.82 | 25411.732 | 25411.732 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 3.82 | 30807.039 | 30807.039 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:58:48 Pacific Daylight Time

**Compound name: 13C4-PFOS**
Response Factor: 1
RRF SD: 8.3925e-017, Relative SD: 8.3925e-015
Response type: Internal Std ( Ref 35 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 3.88 | 4072.196 | 4072.196 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 3.88 | 5130.696 | 5130.696 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 3.87 | 4837.479 | 4837.479 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 3.87 | 5669.458 | 5669.458 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 3.88 | 5068.695 | 5068.695 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 3.87 | 5023.010 | 5023.010 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 3.87 | 4963.667 | 4963.667 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 3.88 | 5333.926 | 5333.926 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |

**Compound name: 13C6-PFDA**
Response Factor: 1
RRF SD: 5.93439e-017, Relative SD: 5.93439e-015
Response type: Internal Std ( Ref 36 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 170710M3_2 | Standard | 12.500 | 3.99 | 30066.424 | 30066.424 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 2 | 2 170710M3_3 | Standard | 12.500 | 3.99 | 34644.785 | 34644.785 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 3 | 3 170710M3_4 | Standard | 12.500 | 3.99 | 35483.492 | 35483.492 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 4 | 4 170710M3_5 | Standard | 12.500 | 3.99 | 33241.297 | 33241.297 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 5 | 5 170710M3_6 | Standard | 12.500 | 3.99 | 34417.320 | 34417.320 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 6 | 6 170710M3_7 | Standard | 12.500 | 4.00 | 37874.355 | 37874.355 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 7 | 7 170710M3_8 | Standard | 12.500 | 3.99 | 30816.412 | 30816.412 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 8 | 8 170710M3_9 | Standard | 12.500 | 3.99 | 30550.707 | 30550.707 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |

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Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
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**Compound name: 13C7-PFUnA**
Response Factor: 1
RRF SD: 1.18688e-016, Relative SD: 1.18688e-014
Response type: Internal Std ( Ref 37 ), Area * ( IS Conc. / IS Area )
Curve type: RF

| | # | Name | Type | Std. Conc | RT | Area | IS Area | Response | Conc. | %Dev | Conc. Flag | CoD | CoD Flag | x=excluded |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 170710M3_2 | Standard | 12.500 | 4.15 | 29392.709 | 29392.709 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 2 | 2 | 170710M3_3 | Standard | 12.500 | 4.15 | 33292.914 | 33292.914 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 3 | 3 | 170710M3_4 | Standard | 12.500 | 4.15 | 25046.889 | 25046.889 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 4 | 4 | 170710M3_5 | Standard | 12.500 | 4.15 | 31311.639 | 31311.639 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 5 | 5 | 170710M3_6 | Standard | 12.500 | 4.15 | 32131.605 | 32131.605 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 6 | 6 | 170710M3_7 | Standard | 12.500 | 4.15 | 33095.688 | 33095.688 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 7 | 7 | 170710M3_8 | Standard | 12.500 | 4.15 | 32101.432 | 32101.432 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |
| 8 | 8 | 170710M3_9 | Standard | 12.500 | 4.15 | 29853.807 | 29853.807 | 12.500 | 12.5 | 0.0 | NO | | NO | bb |

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Friday, July 14, 2017 09:02:22 Pacific Daylight Time
Printed: Friday, July 14, 2017 09:03:26 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

**Compound name: PFBS**

| | Name | ID | Acq.Date | Acq.Time |
|---|---|---|---|---|
| 1 | 170710M3_1 | IPA | 10-Jul-17 | 16:24:39 |
| 2 | 170710M3_2 | ST170710M3-1 PFC CS-2 17G1003 | 10-Jul-17 | 16:35:25 |
| 3 | 170710M3_3 | ST170710M3-2 PFC CS-1 17G1004 | 10-Jul-17 | 16:46:13 |
| 4 | 170710M3_4 | ST170710M3-3 PFC CS0 17G1005 | 10-Jul-17 | 16:56:56 |
| 5 | 170710M3_5 | ST170710M3-4 PFC CS1 17G1006 | 10-Jul-17 | 17:07:35 |
| 6 | 170710M3_6 | ST170710M3-5 PFC CS2 17G1007 | 10-Jul-17 | 17:18:21 |
| 7 | 170710M3_7 | ST170710M3-6 PFC CS3 17G1008 | 10-Jul-17 | 17:28:59 |
| 8 | 170710M3_8 | ST170710M3-7 PFC CS4 17G1009 | 10-Jul-17 | 17:39:46 |
| 9 | 170710M3_9 | ST170710M3-8 PFC CS5 17G1010 | 10-Jul-17 | 17:50:33 |
| 10 | 170710M3_10 | IPA | 10-Jul-17 | 18:01:19 |
| 11 | 170710M3_11 | SS170710M3-1 PFC SSS 17G1011 | 10-Jul-17 | 18:11:57 |
| 12 | 170710M3_12 | IPA | 10-Jul-17 | 18:22:44 |
| 13 | 170710M3_13 | B7G0013-BS1 OPR 0.125 | 10-Jul-17 | 18:33:22 |
| 14 | 170710M3_14 | B7G0020-BS1 OPR 0.25 | 10-Jul-17 | 18:44:08 |
| 15 | 170710M3_15 | B7G0024-BS1 OPR 0.25 | 10-Jul-17 | 18:54:55 |
| 16 | 170710M3_16 | B7G0024-BS2 OPR 0.25 | 10-Jul-17 | 19:06:07 |
| 17 | 170710M3_17 | IPA | 10-Jul-17 | 19:17:52 |
| 18 | 170710M3_18 | B7G0013-BLK1 Method Blank 0.125 | 10-Jul-17 | 19:29:17 |
| 19 | 170710M3_19 | B7G0020-BLK1 Method Blank 0.25 | 10-Jul-17 | 19:40:01 |
| 20 | 170710M3_20 | B7G0024-BLK1 Method Blank 0.25 | 10-Jul-17 | 19:50:39 |
| 21 | 170710M3_21 | 1700757-01RE1 DPH-MW6 0.11883 | 10-Jul-17 | 20:01:26 |
| 22 | 170710M3_22 | 1700757-02RE1 DPH-B5 0.12231 | 10-Jul-17 | 20:12:04 |
| 23 | 170710M3_23 | 1700757-03RE1 DPH-105 0.11689 | 10-Jul-17 | 20:22:43 |
| 24 | 170710M3_24 | 1700767-01RE1 1 Main 0.24476 | 10-Jul-17 | 20:33:21 |
| 25 | 170710M3_25 | 1700767-02RE1 2 Keyser 0.2358 | 10-Jul-17 | 20:43:59 |
| 26 | 170710M3_26 | 1700767-03RE1 3 College 0.24414 | 10-Jul-17 | 20:54:46 |
| 27 | 170710M3_27 | 1700767-04RE1 4 College 0.24491 | 10-Jul-17 | 21:05:24 |
| 28 | 170710M3_28 | 1700767-05RE1 5 Sunrise 0.24353 | 10-Jul-17 | 21:16:02 |
| 29 | 170710M3_29 | 1700803-02 EB01 0.11989 | 10-Jul-17 | 21:26:41 |
| 30 | 170710M3_30 | 1700804-01 IRPSite7-GW-07GW41-2017062... | 10-Jul-17 | 21:37:19 |
| 31 | 170710M3_31 | 1700804-02 IRPSite5-GW-05GW01-2017062... | 10-Jul-17 | 21:48:06 |

Dataset: Untitled

Last Altered: Friday, July 14, 2017 09:02:22 Pacific Daylight Time
Printed: Friday, July 14, 2017 09:03:26 Pacific Daylight Time

**Compound name: PFBS**

| | Name | ID | Acq.Date | Acq.Time |
|---|---|---|---|---|
| 32 | 170710M3_32 | IPA | 10-Jul-17 | 21:58:44 |
| 33 | 170710M3_33 | ST170710M3-9 PFC CS3 17G1008 | 10-Jul-17 | 22:09:22 |
| 34 | 170710M3_34 | IPA | 10-Jul-17 | 22:20:01 |
| 35 | 170710M3_35 | 1700804-03 IRPSite5-GW-FD01-20170629 0.... | 10-Jul-17 | 22:31:27 |
| 36 | 170710M3_36 | 1700804-04 IRPSite33-GW-FRB01-20170629... | 10-Jul-17 | 22:42:07 |
| 37 | 170710M3_37 | 1700804-05 IRPSite33-GW-11MW204D-2017... | 10-Jul-17 | 22:52:45 |
| 38 | 170710M3_38 | 1700804-06 IRPSite33-GW-11MW204S-2017... | 10-Jul-17 | 23:03:24 |
| 39 | 170710M3_39 | 1700804-07 Bldg 110-GW-11MW205D-20170... | 10-Jul-17 | 23:14:02 |
| 40 | 170710M3_40 | 1700804-08 Bldg 110-GW-FRB01-20170629 0... | 10-Jul-17 | 23:24:41 |
| 41 | 170710M3_41 | 1700804-09 Bldg 110-GW-11MW205S-20170... | 10-Jul-17 | 23:35:19 |
| 42 | 170710M3_42 | 1700804-10 IRPSite7-GW-07GW102-201706... | 10-Jul-17 | 23:45:57 |
| 43 | 170710M3_43 | 1700804-11 IRPSite5-GW-04GW82-2017062... | 10-Jul-17 | 23:56:36 |
| 44 | 170710M3_44 | 1700751-01RE1 NH0100960_I 0.23355 | 11-Jul-17 | 00:07:41 |
| 45 | 170710M3_45 | IPA | 11-Jul-17 | 00:18:50 |
| 46 | 170710M3_46 | ST170710M3-10 PFC CS3 17G1008 | 11-Jul-17 | 00:29:28 |
| 47 | 170710M3_47 | IPA | 11-Jul-17 | 00:40:16 |
| 48 | 170710M3_48 | 1700751-02RE1 NH0100960_E 0.24913 | 11-Jul-17 | 00:51:03 |
| 49 | 170710M3_49 | 1700751-03RE1 NH0100901_I 0.25207 | 11-Jul-17 | 01:01:51 |
| 50 | 170710M3_50 | 1700751-04RE1 NH0100901_E 0.24547 | 11-Jul-17 | 01:12:29 |
| 51 | 170710M3_51 | 1700751-05RE1 NH0100668_I 0.22393 | 11-Jul-17 | 01:23:08 |
| 52 | 170710M3_52 | 1700751-06RE1 NH0100668_E 0.24262 | 11-Jul-17 | 01:33:46 |
| 53 | 170710M3_53 | 1700751-07RE1 NH0101303_I 0.05246 | 11-Jul-17 | 01:44:33 |
| 54 | 170710M3_54 | 1700751-08RE1 NH0101303_E 0.24891 | 11-Jul-17 | 01:55:11 |
| 55 | 170710M3_55 | 1700751-09RE1 NH0101311_I 0.23975 | 11-Jul-17 | 02:06:00 |
| 56 | 170710M3_56 | 1700751-10RE1 NH0101311_E 0.25554 | 11-Jul-17 | 02:17:45 |
| 57 | 170710M3_57 | 1700752-01RE1 STP-MW-71-061917 0.11831 | 11-Jul-17 | 02:28:31 |
| 58 | 170710M3_58 | IPA | 11-Jul-17 | 02:39:10 |
| 59 | 170710M3_59 | ST170710M3-11 PFC CS3 17G1008 | 11-Jul-17 | 02:49:48 |
| 60 | 170710M3_60 | IPA | 11-Jul-17 | 03:00:35 |
| 61 | 170710M3_61 | 1700752-02RE1 STP-MW-72-061917 0.02754 | 11-Jul-17 | 03:11:21 |
| 62 | 170710M3_62 | 1700752-03RE1 STP-MW-73-061917 0.11524 | 11-Jul-17 | 03:21:59 |
| 63 | 170710M3_63 | 1700752-04RE1 STP-MW-70-062017 0.11762 | 11-Jul-17 | 03:32:38 |
| 64 | 170710M3_64 | 1700752-05RE1 STP-MW-34-062017 0.11783 | 11-Jul-17 | 03:43:24 |
| 65 | 170710M3_65 | 1700752-06RE1 STP-EB3-061917 0.11814 | 11-Jul-17 | 03:54:11 |

Dataset: Untitled

Last Altered: Friday, July 14, 2017 09:02:22 Pacific Daylight Time
Printed: Friday, July 14, 2017 09:03:26 Pacific Daylight Time

**Compound name: PFBS**

| | Name | ID | Acq.Date | Acq.Time |
|---|---|---|---|---|
| 66 | 170710M3_66 | 1700752-07RE1 STP-EB4-062017 0.1185 | 11-Jul-17 | 04:04:49 |
| 67 | 170710M3_67 | IPA | 11-Jul-17 | 04:15:27 |
| 68 | 170710M3_68 | ST170710M3-12 PFC CS3 17G1008 | 11-Jul-17 | 04:26:06 |
| 69 | 170710M3_69 | IPA | 11-Jul-17 | 04:36:48 |

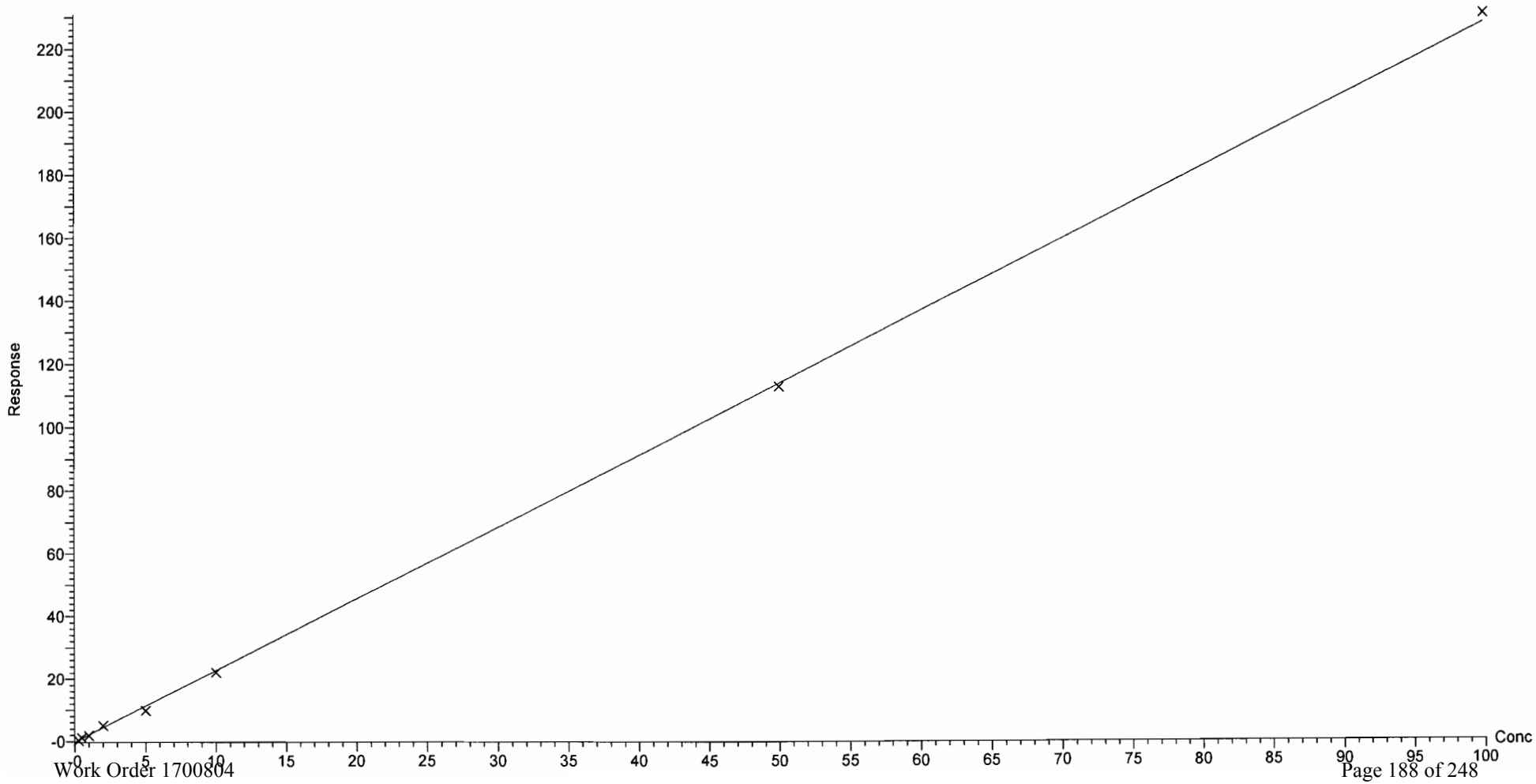
Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-5-17.mdb 10 Jul 2017 08:06:14**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:45:55**

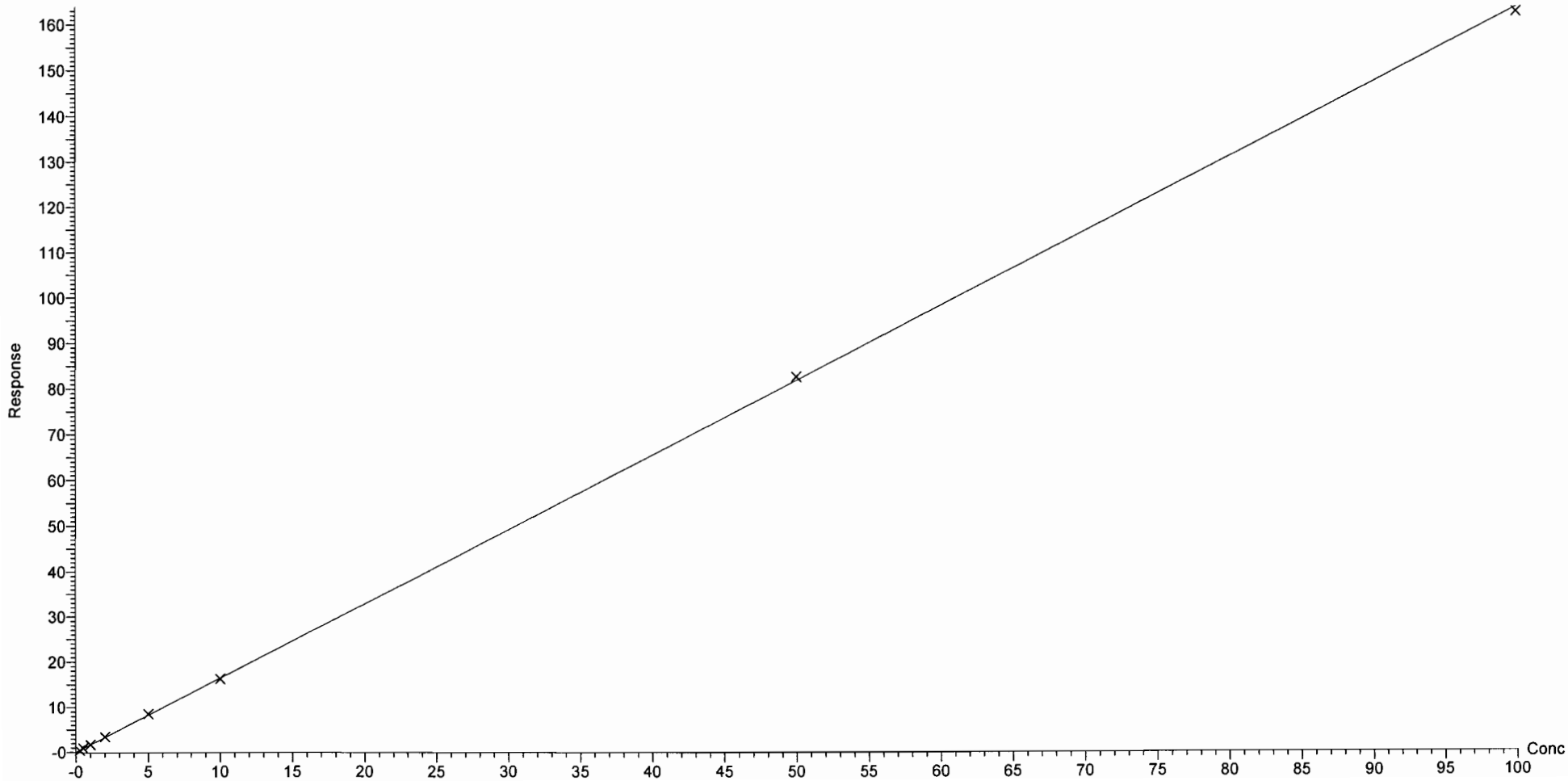
Compound name: PFBS
Correlation coefficient: r = 0.999476, r^2 = 0.998952
Calibration curve: 2.28219 * x + -0.143808
Response type: Internal Std ( Ref 17 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

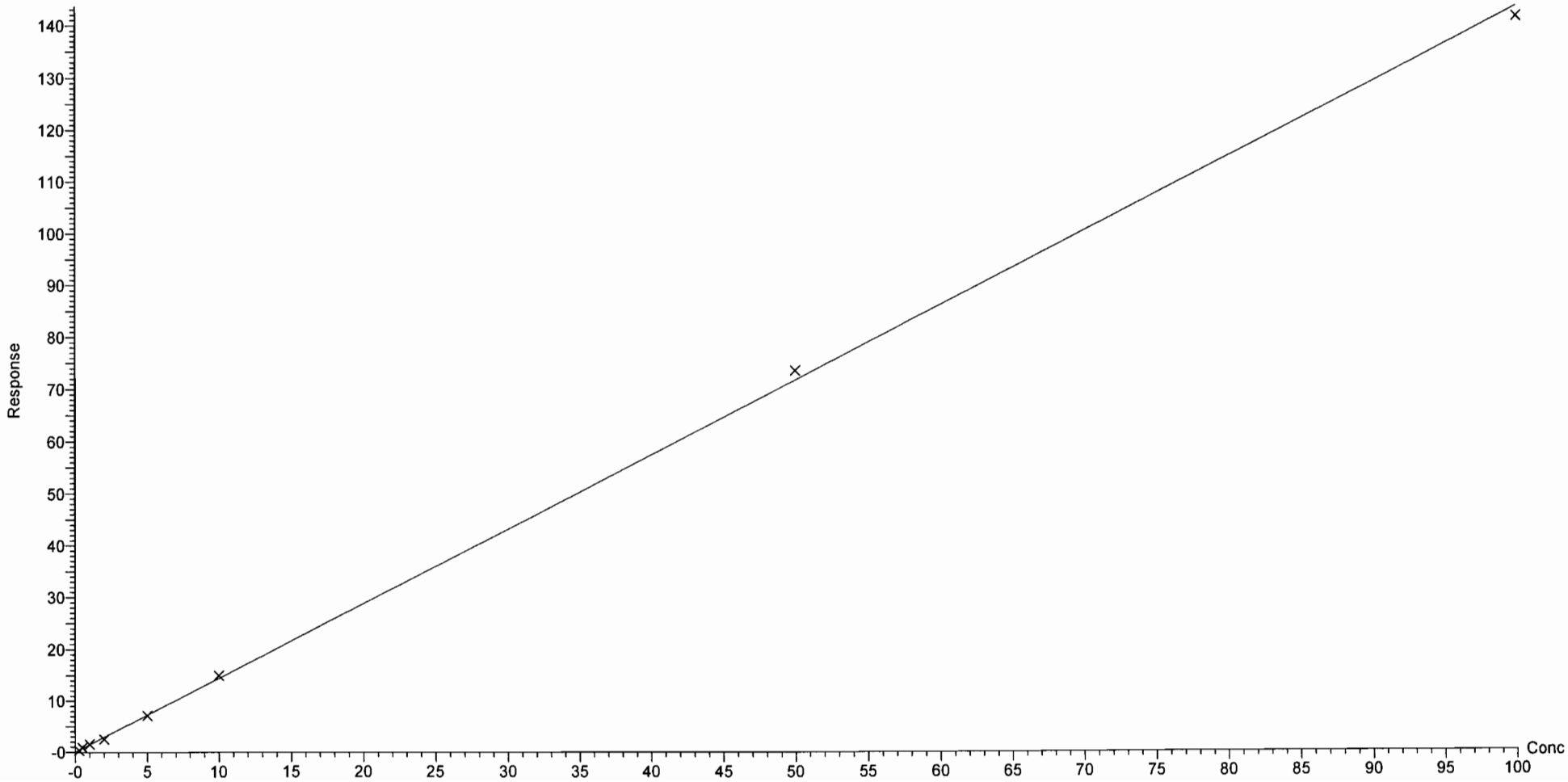
Compound name: PFHxA
Correlation coefficient: r = 0.999913, r^2 = 0.999826
Calibration curve: 1.63833 * x + 0.053424
Response type: Internal Std ( Ref 18 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

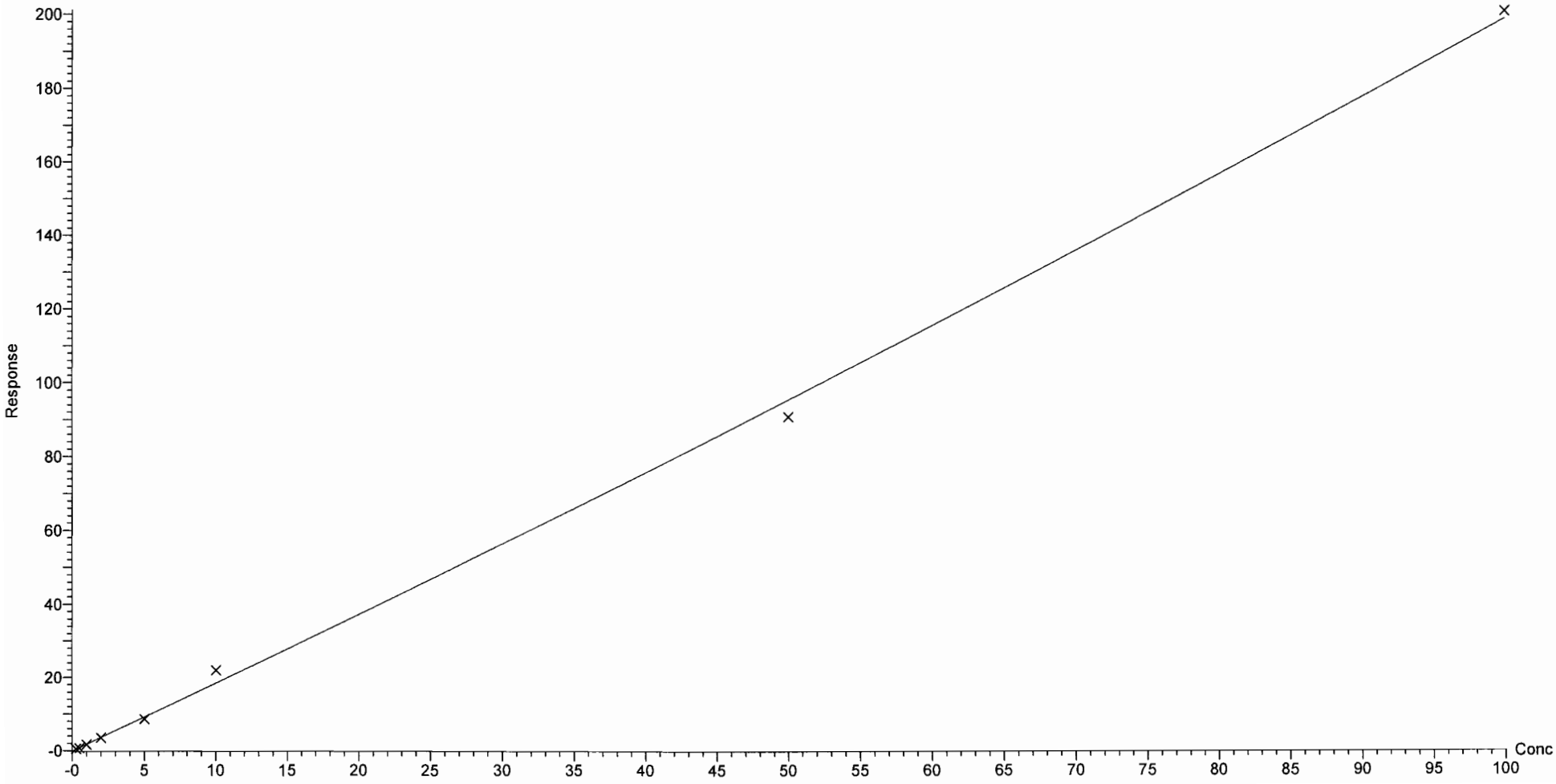
Compound name: PFHpA
Correlation coefficient: r = 0.999627, r^2 = 0.999254
Calibration curve: 1.43595 * x + 0.0332012
Response type: Internal Std ( Ref 19 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

Compound name: PFHxS
Coefficient of Determination: R^2 = 0.997055
Calibration curve: 0.00158619 * x^2 + 1.83332 * x + -0.0924995
Response type: Internal Std ( Ref 20 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

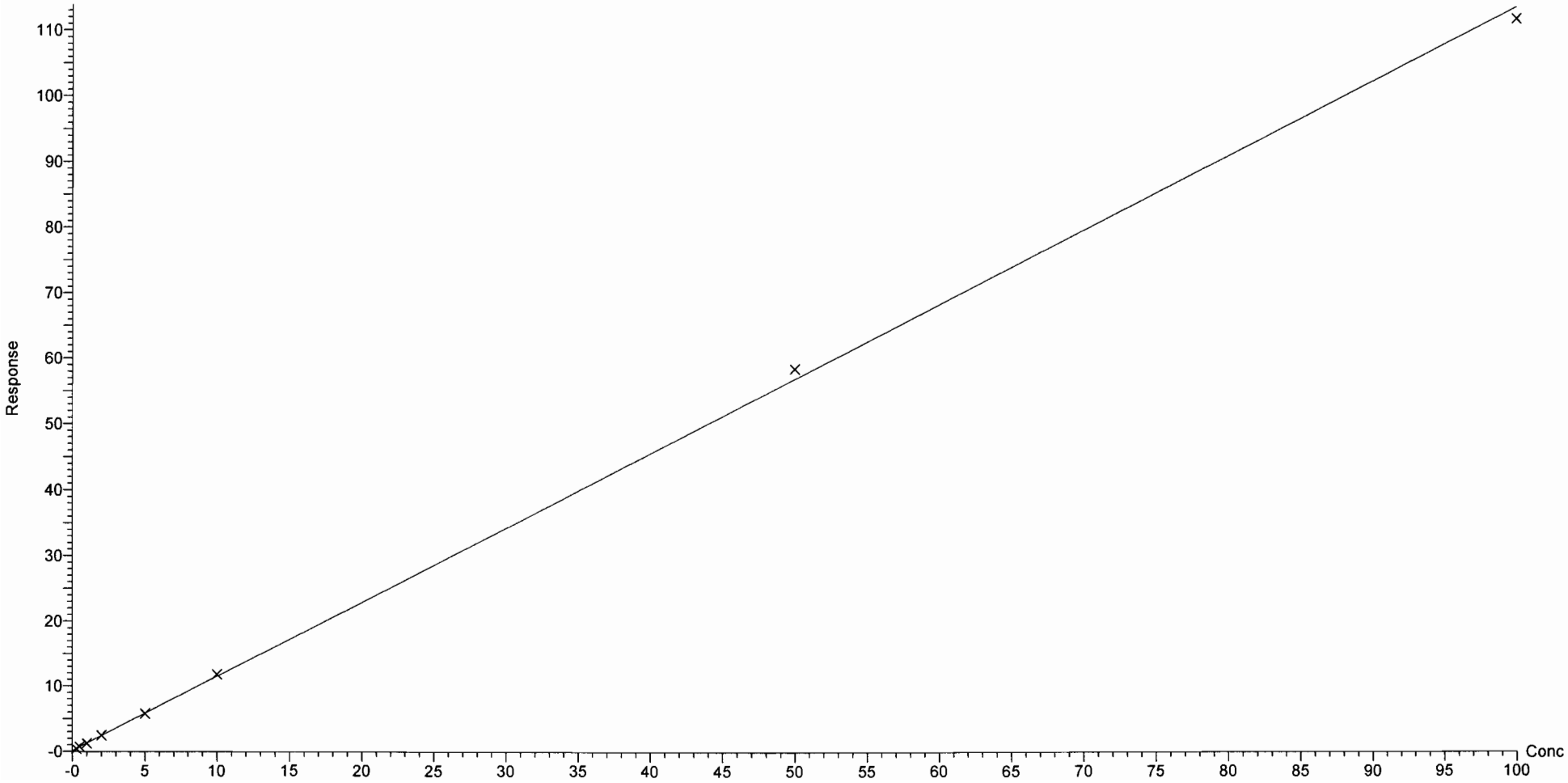


Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

Compound name: PFOA
Correlation coefficient: r = 0.999752, r^2 = 0.999504
Calibration curve: 1.13698 * x + 0.117502
Response type: Internal Std ( Ref 21 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

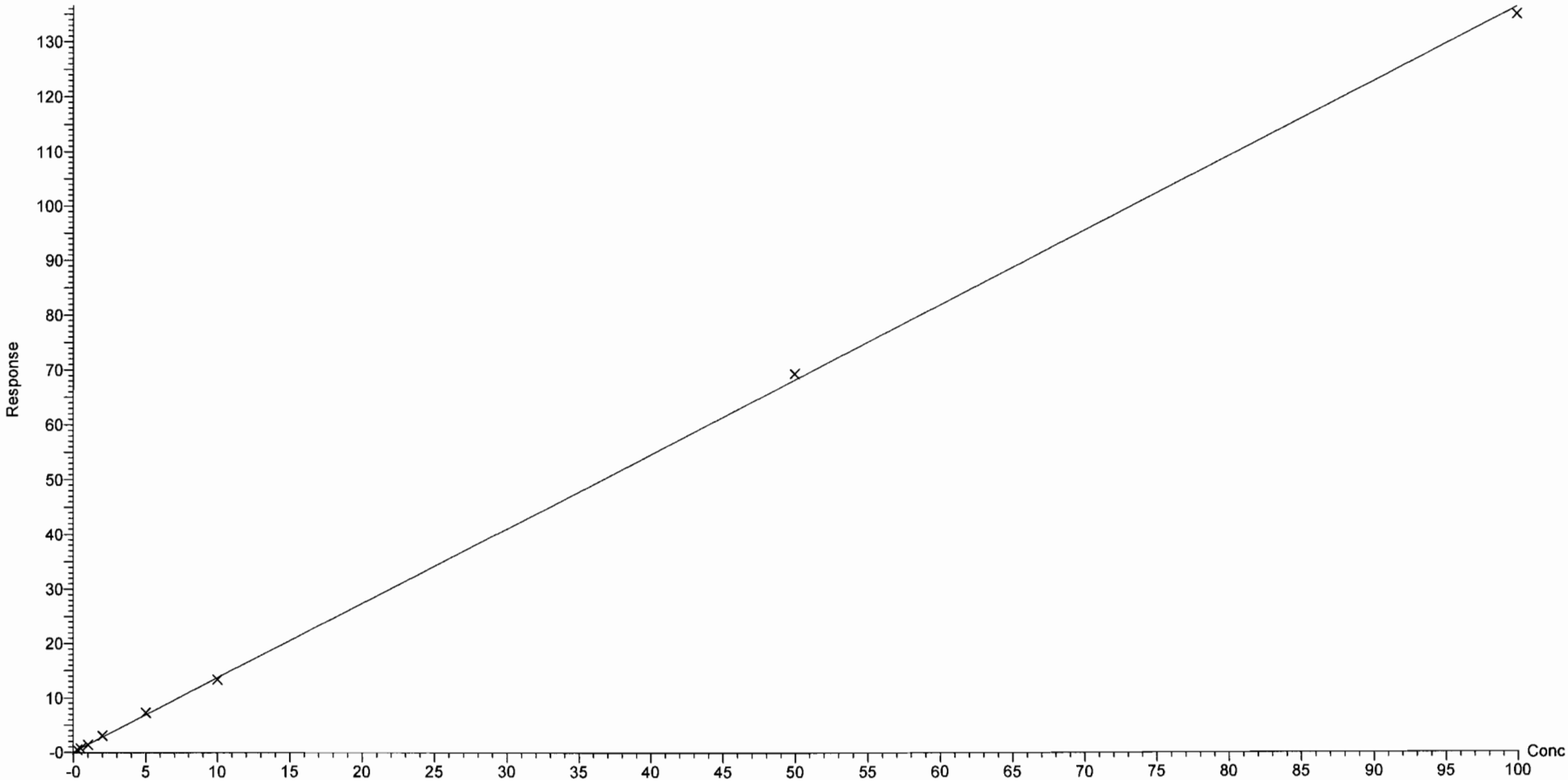


Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

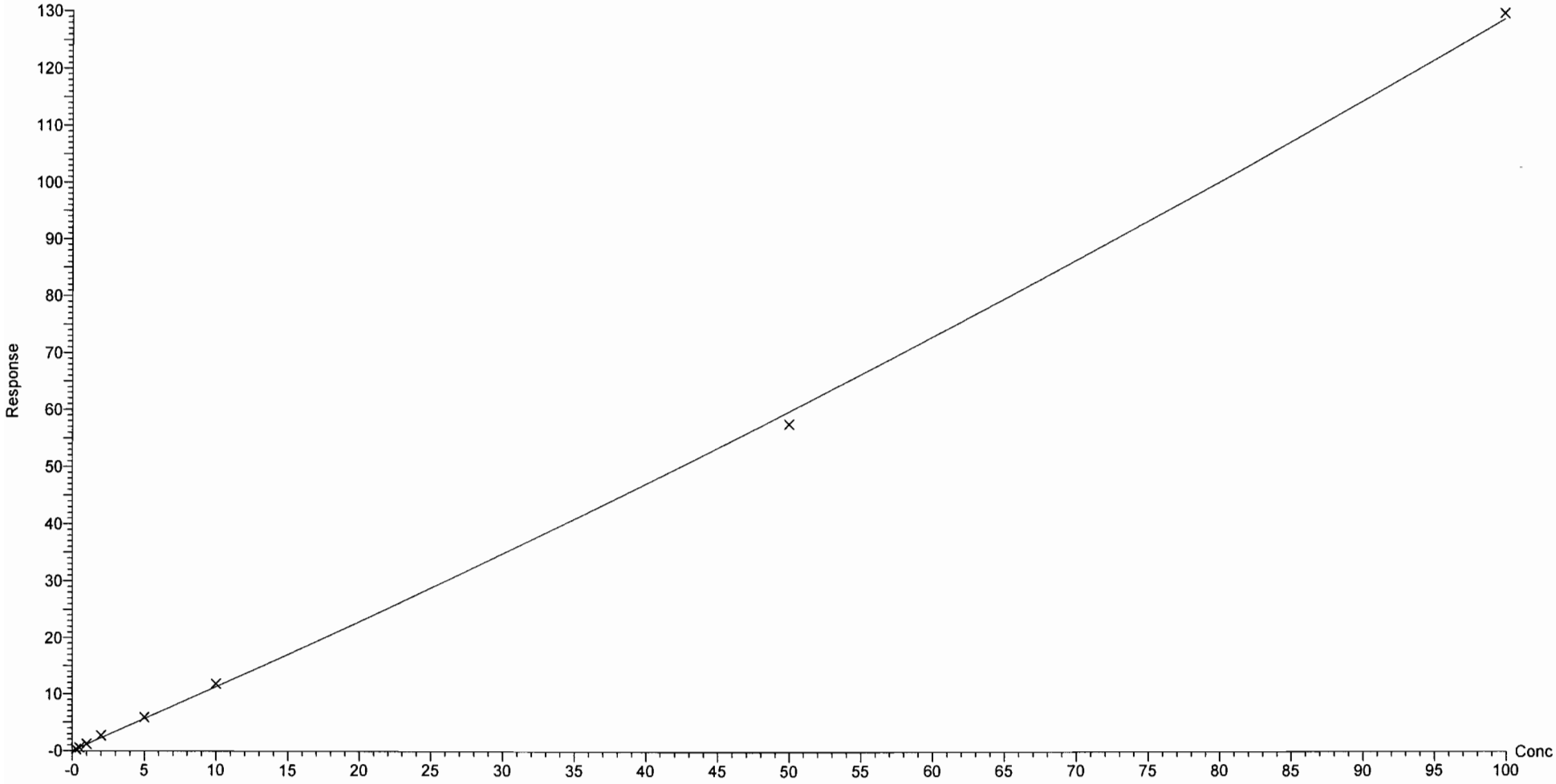
Compound name: PFNA
Correlation coefficient: r = 0.999771, r^2 = 0.999542
Calibration curve: 1.36517 * x + 0.0586296
Response type: Internal Std ( Ref 22 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

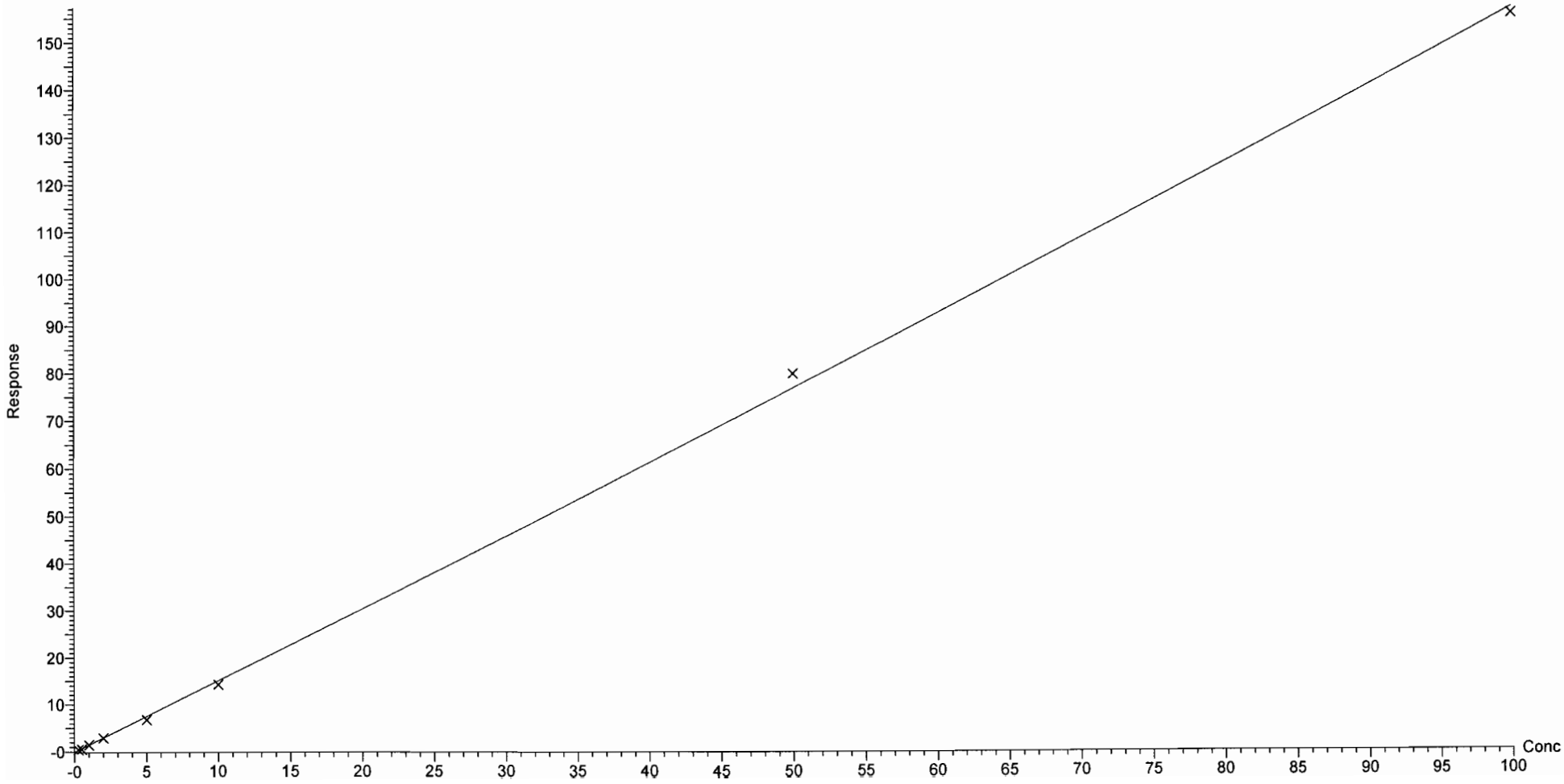
Compound name: PFOS
Coefficient of Determination: R^2 = 0.999061
Calibration curve: 0.00185446 * x^2 + 1.10476 * x + 0.0290336
Response type: Internal Std ( Ref 23 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

Compound name: PFDA
Coefficient of Determination: R^2 = 0.998836
Calibration curve: 0.000679513 * x^2 + 1.50572 * x + -0.0681733
Response type: Internal Std ( Ref 24 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

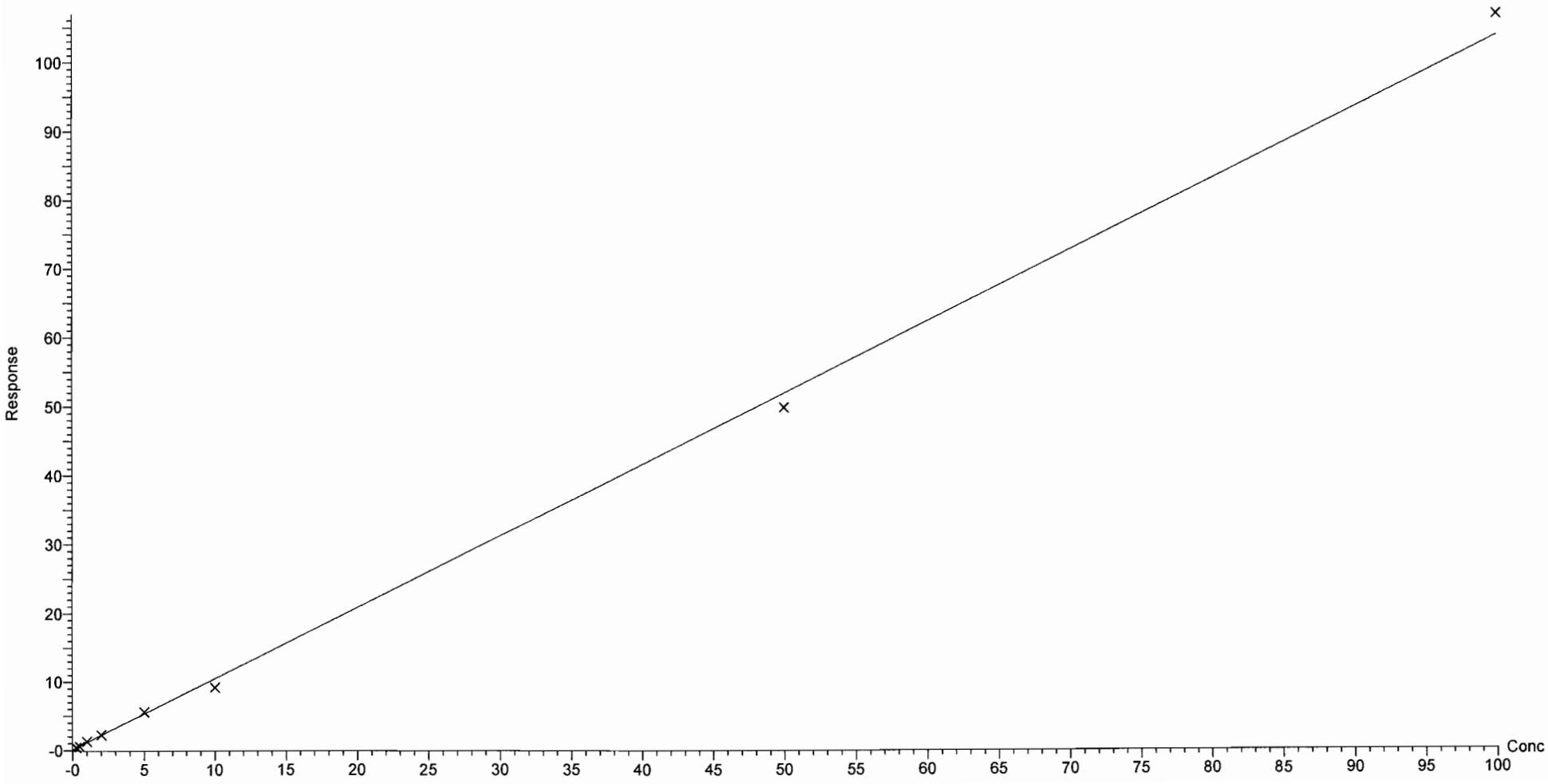


Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

Compound name: PFUnA
Correlation coefficient: r = 0.998876, r^2 = 0.997753
Calibration curve: 1.03711 * x + 0.141151
Response type: Internal Std ( Ref 25 ), Area * ( IS Conc. / IS Area )
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

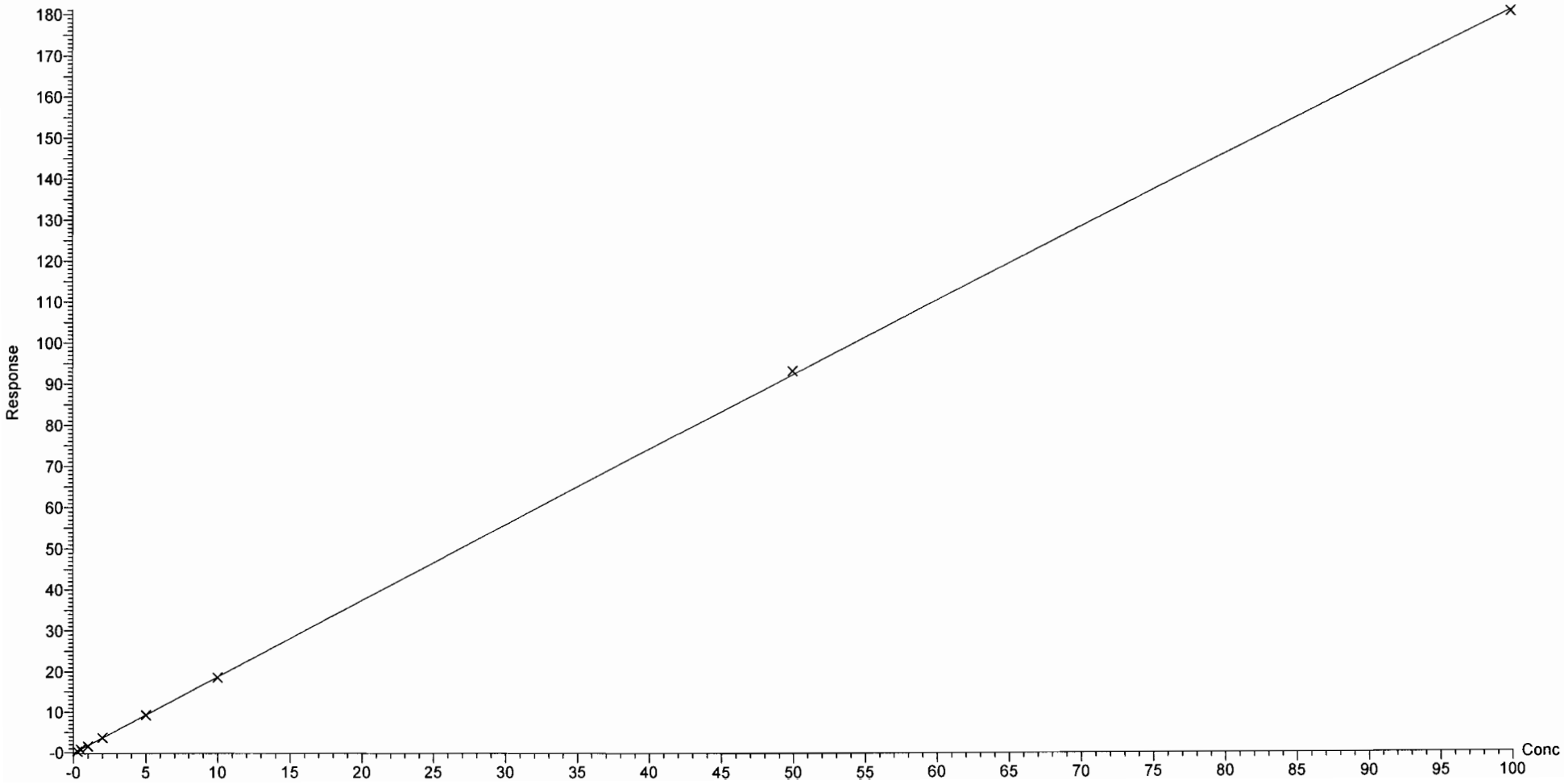


Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

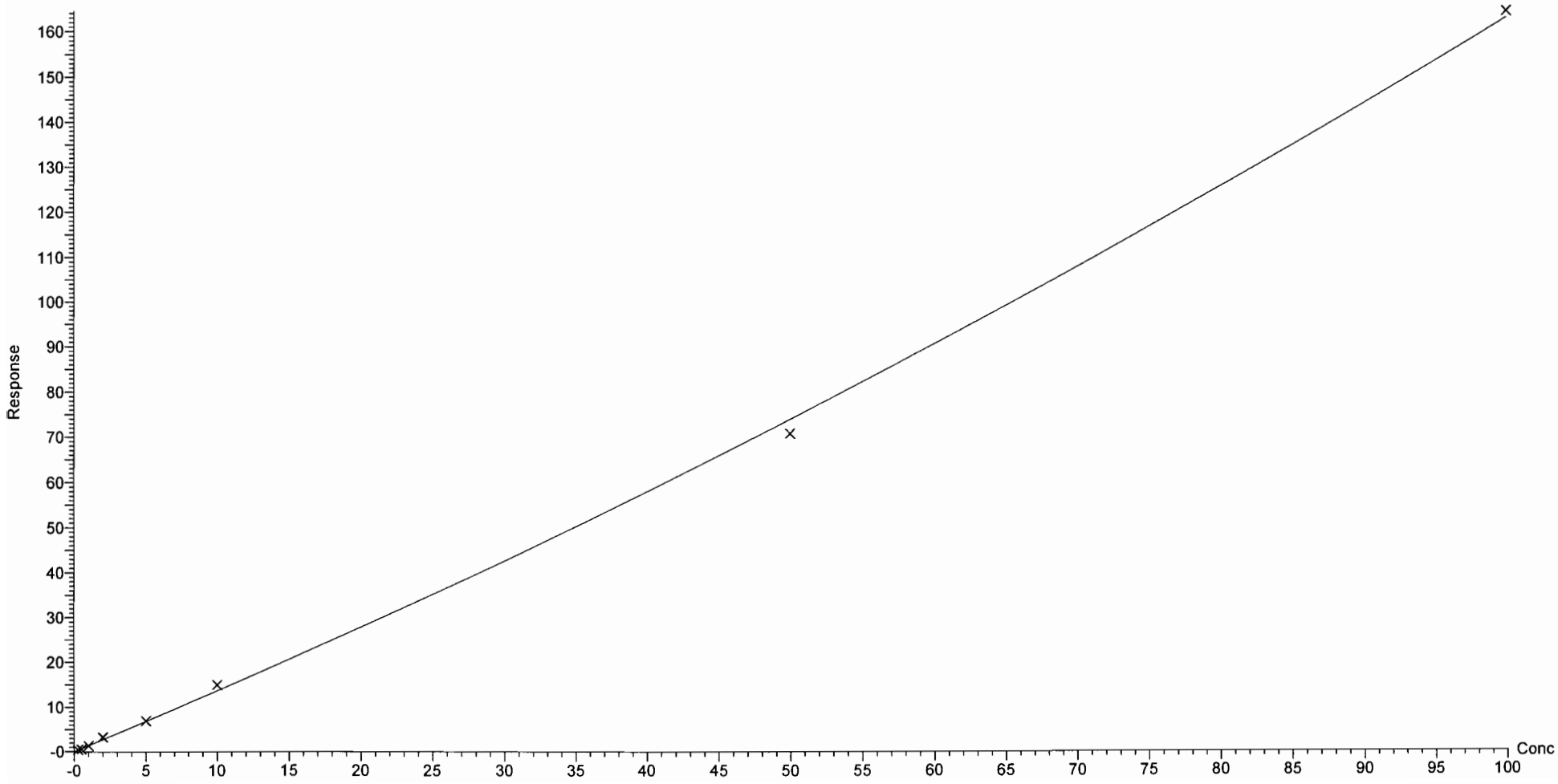
Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.999758
Calibration curve: -0.000725393 * x^2 + 1.88459 * x + -0.112345
Response type: Internal Std ( Ref 26 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.998485
Calibration curve: 0.00300948 * x^2 + 1.32985 * x + 0.0134202
Response type: Internal Std ( Ref 27 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



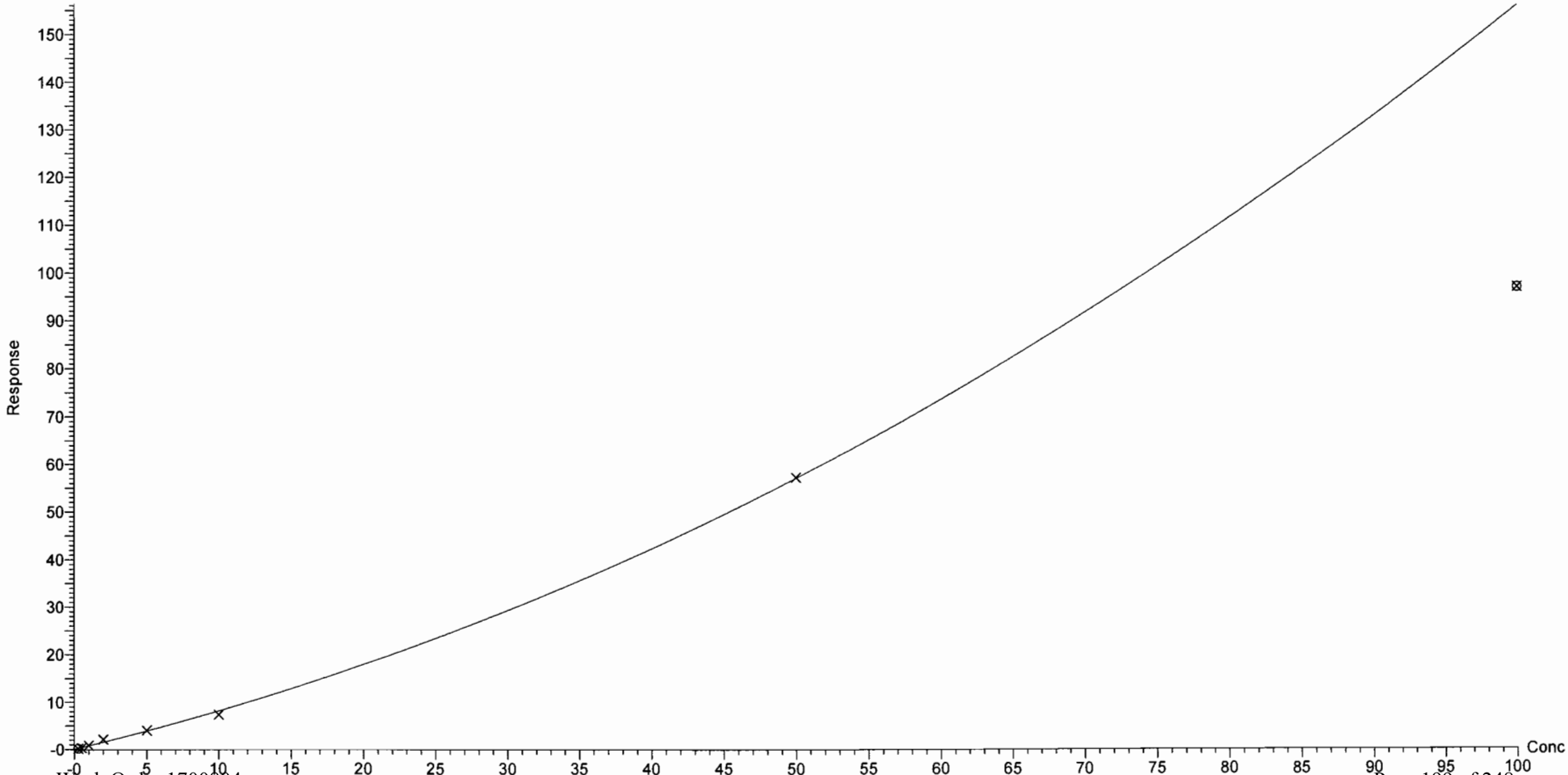
Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:57:46 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:59:07 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-5-17.mdb 10 Jul 2017 08:06:14**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

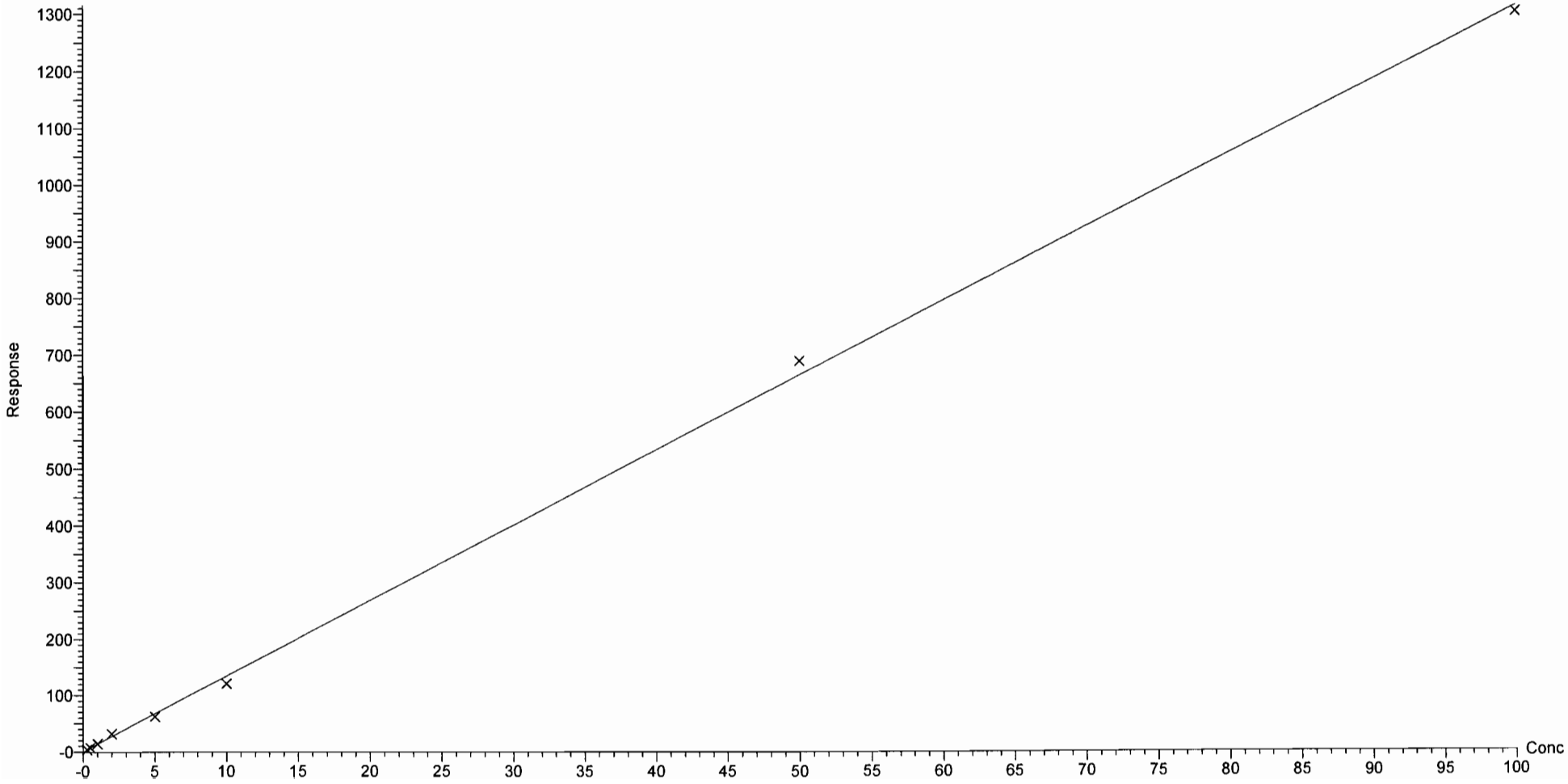
Compound name: PFDoA
Coefficient of Determination: R^2 = 0.996663
Calibration curve: 0.00839285 * x^2 + 0.722755 * x + 0.0737712
Response type: Internal Std ( Ref 28 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.998284
Calibration curve: -0.0031383 * x^2 + 13.4645 * x + 0.137265
Response type: Internal Std ( Ref 28 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

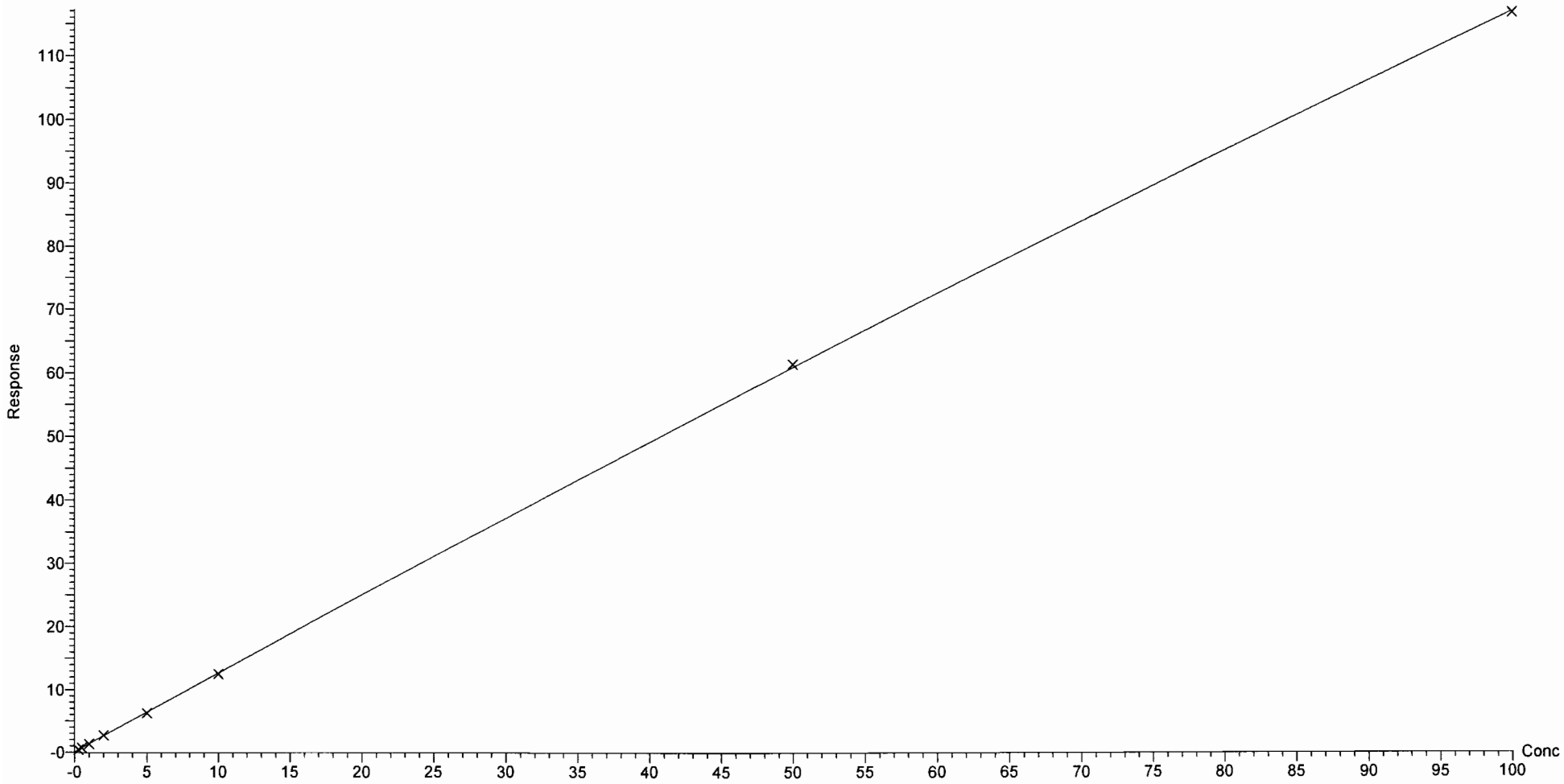


Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:53:58 Pacific Daylight Time

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999913
Calibration curve: -0.000928994 * x^2 + 1.26436 * x + 0.081381
Response type: Internal Std ( Ref 29 ), Area * ( IS Conc. / IS Area )
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



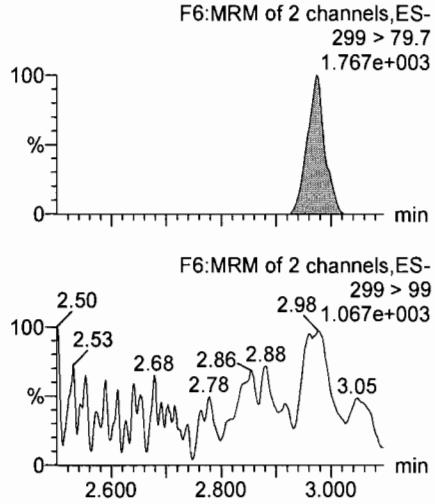
Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

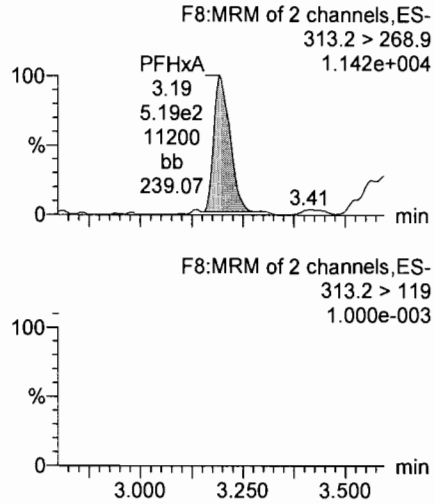
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-5-17.mdb 10 Jul 2017 08:06:14**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:45:55**

**Name: 170710M3_2, Date: 10-Jul-2017, Time: 16:35:25, ID: ST170710M3-1 PFC CS-2 17G1003, Description: PFC CS-2 17G1003**

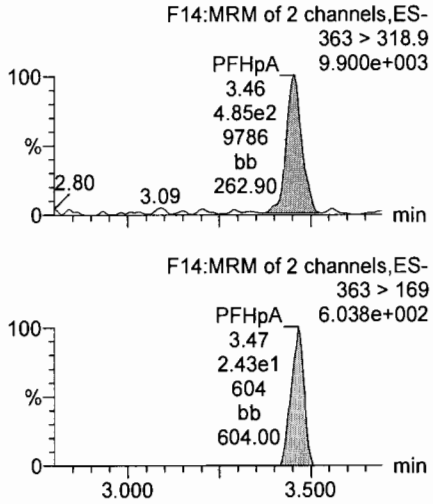
**Total PFBS**



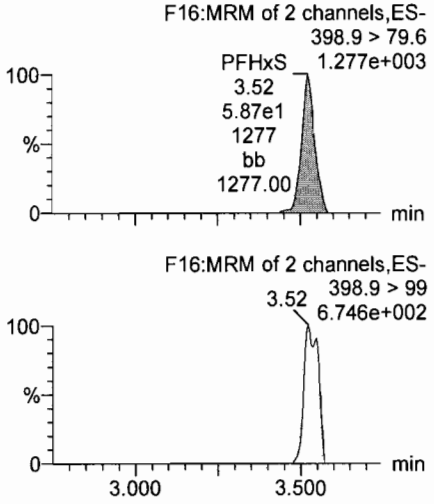

**PFHxA**



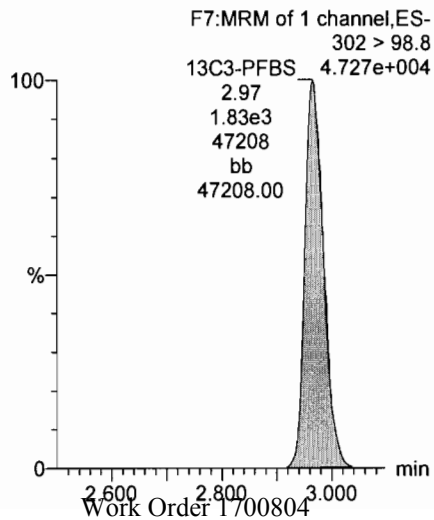

**PFHpA**



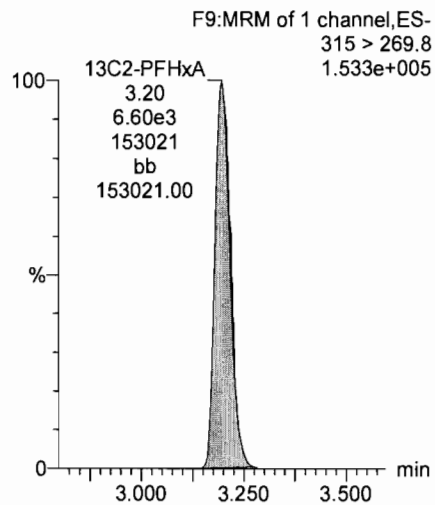

**Total PFHxS**



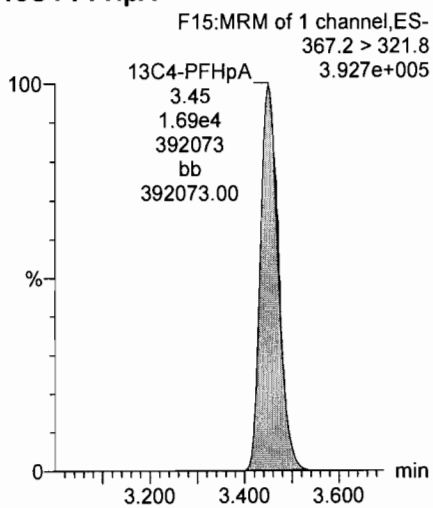

**13C3-PFBS**



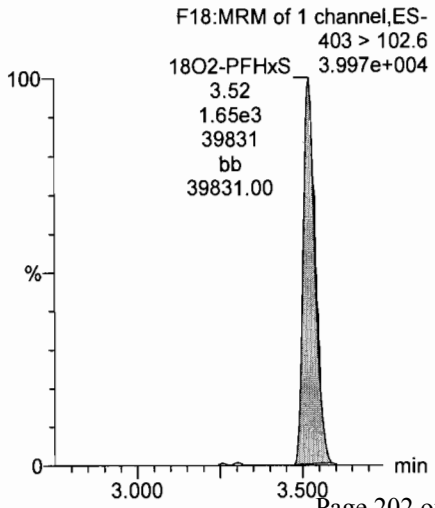

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

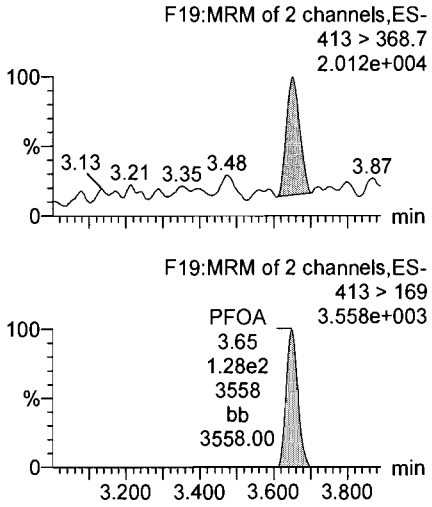


Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

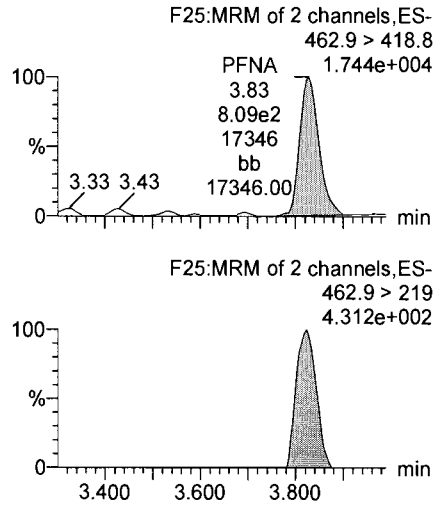
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_2, Date: 10-Jul-2017, Time: 16:35:25, ID: ST170710M3-1 PFC CS-2 17G1003, Description: PFC CS-2 17G1003**

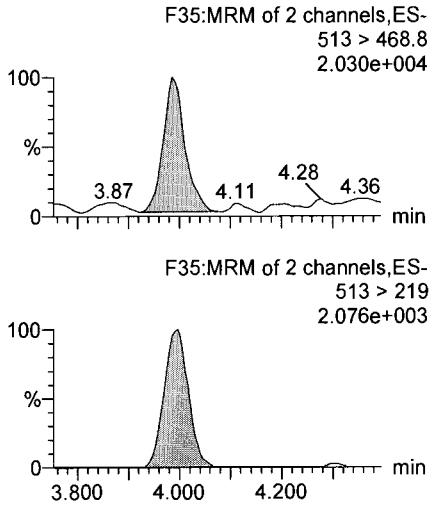
**Total PFOA**



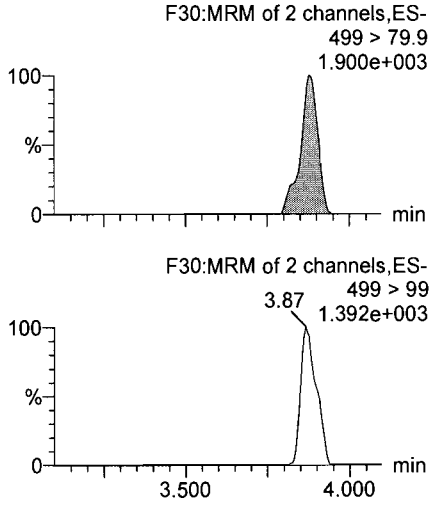

**PFNA**



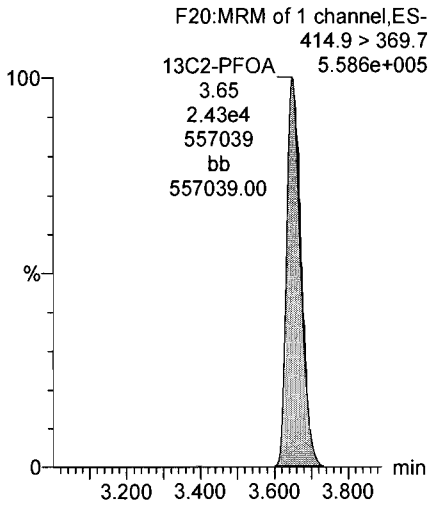

**PFDA**



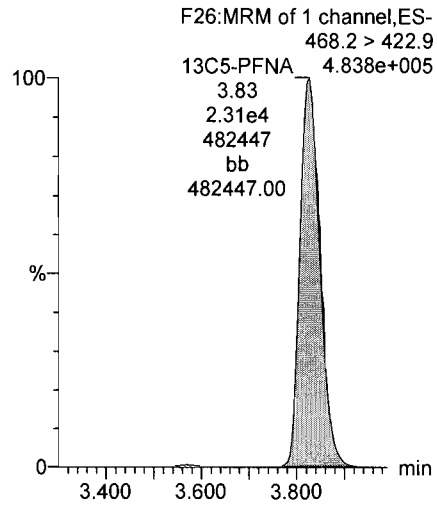

**Total PFOS**



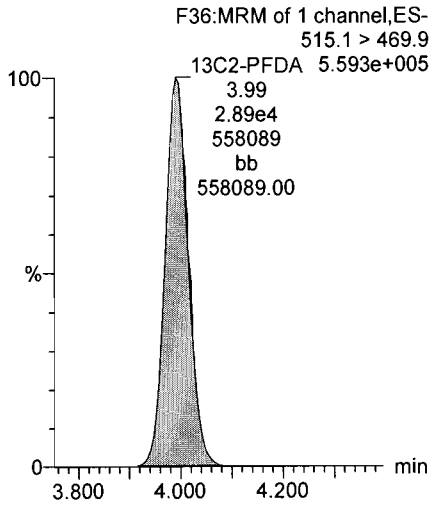

**13C2-PFOA**



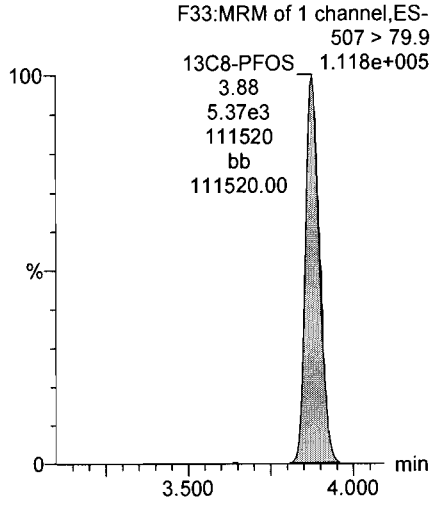

**13C5-PFNA**




**13C2-PFDA**




**13C8-PFOS**

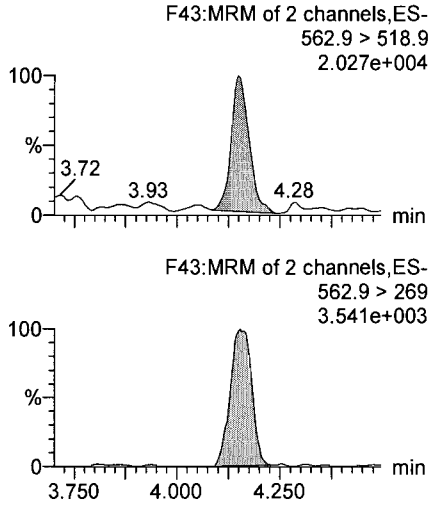


Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

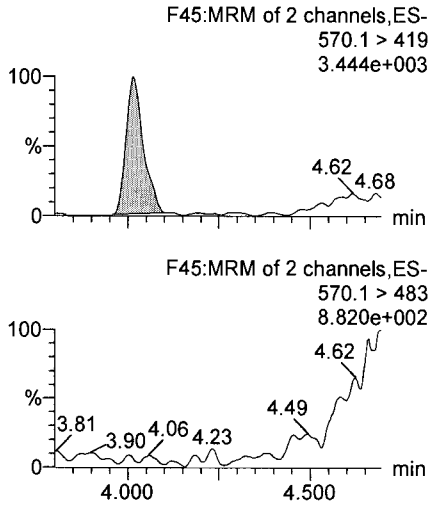
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_2, Date: 10-Jul-2017, Time: 16:35:25, ID: ST170710M3-1 PFC CS-2 17G1003, Description: PFC CS-2 17G1003**

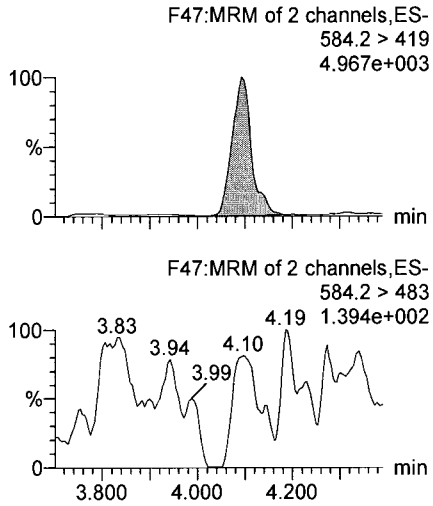
**PFUnA**



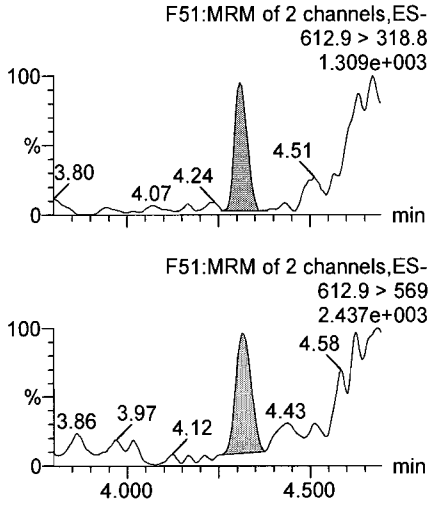

**N-MeFOSAA**



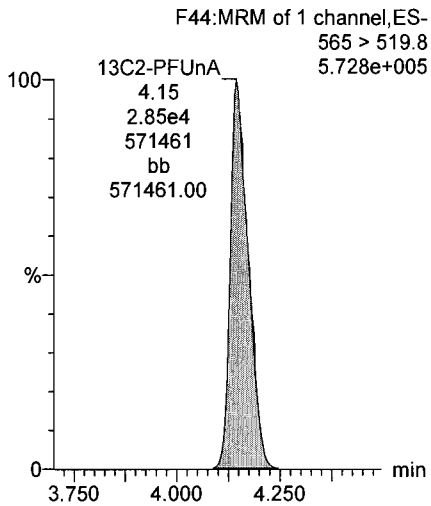

**N-EtFOSAA**



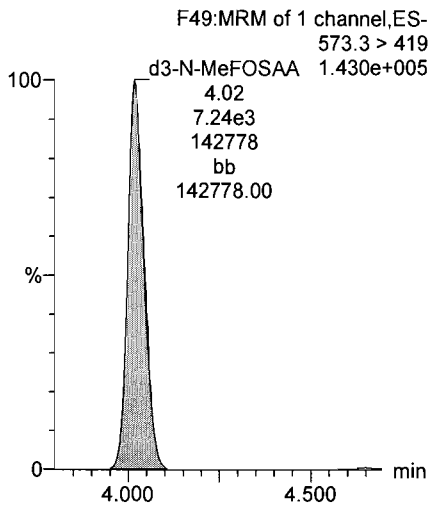

**PFDoA**



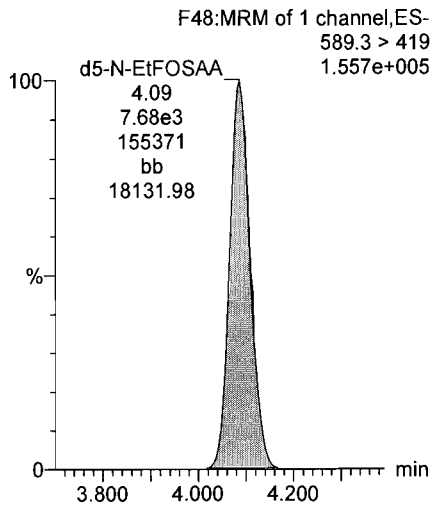

**13C2-PFUnA**



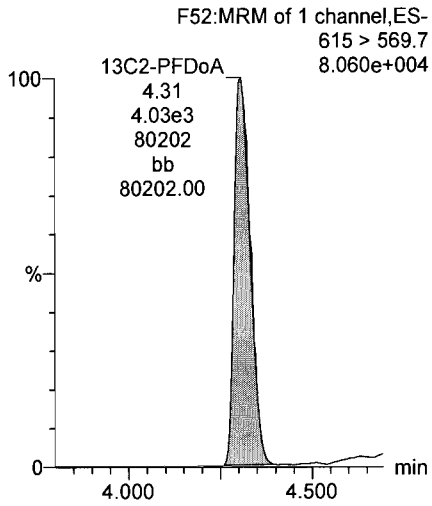

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**



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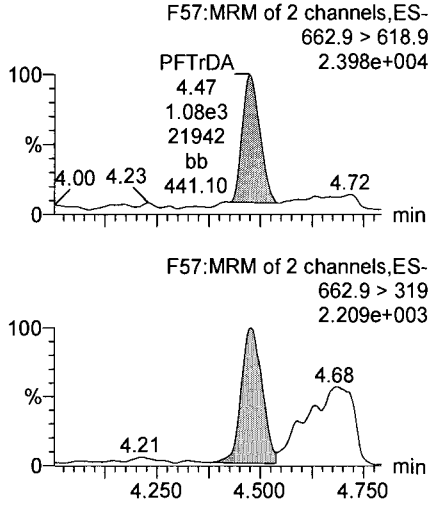
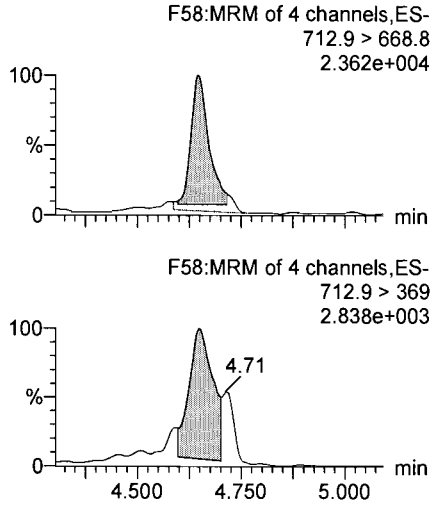
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_2, Date: 10-Jul-2017, Time: 16:35:25, ID: ST170710M3-1 PFC CS-2 17G1003, Description: PFC CS-2 17G1003**

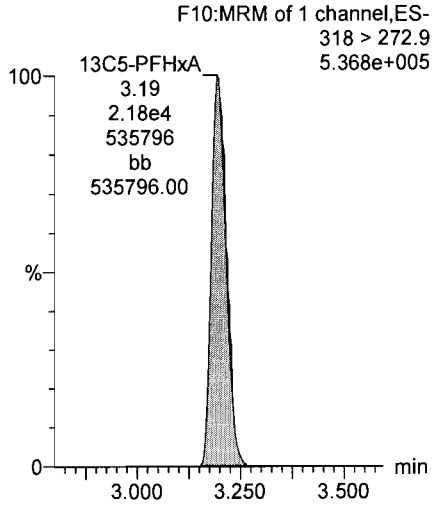
**PFTrDA**



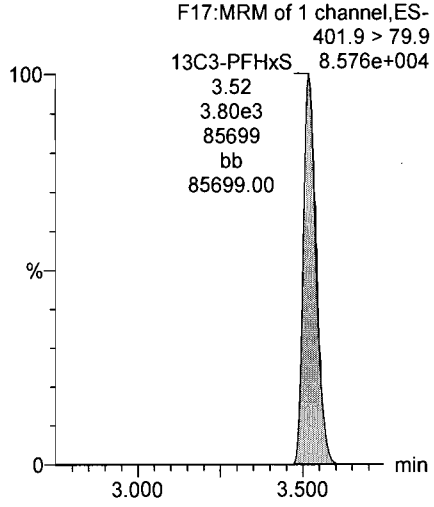

**PFTeDA**




**13C5-PFHxA**




**13C3-PFHxS**

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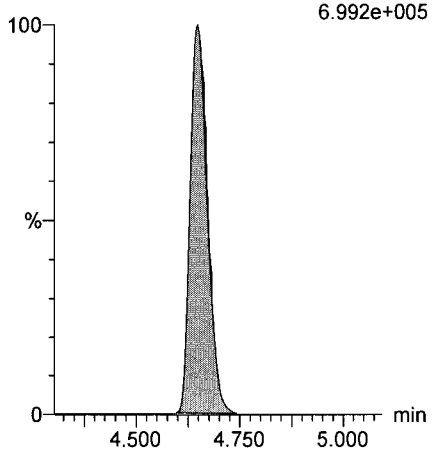
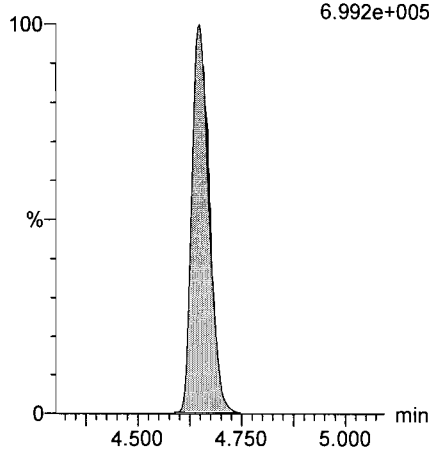
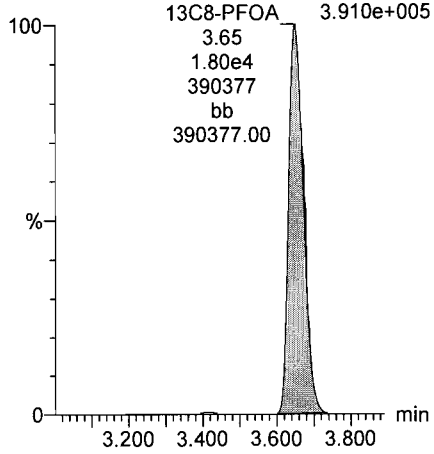


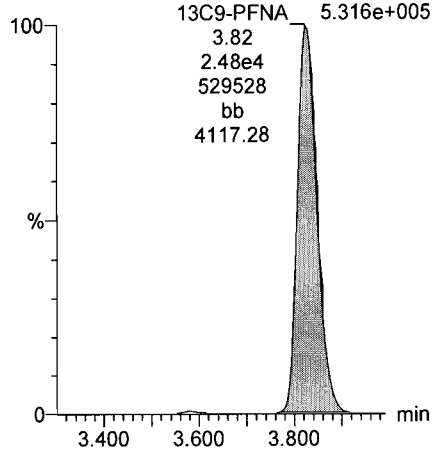

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**



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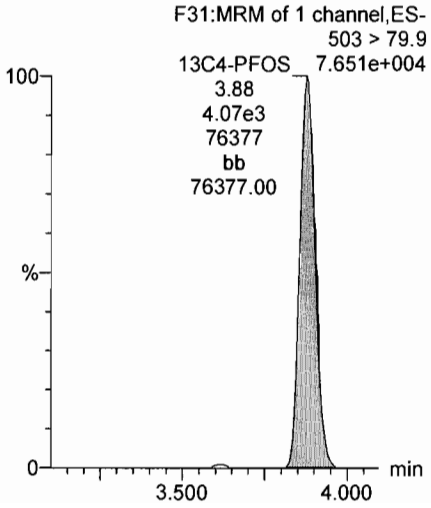
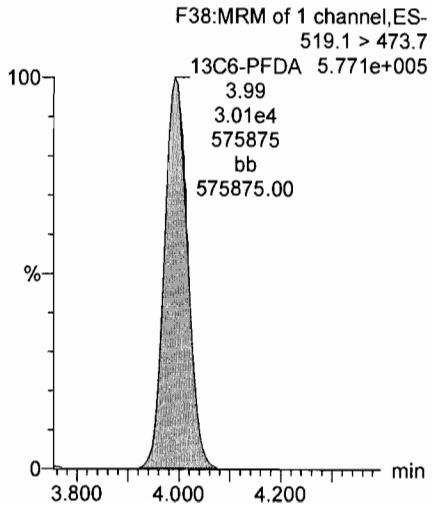
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_2, Date: 10-Jul-2017, Time: 16:35:25, ID: ST170710M3-1 PFC CS-2 17G1003, Description: PFC CS-2 17G1003**

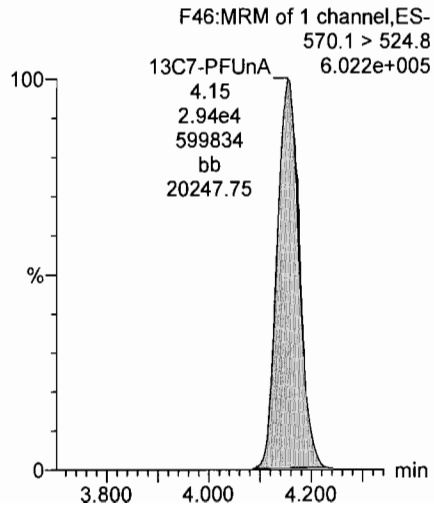
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



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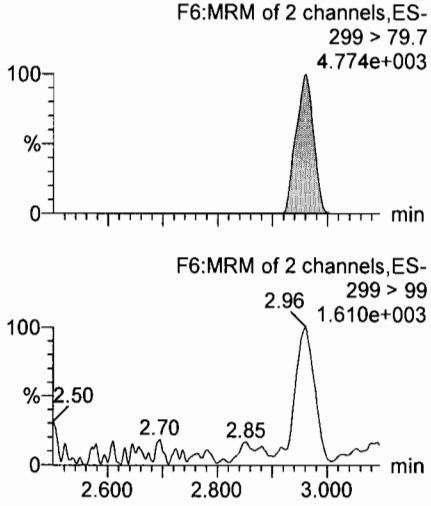
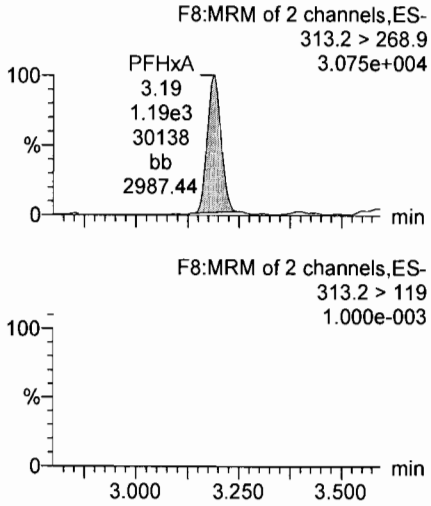
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_3, Date: 10-Jul-2017, Time: 16:46:13, ID: ST170710M3-2 PFC CS-1 17G1004, Description: PFC CS-1 17G1004**

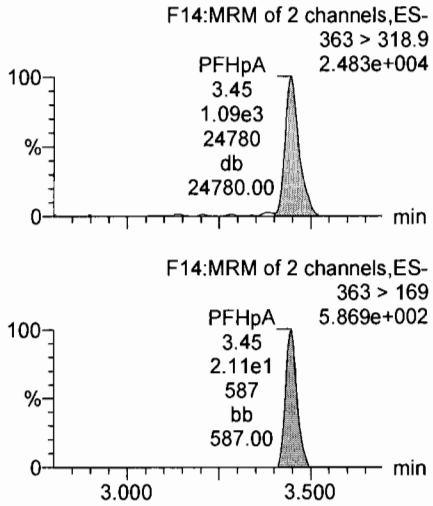
**Total PFBS**



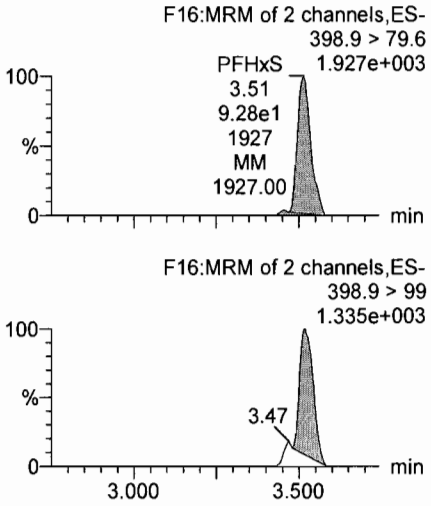

**PFHxA**




**PFHpA**




**Total PFHxS**

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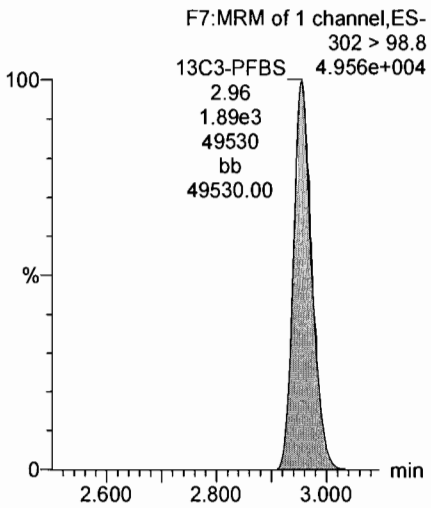
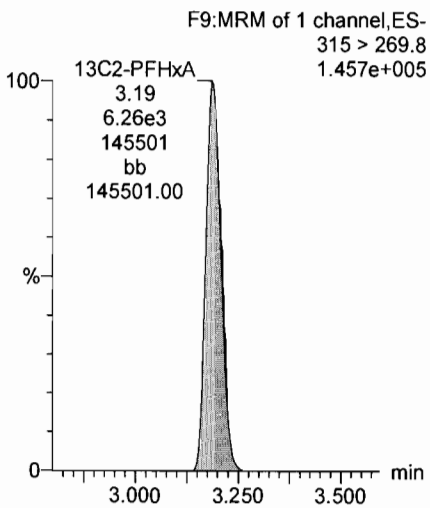
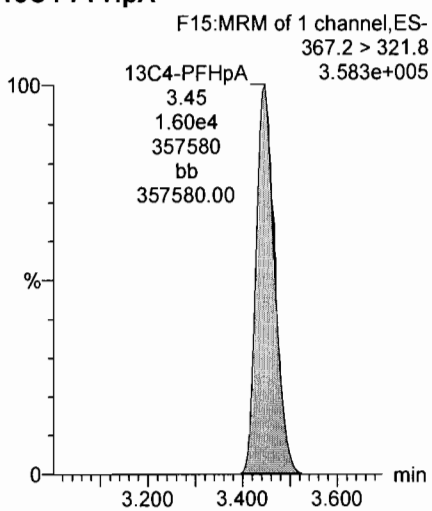



**13C2-PFHxA**




**13C4-PFHpA**

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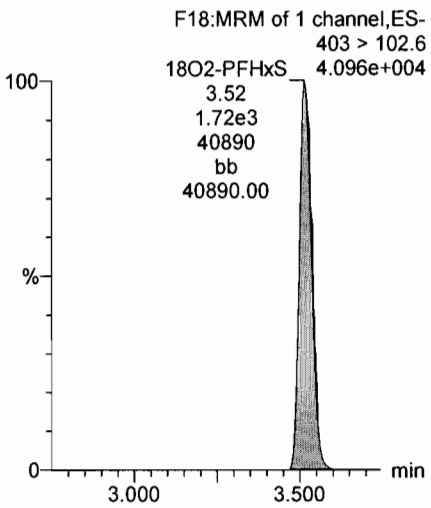

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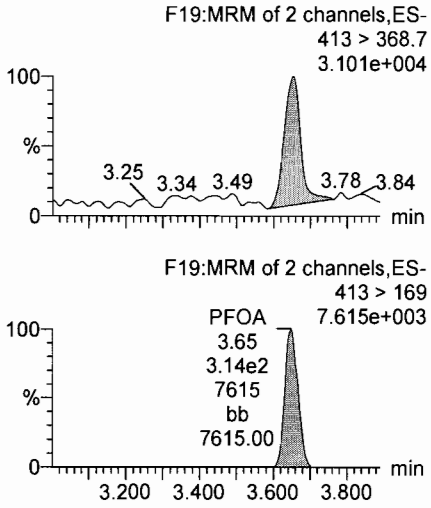
**Name: 170710M3_3, Date: 10-Jul-2017, Time: 16:46:13, ID: ST170710M3-2 PFC CS-1 17G1004, Description: PFC CS-1 17G1004**

**Total PFOA**

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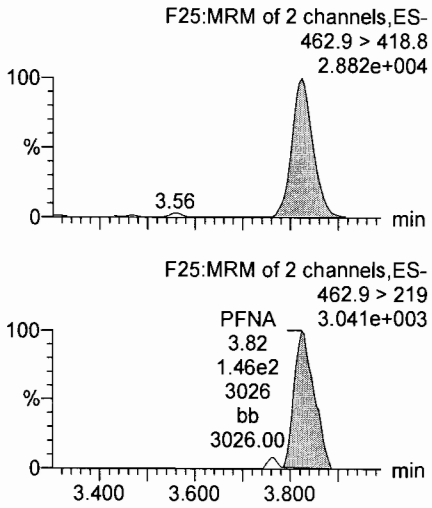


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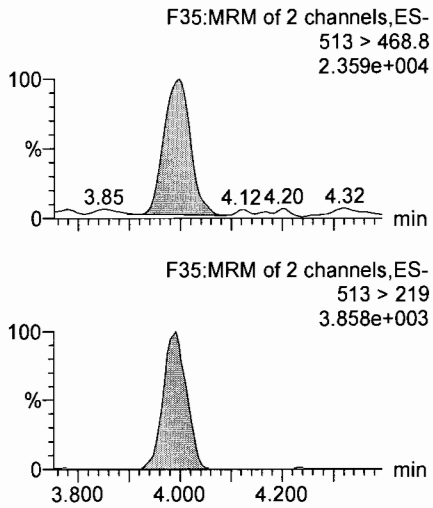
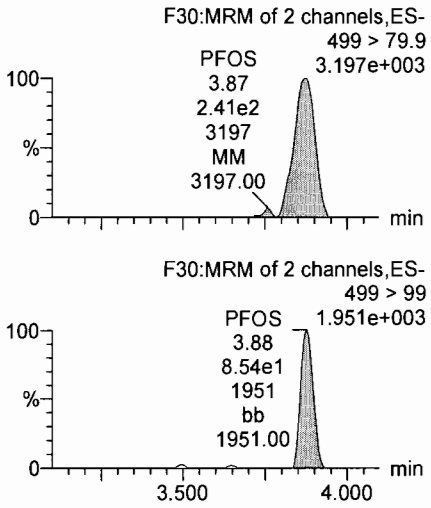
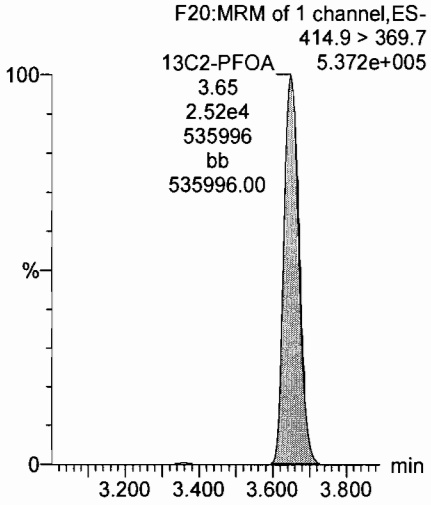


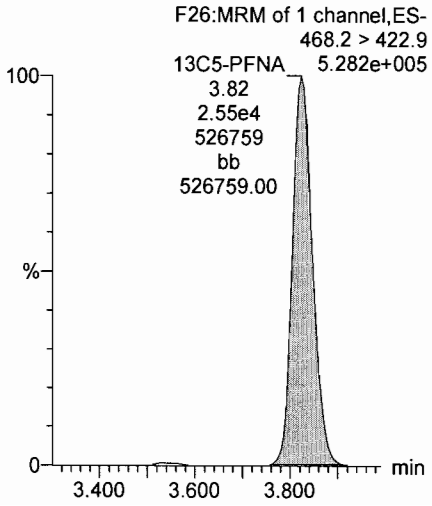

**Total PFOS**




**13C2-PFOA**




**13C5-PFNA**

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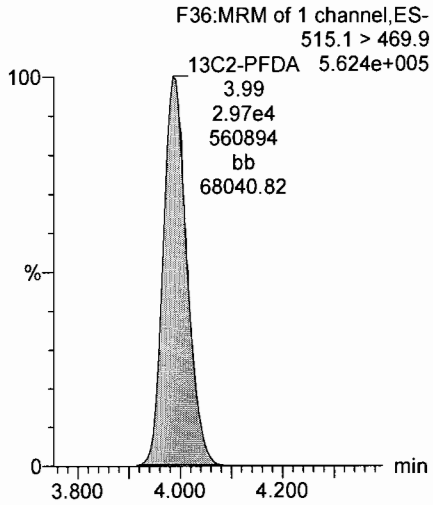
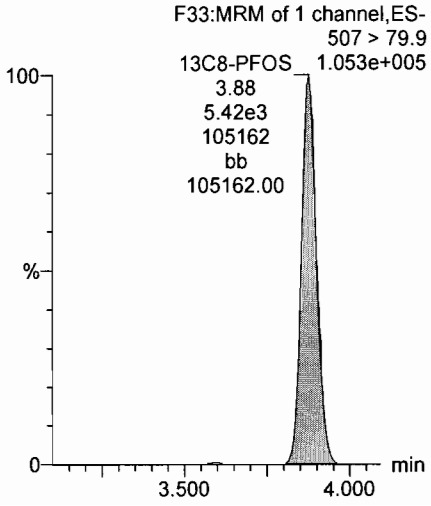



**13C8-PFOS**



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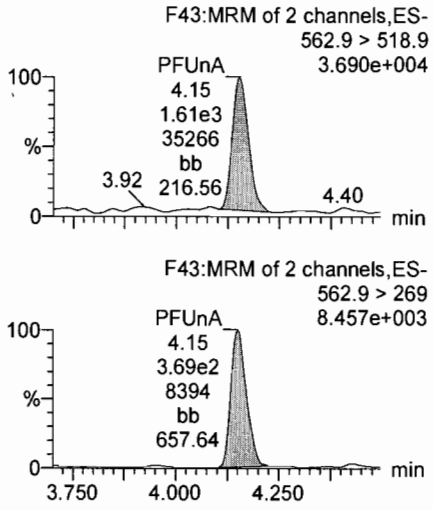
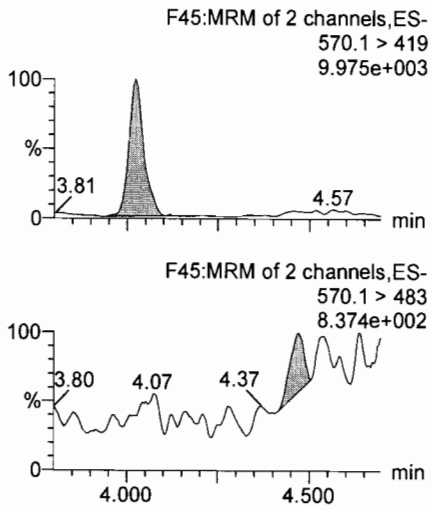
**Name: 170710M3_3, Date: 10-Jul-2017, Time: 16:46:13, ID: ST170710M3-2 PFC CS-1 17G1004, Description: PFC CS-1 17G1004**

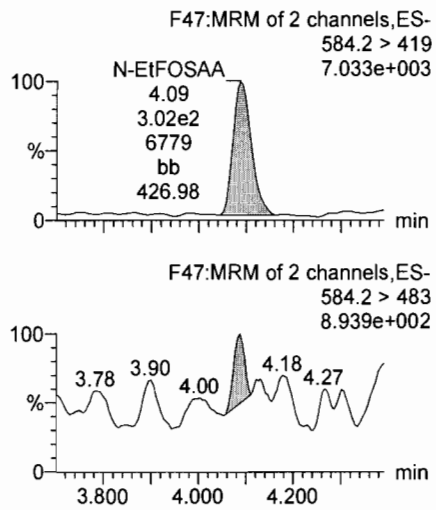
**PFUnA**



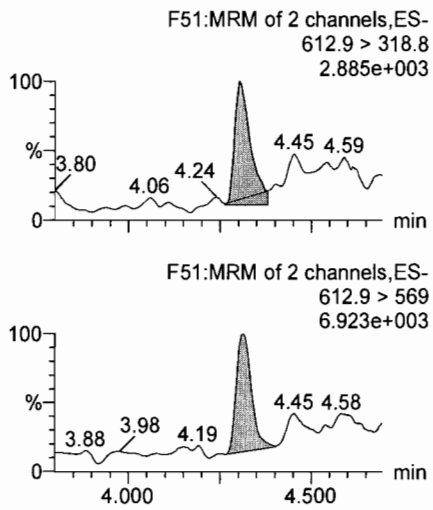

**N-MeFOSAA**



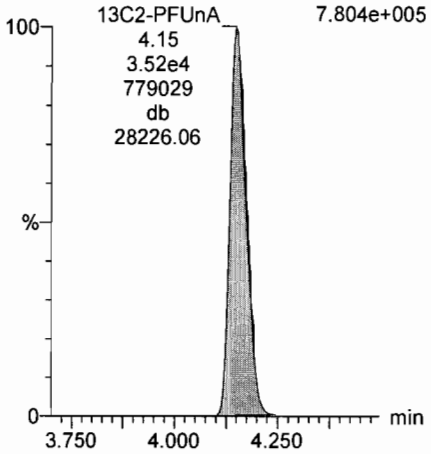

**N-EtFOSAA**



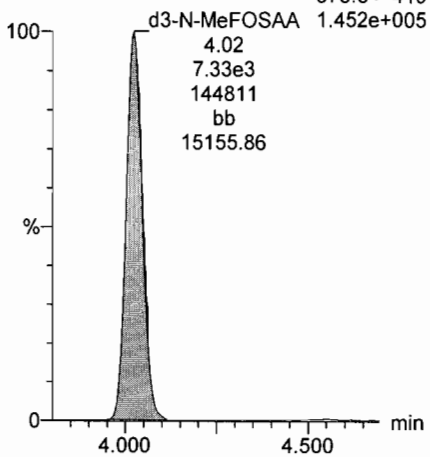

**PFDoA**



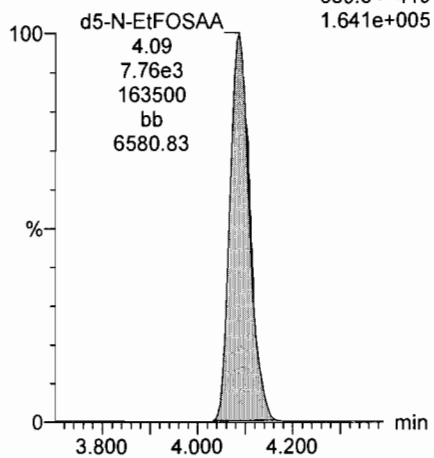

**13C2-PFUnA**



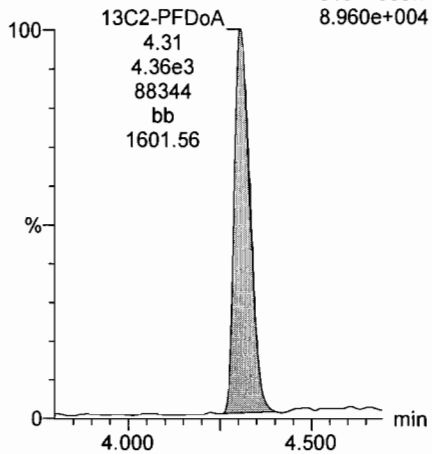

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**



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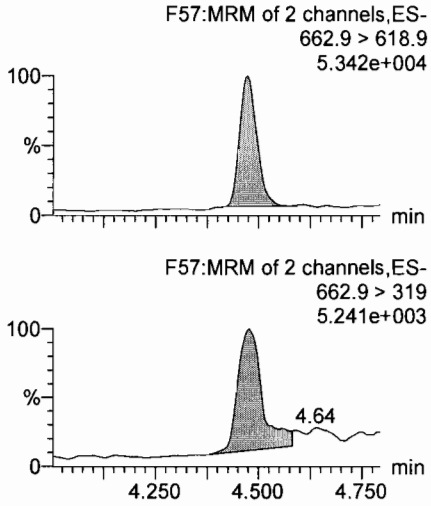
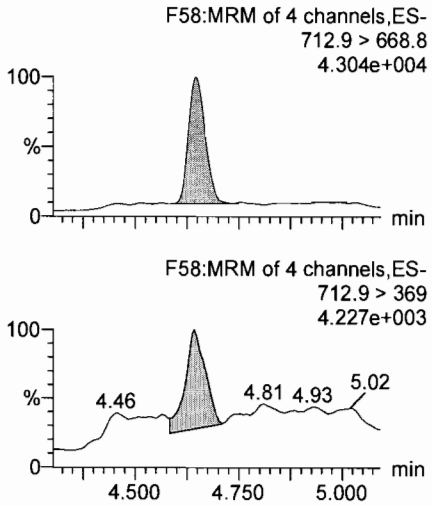
**Name: 170710M3_3, Date: 10-Jul-2017, Time: 16:46:13, ID: ST170710M3-2 PFC CS-1 17G1004, Description: PFC CS-1 17G1004**

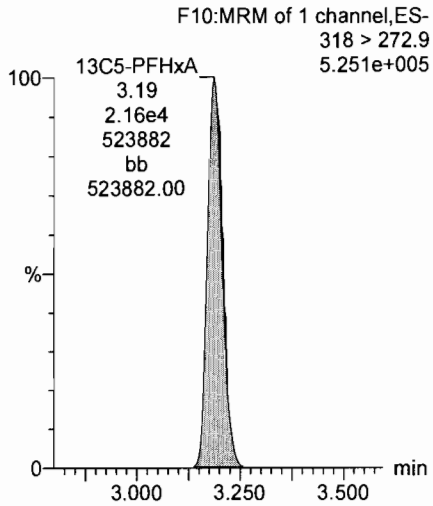
**PFTrDA**



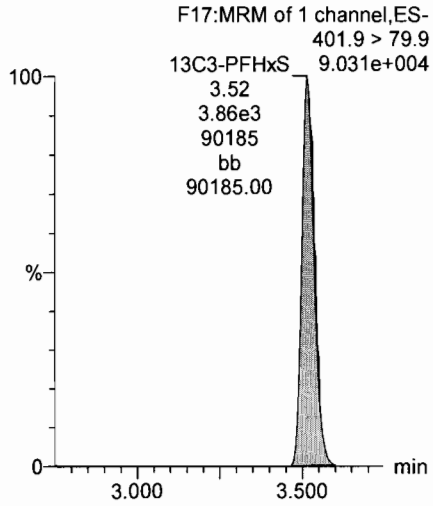

**PFTeDA**



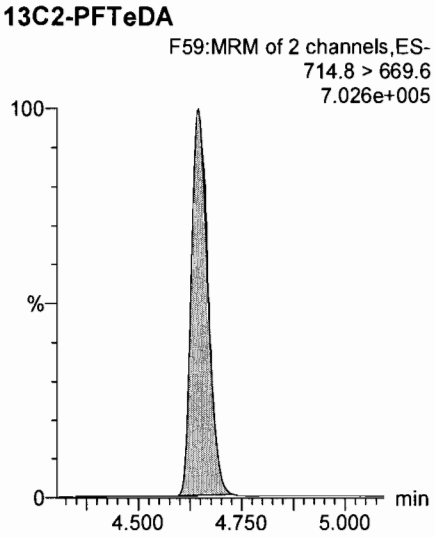

**13C5-PFHxA**



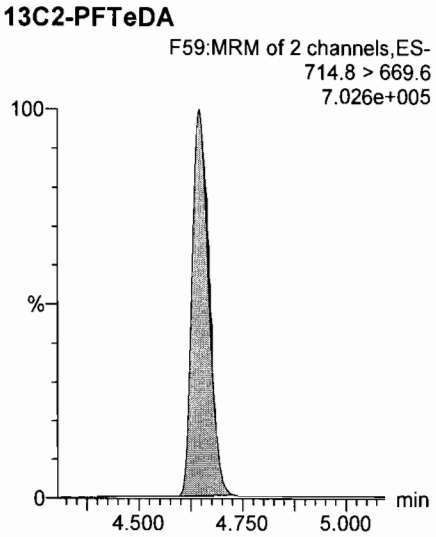

**13C3-PFHxS**



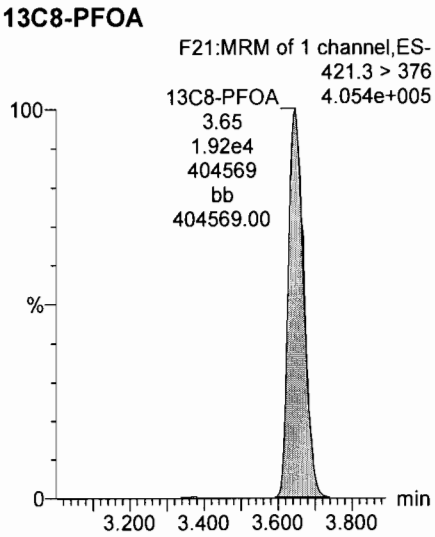

**13C2-PFTeDA**



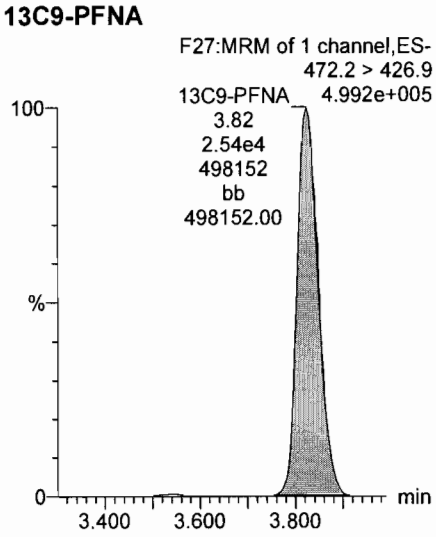

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**



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Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
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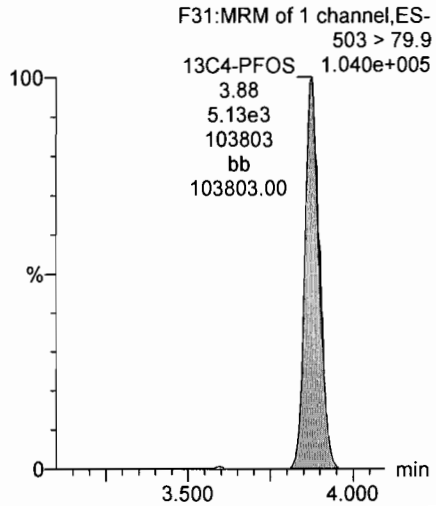
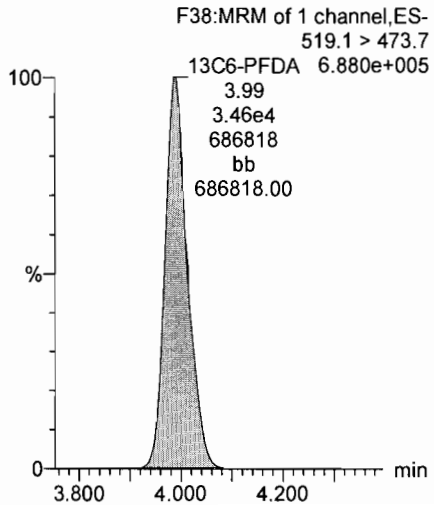
**Name: 170710M3_3, Date: 10-Jul-2017, Time: 16:46:13, ID: ST170710M3-2 PFC CS-1 17G1004, Description: PFC CS-1 17G1004**

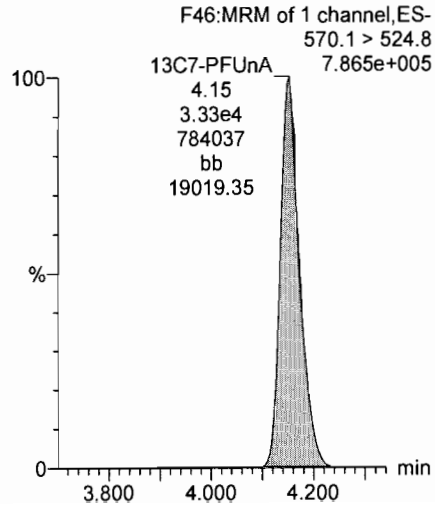
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



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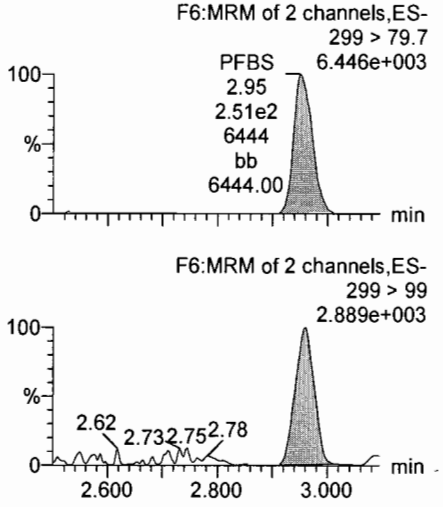
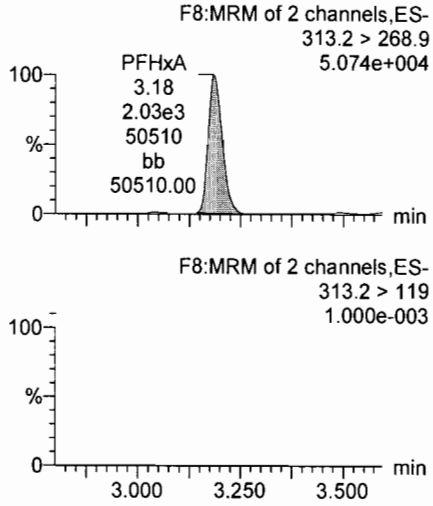
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_4, Date: 10-Jul-2017, Time: 16:56:56, ID: ST170710M3-3 PFC CS0 17G1005, Description: PFC CS0 17G1005**

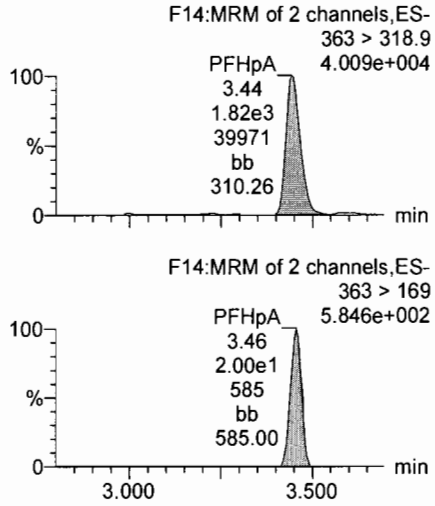
**Total PFBS**



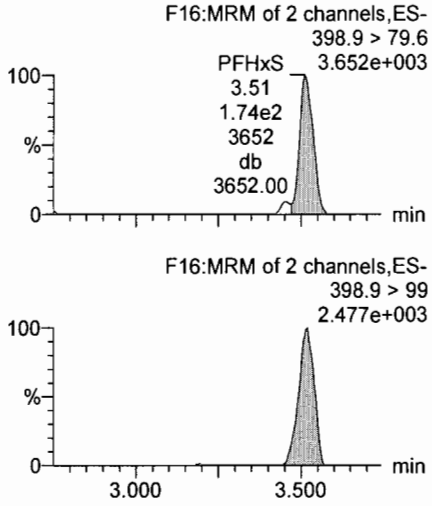

**PFHxA**



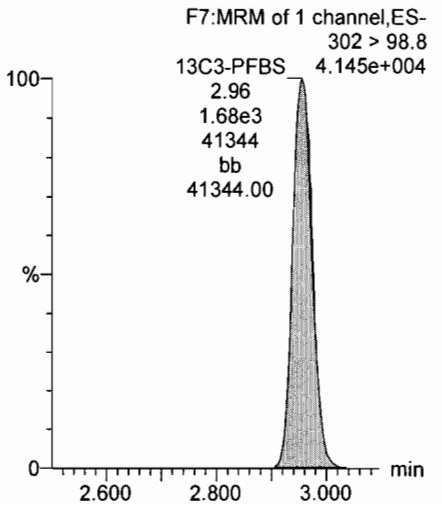

**PFHpA**



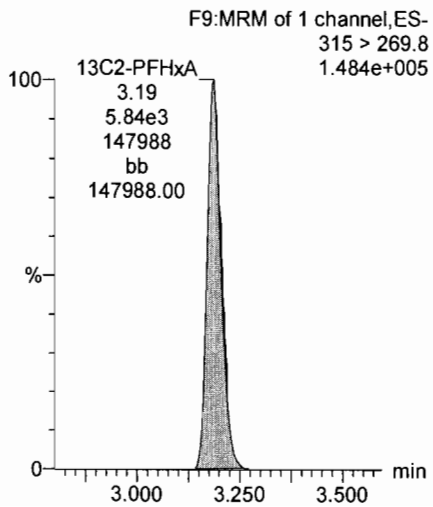

**Total PFHxS**



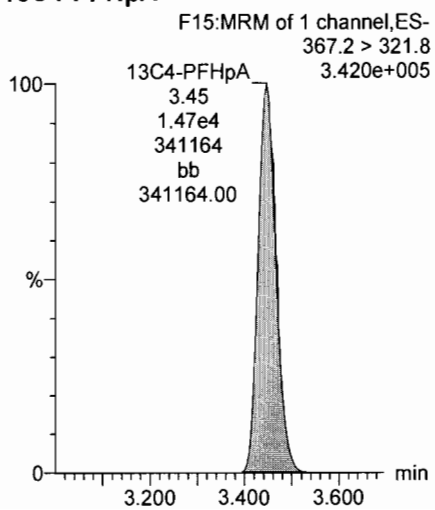

**13C3-PFBS**



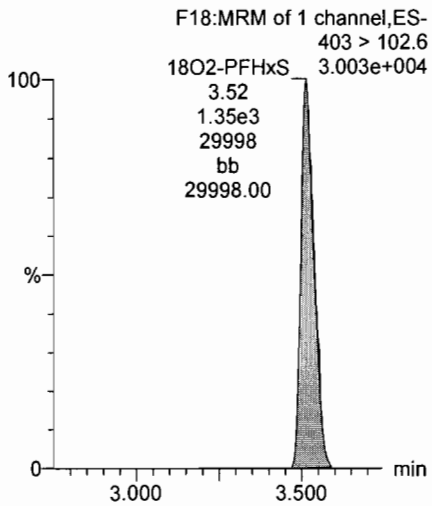

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**



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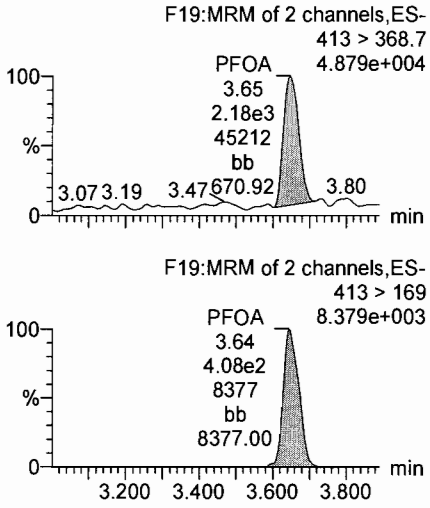
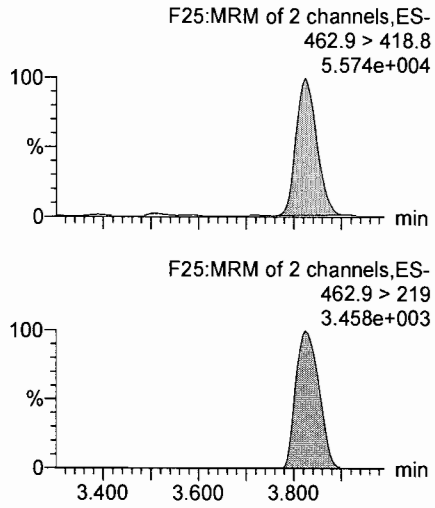
**Name: 170710M3_4, Date: 10-Jul-2017, Time: 16:56:56, ID: ST170710M3-3 PFC CS0 17G1005, Description: PFC CS0 17G1005**

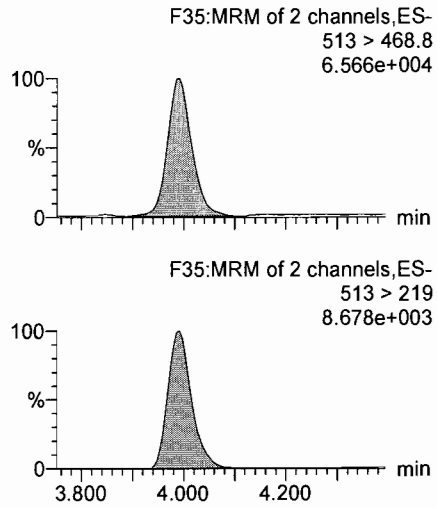
**Total PFOA**



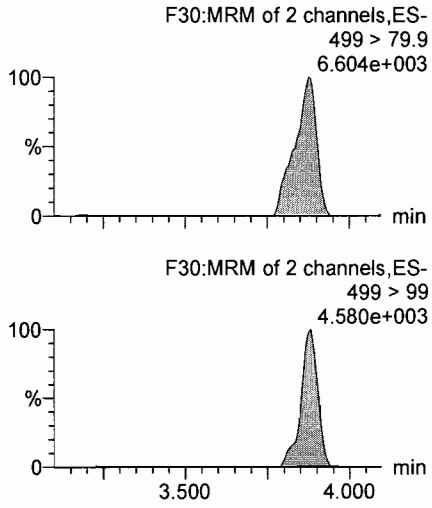

**PFNA**



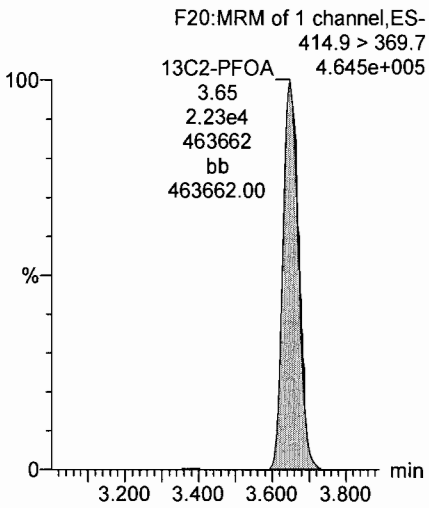

**PFDA**



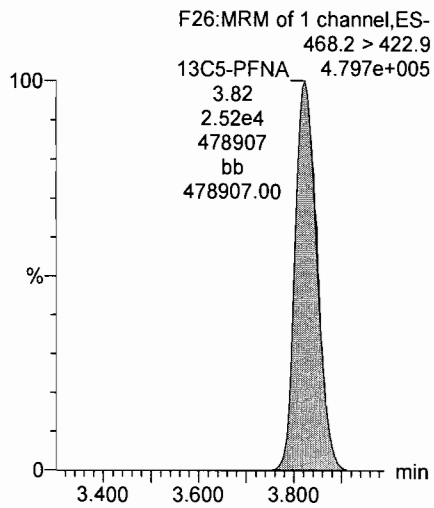

**Total PFOS**



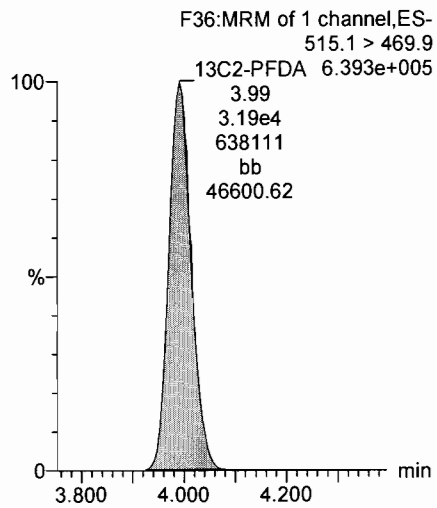

**13C2-PFOA**



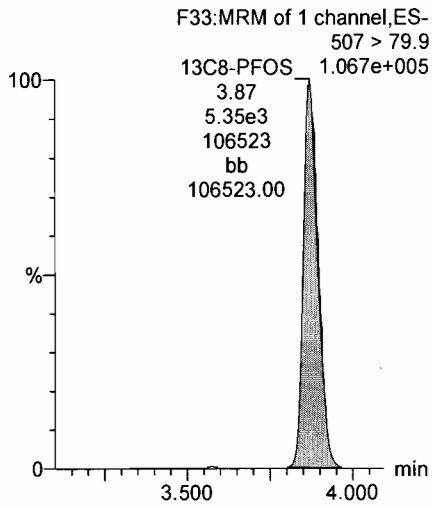

**13C5-PFNA**




**13C2-PFDA**




**13C8-PFOS**



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Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
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**Name: 170710M3_4, Date: 10-Jul-2017, Time: 16:56:56, ID: ST170710M3-3 PFC CS0 17G1005, Description: PFC CS0 17G1005**

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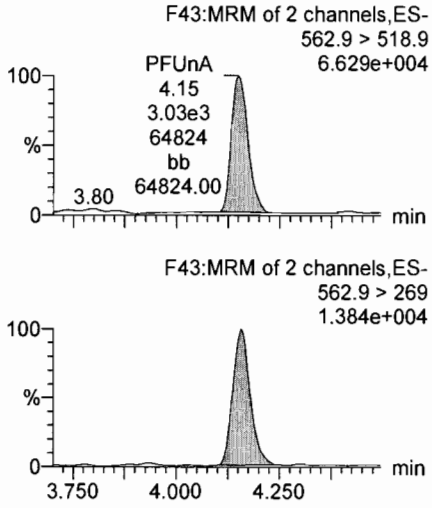
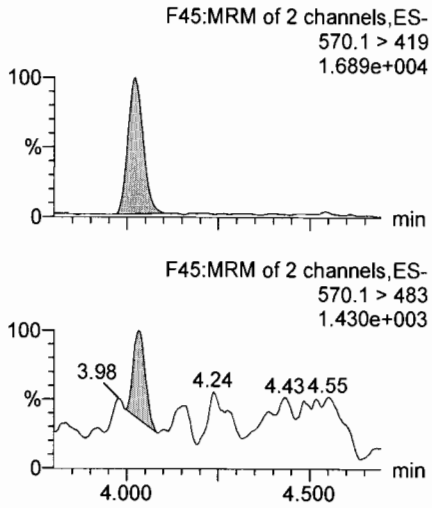
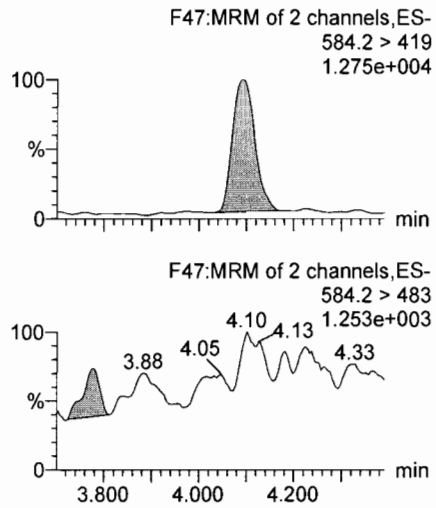


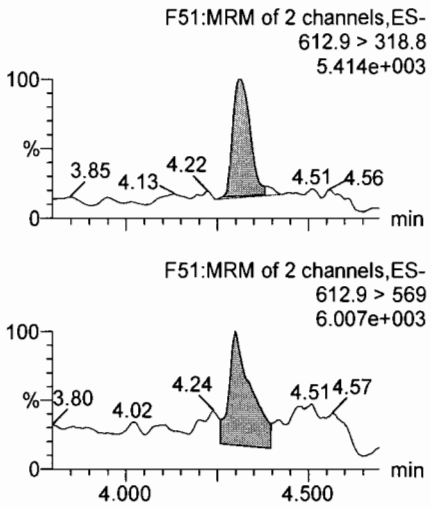

**N-MeFOSAA**



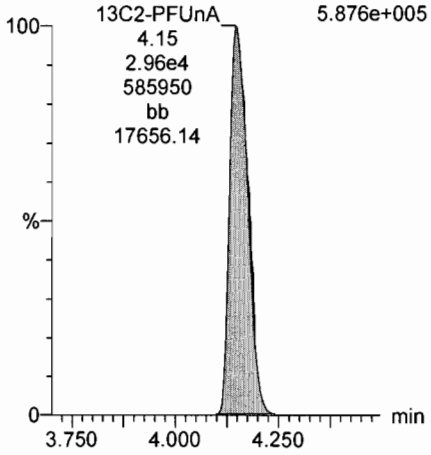

**N-EtFOSAA**



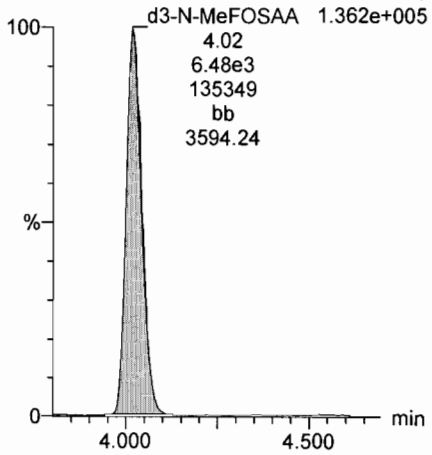

**PFDoA**



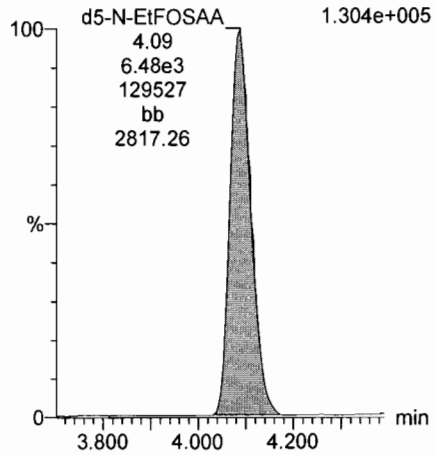

**13C2-PFUnA**



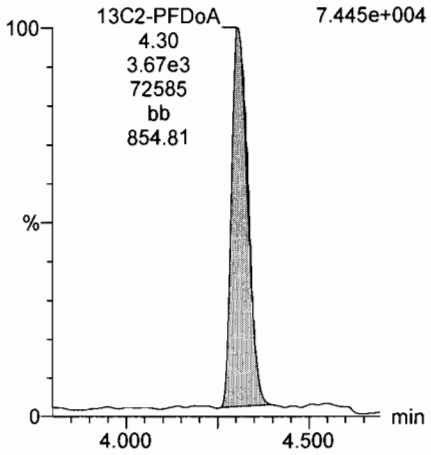

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**



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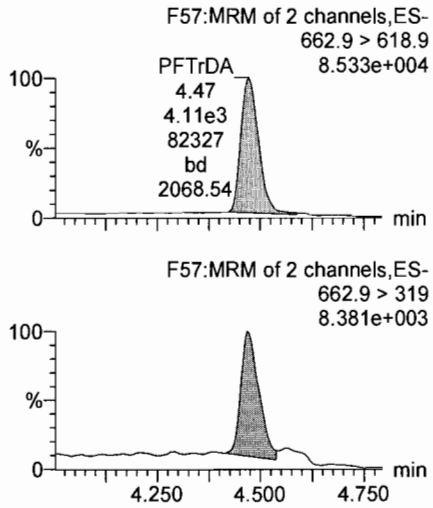
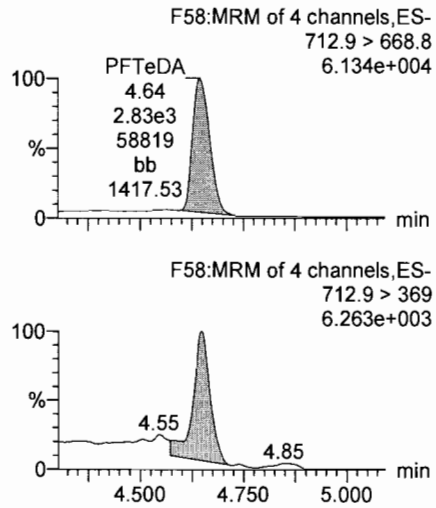
**Name: 170710M3_4, Date: 10-Jul-2017, Time: 16:56:56, ID: ST170710M3-3 PFC CS0 17G1005, Description: PFC CS0 17G1005**

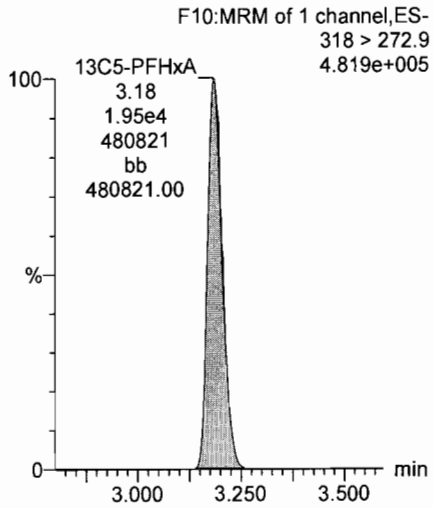
**PFTrDA**



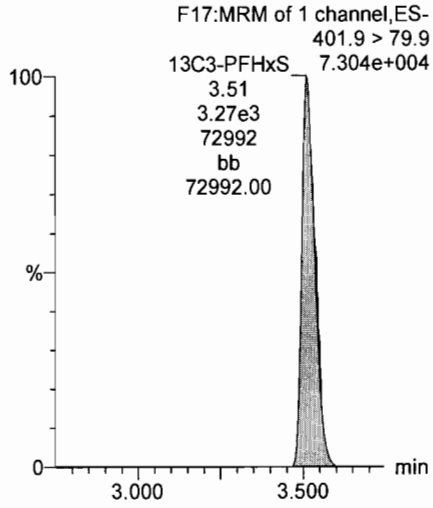

**PFTeDA**



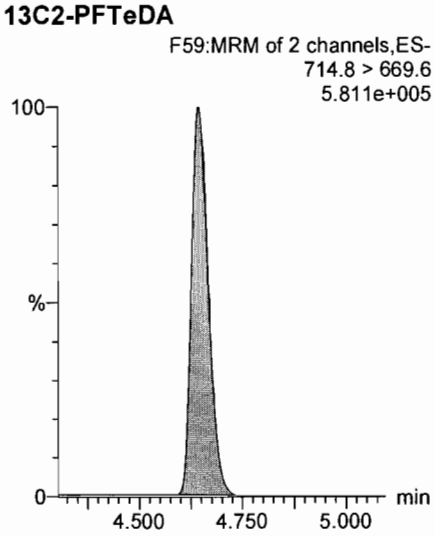

**13C5-PFHxA**



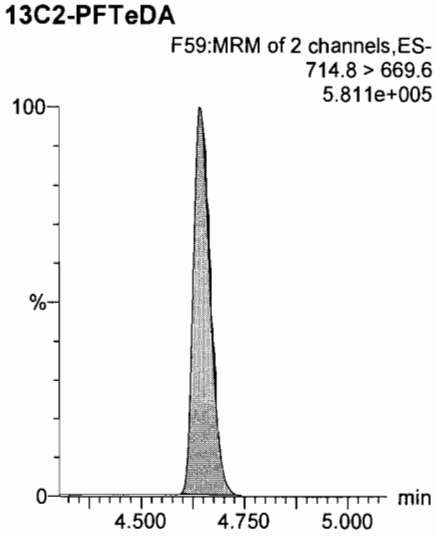

**13C3-PFHxS**



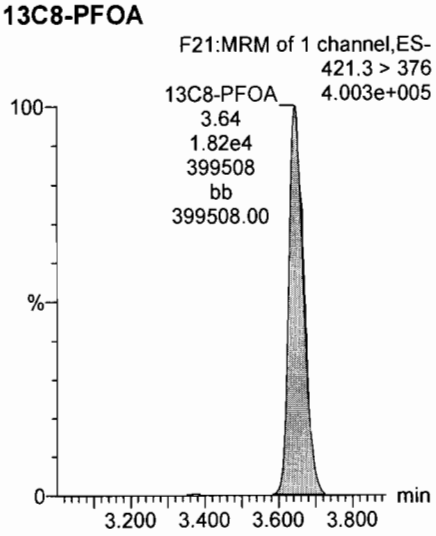

**13C2-PFTeDA**



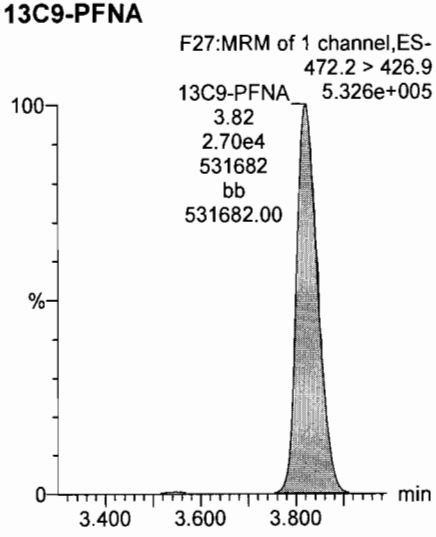

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**



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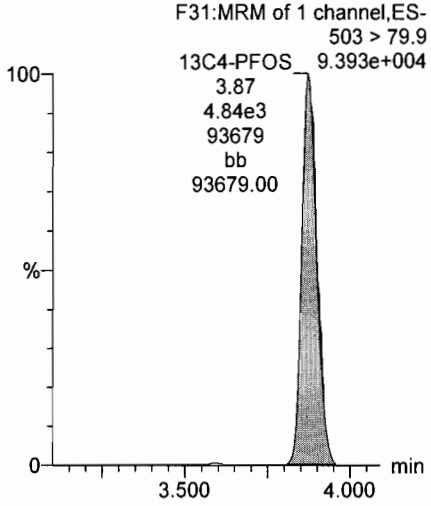
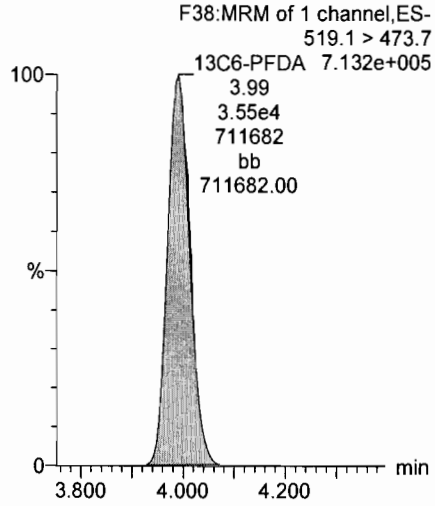
**Name: 170710M3_4, Date: 10-Jul-2017, Time: 16:56:56, ID: ST170710M3-3 PFC CS0 17G1005, Description: PFC CS0 17G1005**

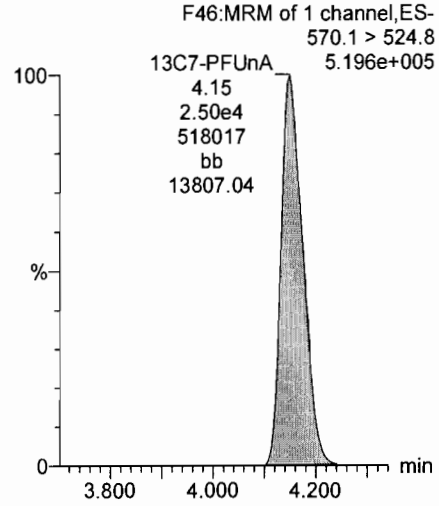
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



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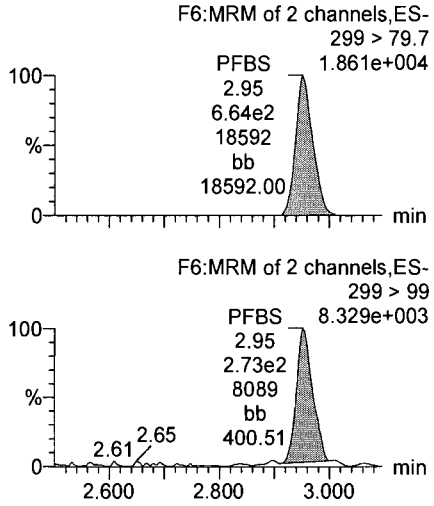
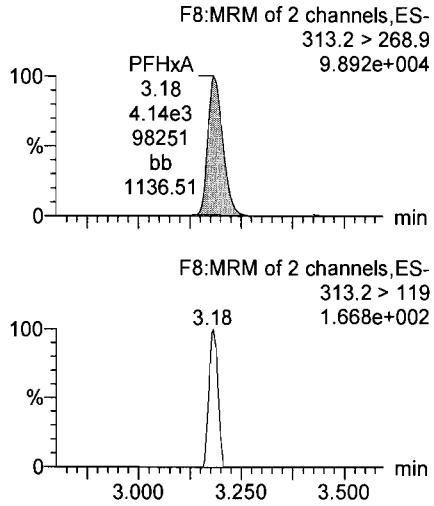
**Name: 170710M3_5, Date: 10-Jul-2017, Time: 17:07:35, ID: ST170710M3-4 PFC CS1 17G1006, Description: PFC CS1 17G1006**

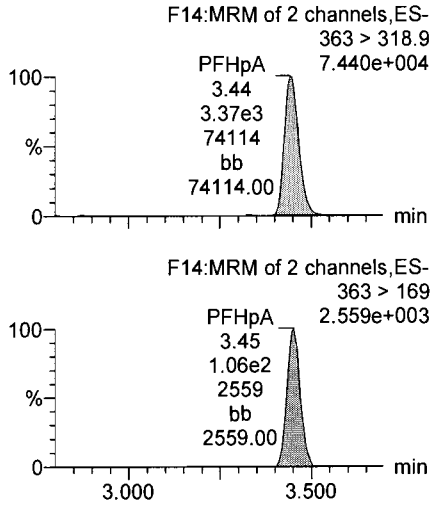
**Total PFBS**



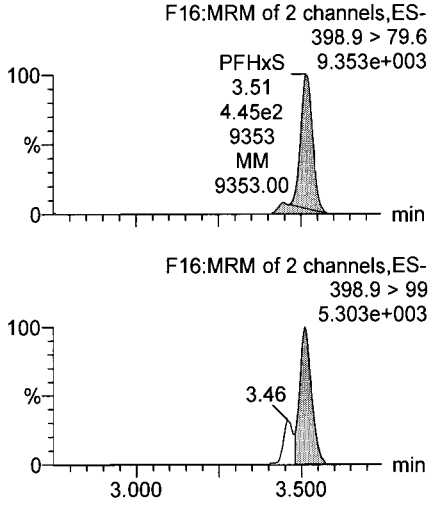

**PFHxA**



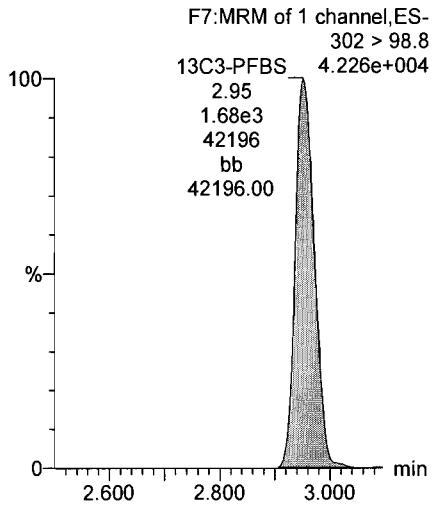

**PFHpA**



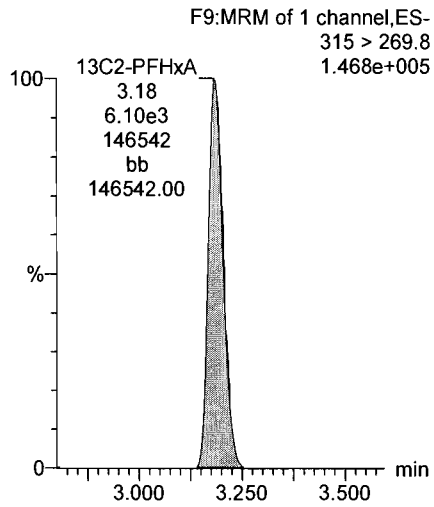

**Total PFHxS**



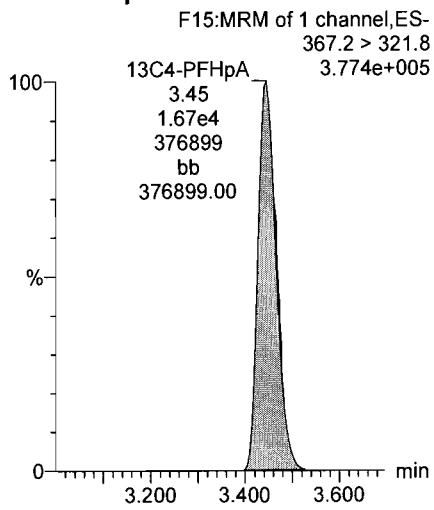

**13C3-PFBS**



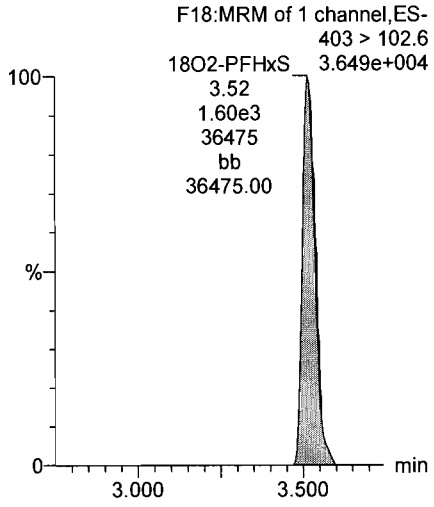

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**



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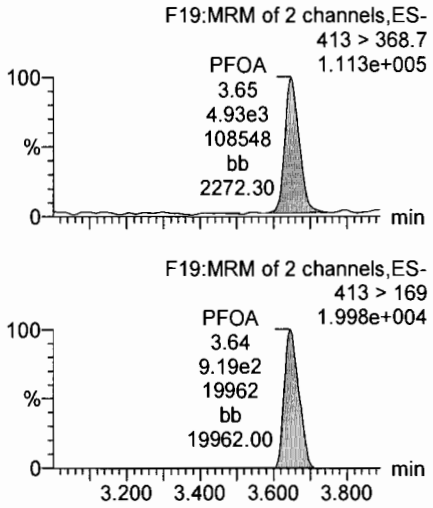
**Name: 170710M3_5, Date: 10-Jul-2017, Time: 17:07:35, ID: ST170710M3-4 PFC CS1 17G1006, Description: PFC CS1 17G1006**

**Total PFOA**

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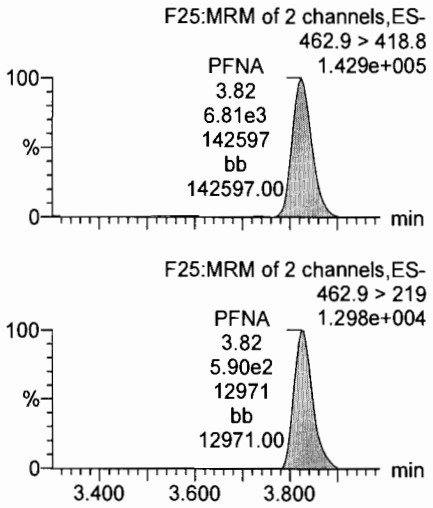


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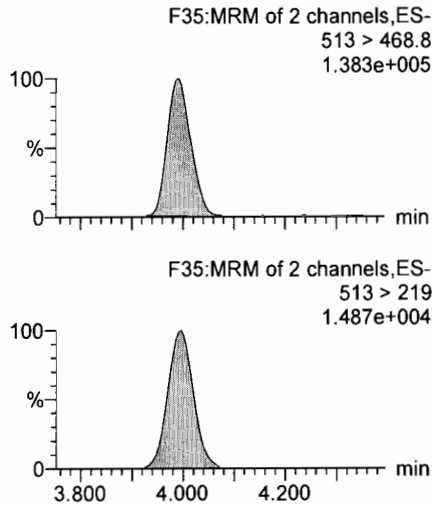
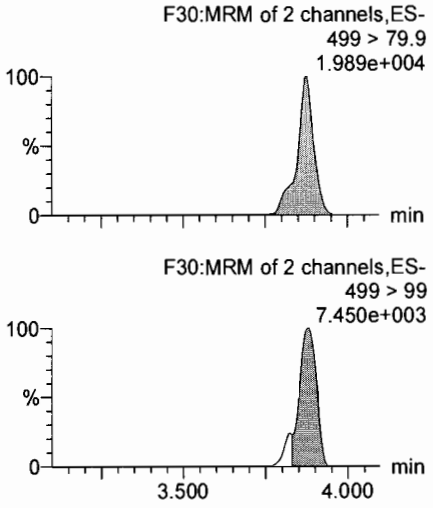
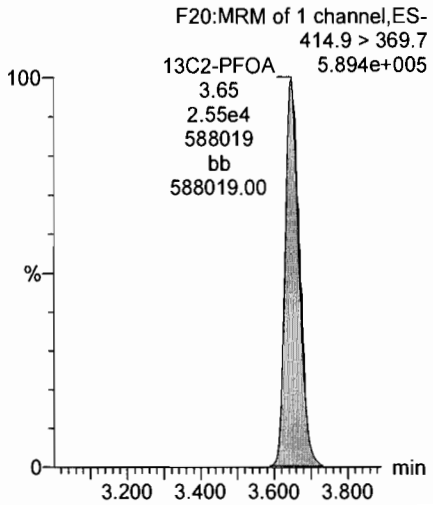


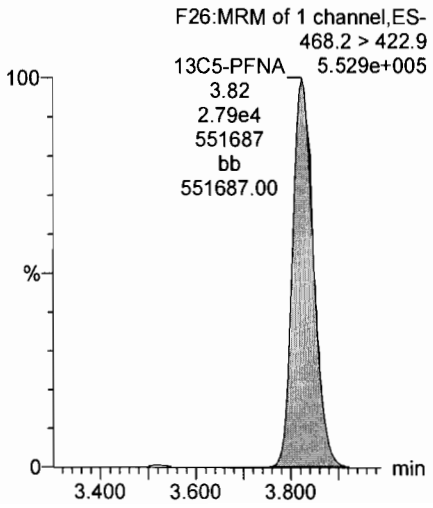

**Total PFOS**




**13C2-PFOA**




**13C5-PFNA**

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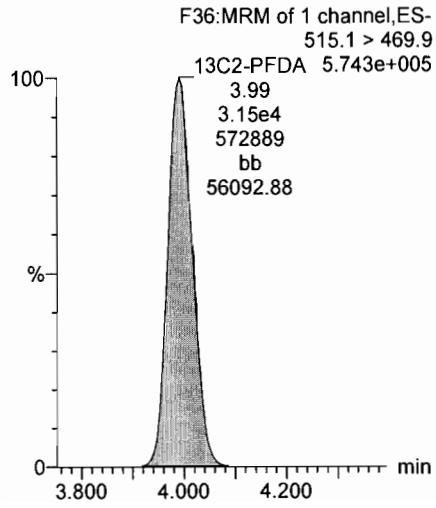
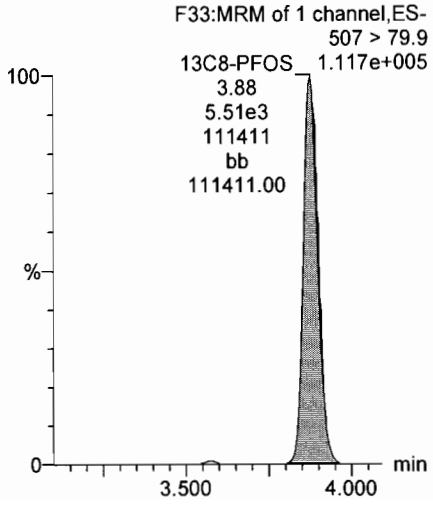



**13C8-PFOS**



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Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
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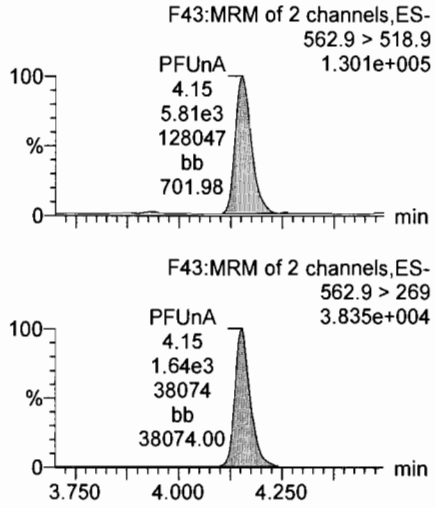
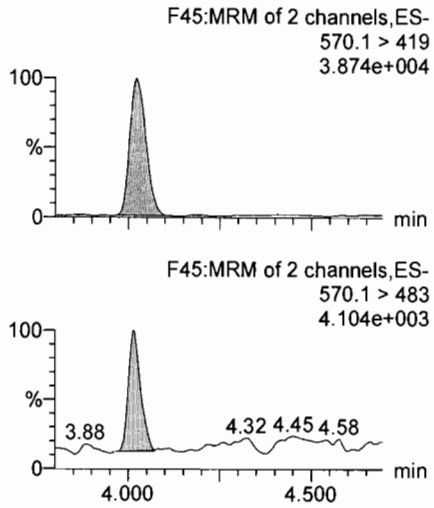
**Name: 170710M3_5, Date: 10-Jul-2017, Time: 17:07:35, ID: ST170710M3-4 PFC CS1 17G1006, Description: PFC CS1 17G1006**

**PFUnA**




**N-MeFOSAA**

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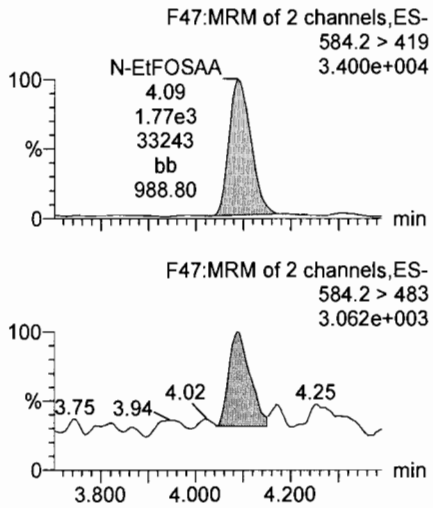
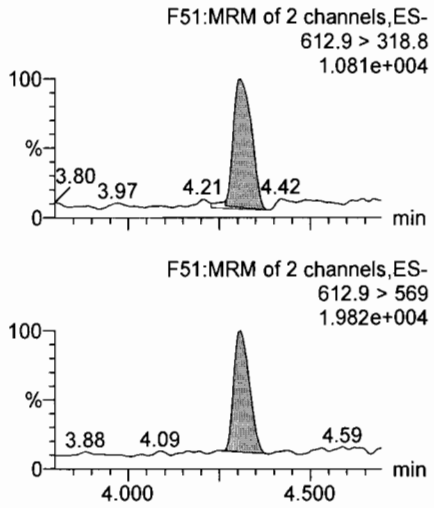
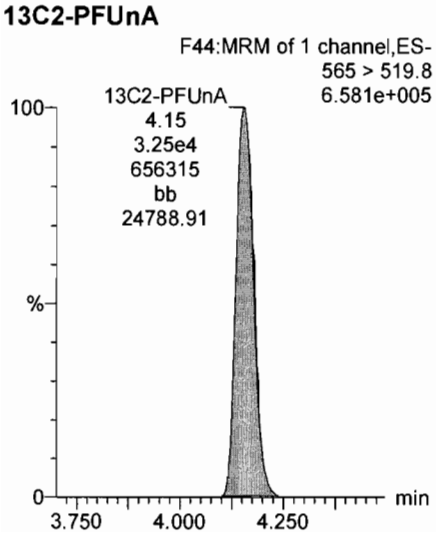


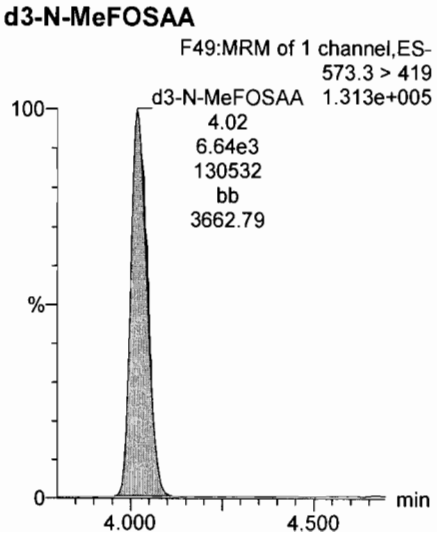

**PFDoA**




**13C2-PFUnA**




**d3-N-MeFOSAA**

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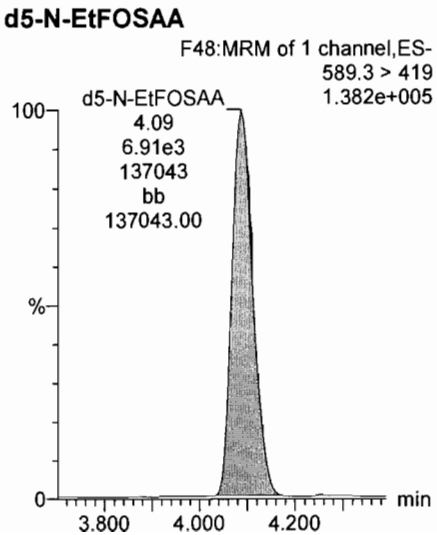
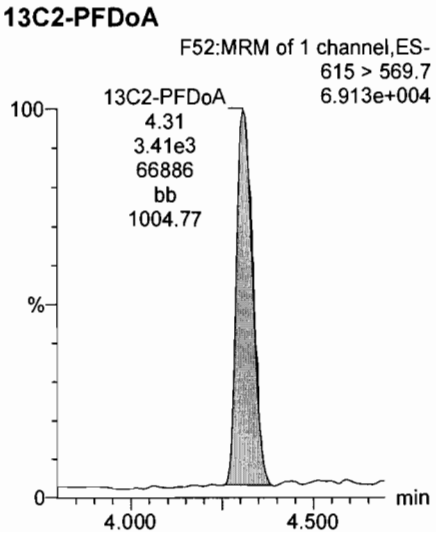



**13C2-PFDoA**



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**Name: 170710M3_5, Date: 10-Jul-2017, Time: 17:07:35, ID: ST170710M3-4 PFC CS1 17G1006, Description: PFC CS1 17G1006**

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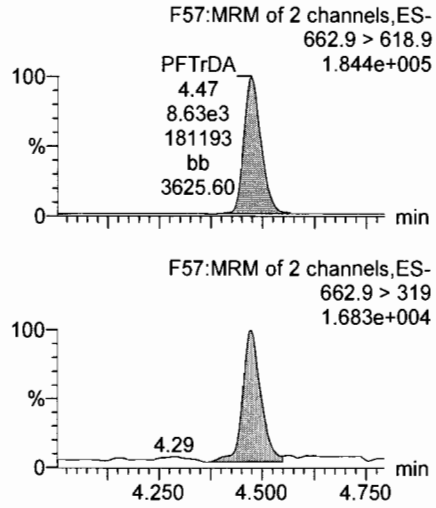
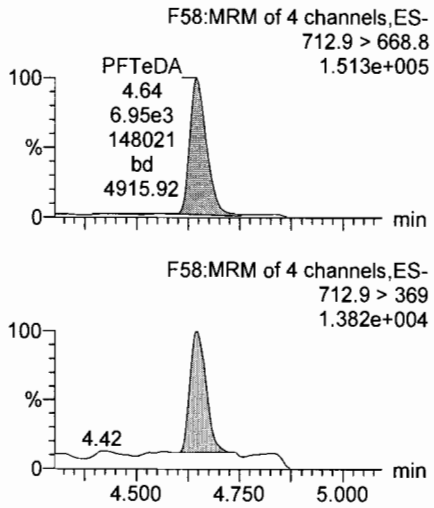
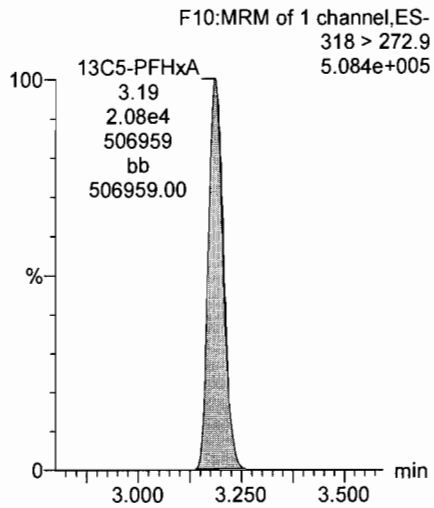


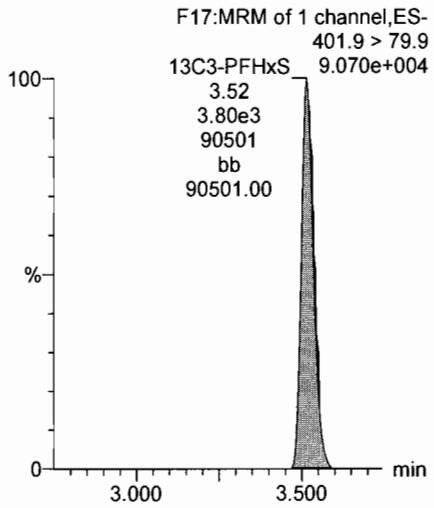

**PFTeDA**




**13C5-PFHxA**




**13C3-PFHxS**

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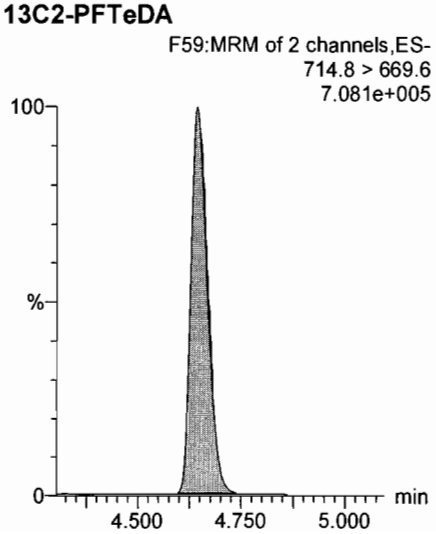
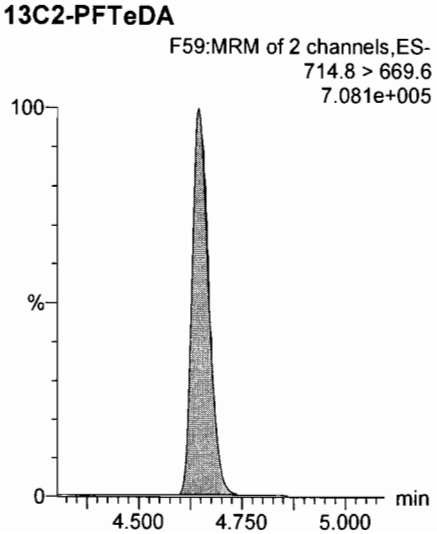
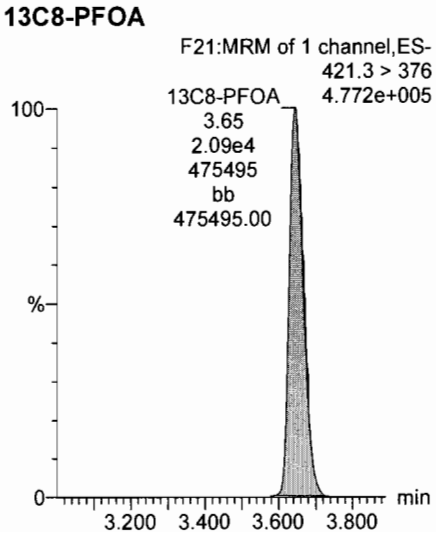



**13C2-PFTeDA**




**13C8-PFOA**

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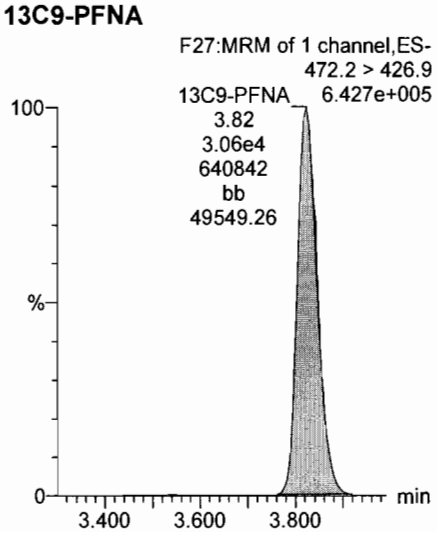

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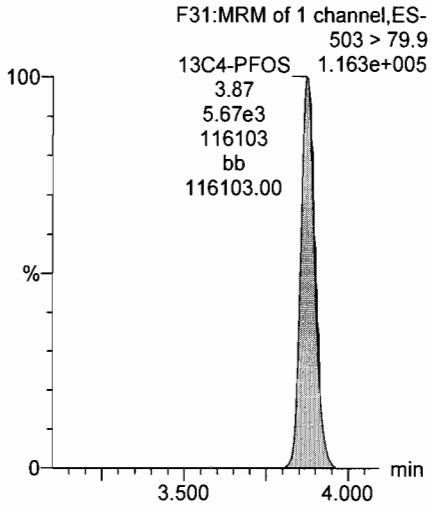
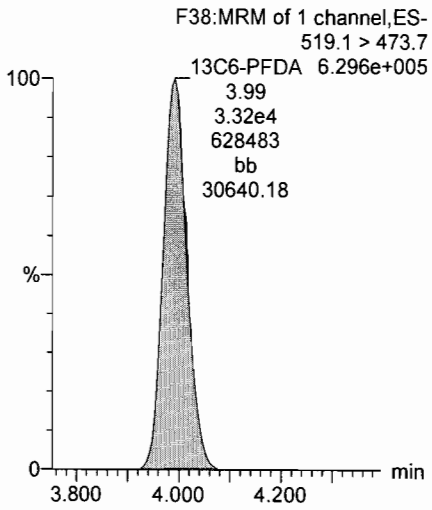
**Name: 170710M3_5, Date: 10-Jul-2017, Time: 17:07:35, ID: ST170710M3-4 PFC CS1 17G1006, Description: PFC CS1 17G1006**

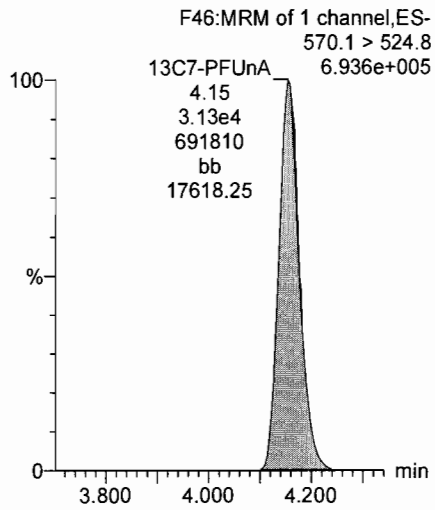
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



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Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
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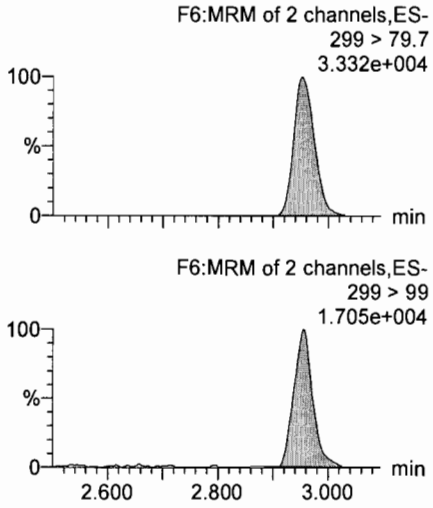
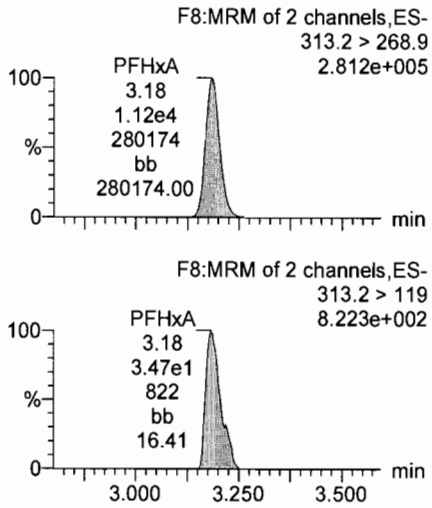
**Name: 170710M3_6, Date: 10-Jul-2017, Time: 17:18:21, ID: ST170710M3-5 PFC CS2 17G1007, Description: PFC CS2 17G1007**

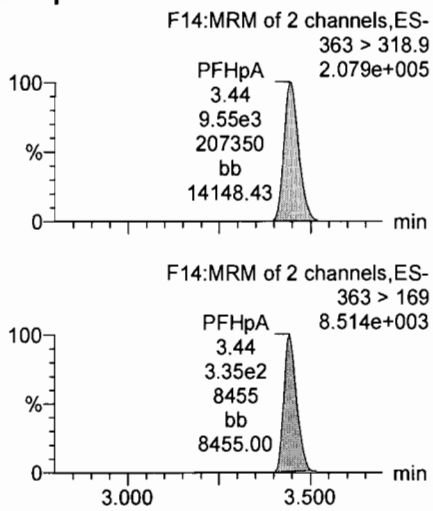
**Total PFBS**



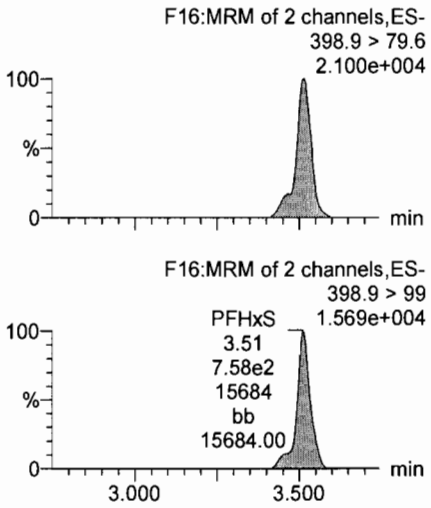

**PFHxA**




**PFHpA**




**Total PFHxS**

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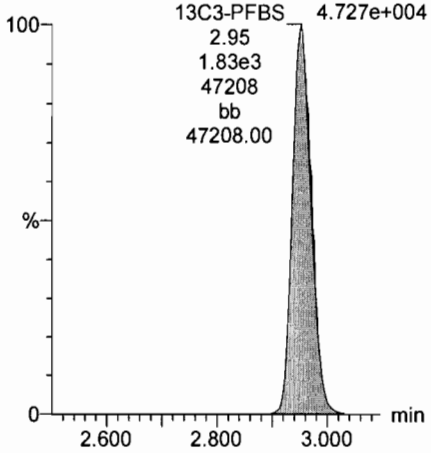
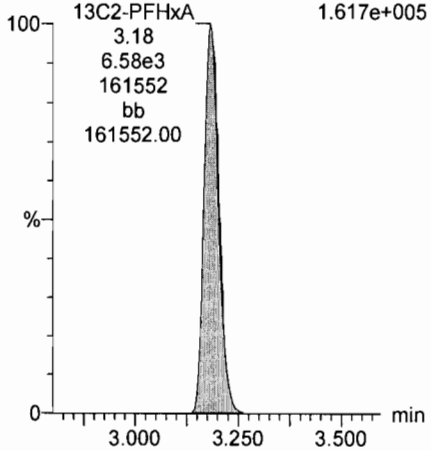
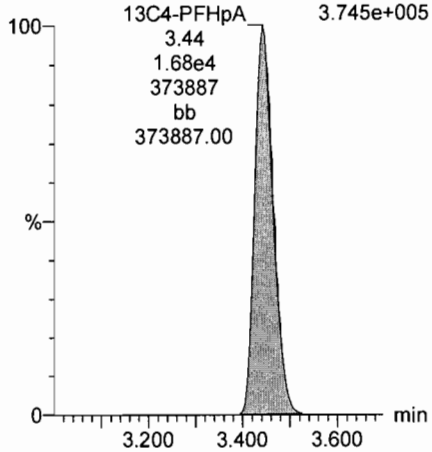


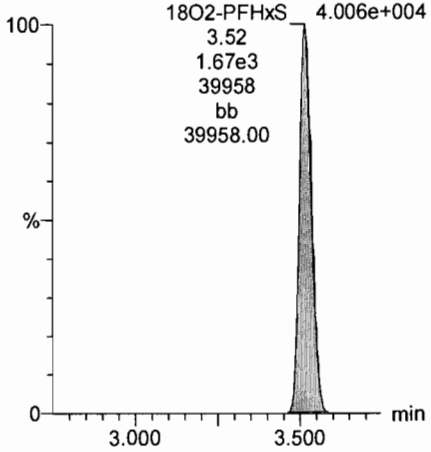

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**



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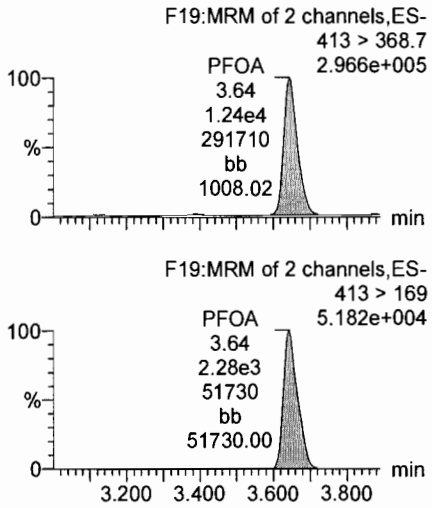
**Name: 170710M3_6, Date: 10-Jul-2017, Time: 17:18:21, ID: ST170710M3-5 PFC CS2 17G1007, Description: PFC CS2 17G1007**

**Total PFOA**

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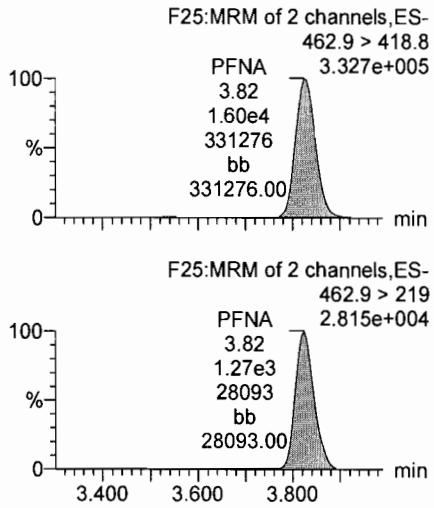
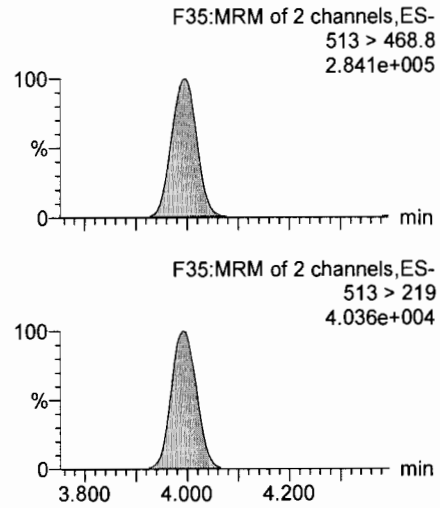
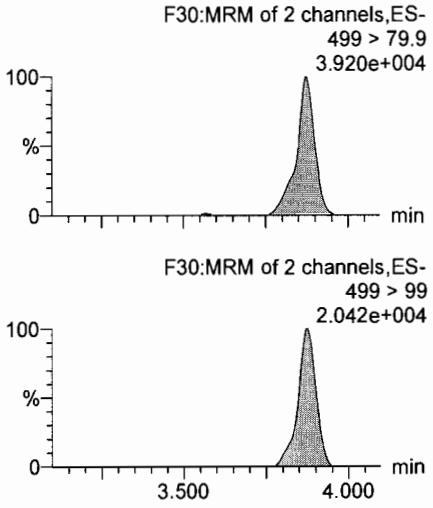


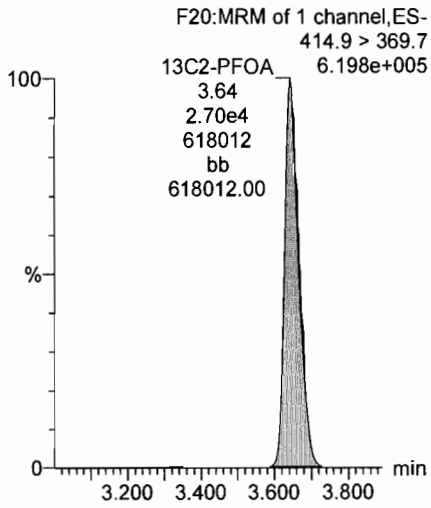

**PFDA**



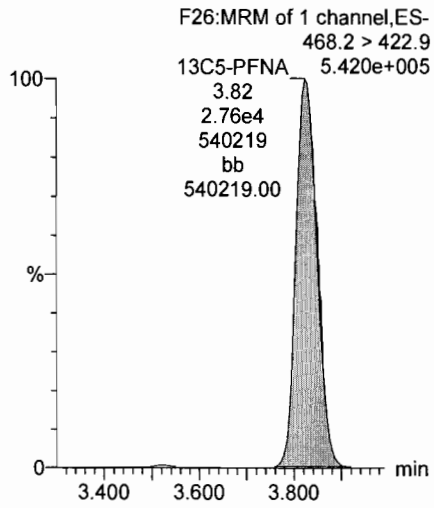

**Total PFOS**




**13C2-PFOA**




**13C5-PFNA**

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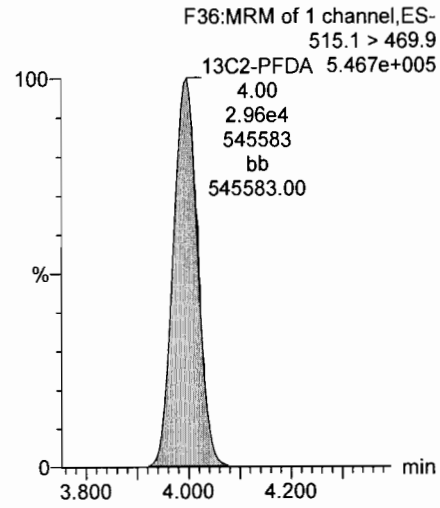
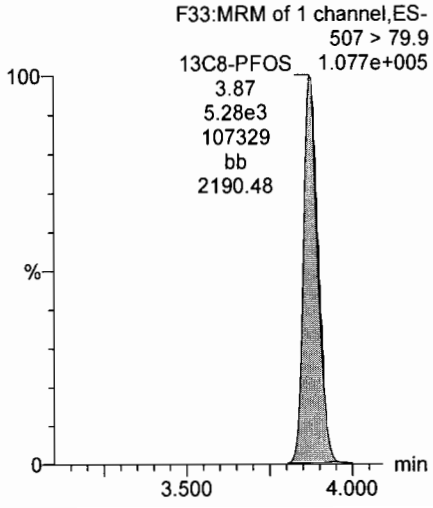



**13C8-PFOS**



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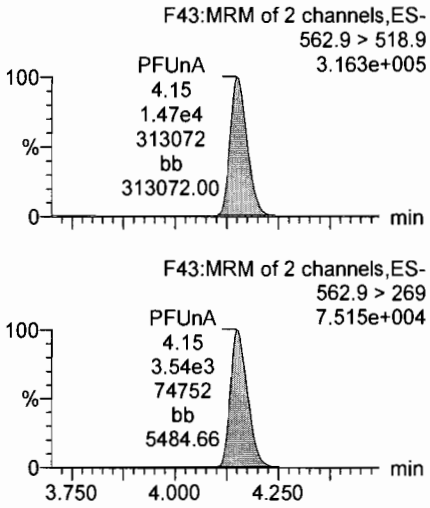
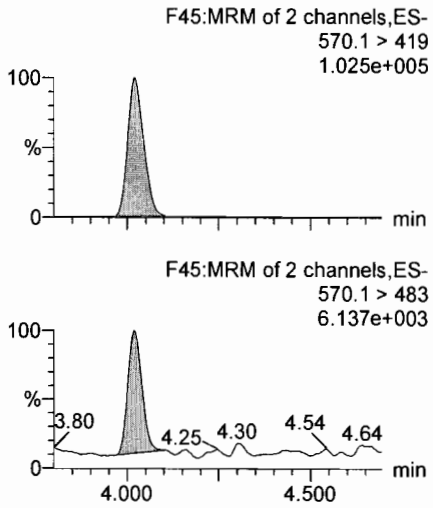
**Name: 170710M3_6, Date: 10-Jul-2017, Time: 17:18:21, ID: ST170710M3-5 PFC CS2 17G1007, Description: PFC CS2 17G1007**

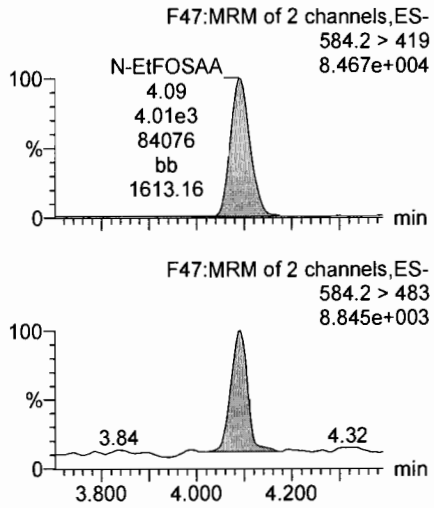
**PFUnA**



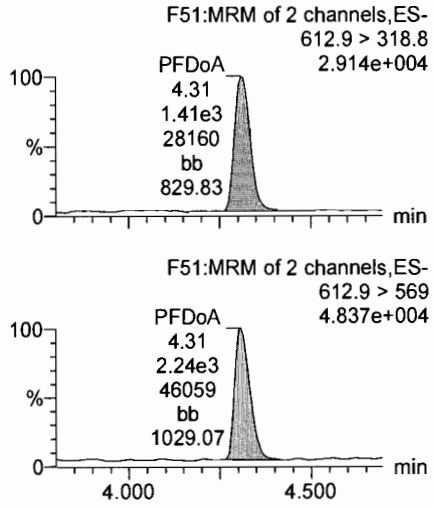

**N-MeFOSAA**



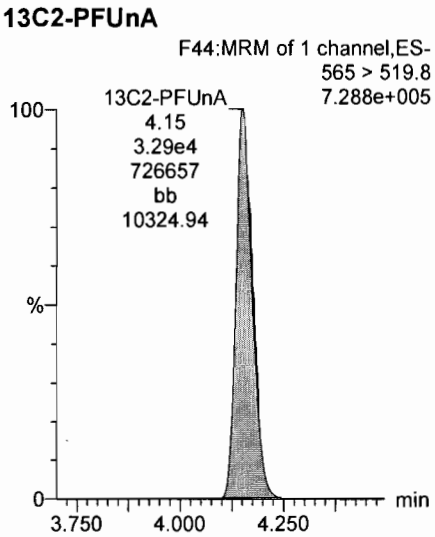

**N-EtFOSAA**



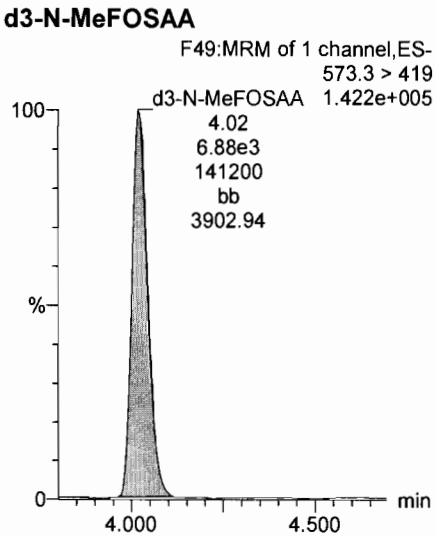

**PFDoA**




**13C2-PFUnA**




**d3-N-MeFOSAA**

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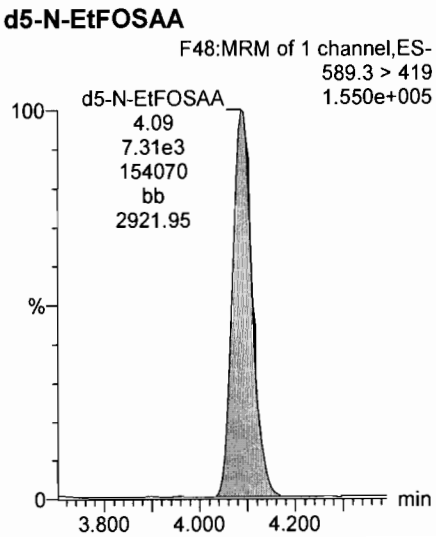
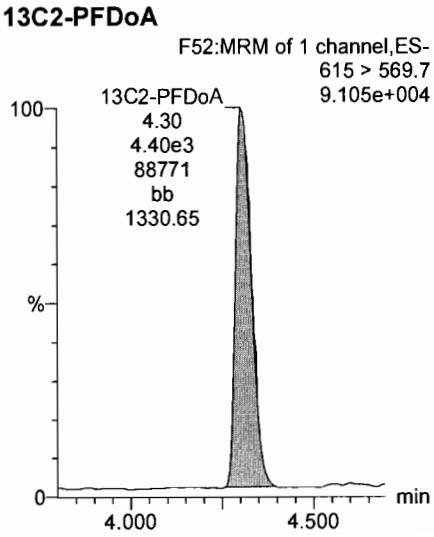



**13C2-PFDoA**



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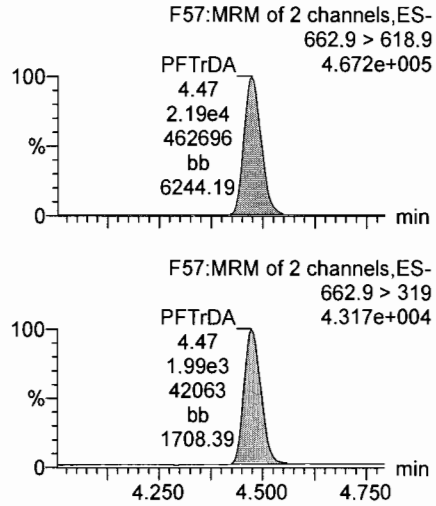
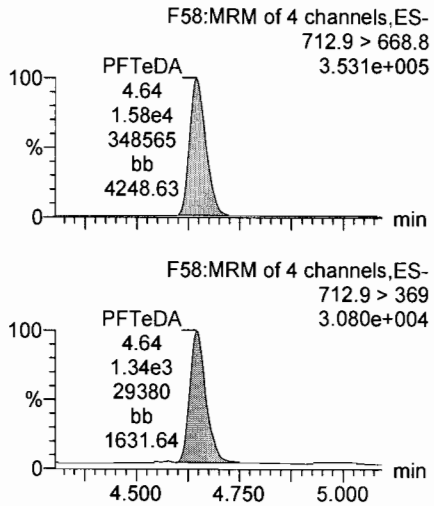
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_6, Date: 10-Jul-2017, Time: 17:18:21, ID: ST170710M3-5 PFC CS2 17G1007, Description: PFC CS2 17G1007**

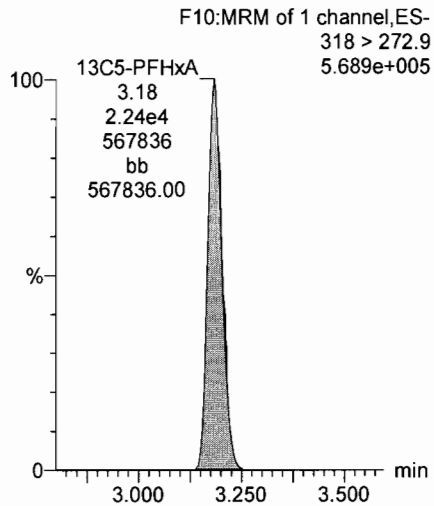
**PFTrDA**



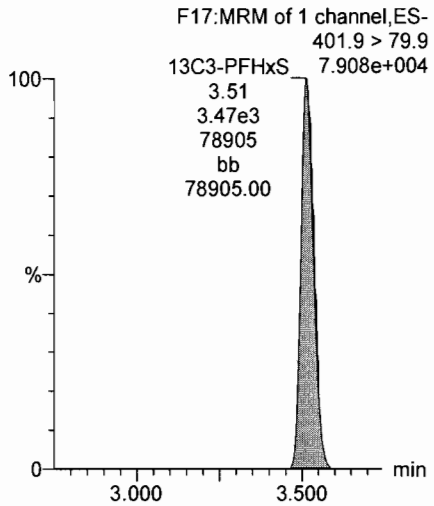

**PFTeDA**




**13C5-PFHxA**




**13C3-PFHxS**

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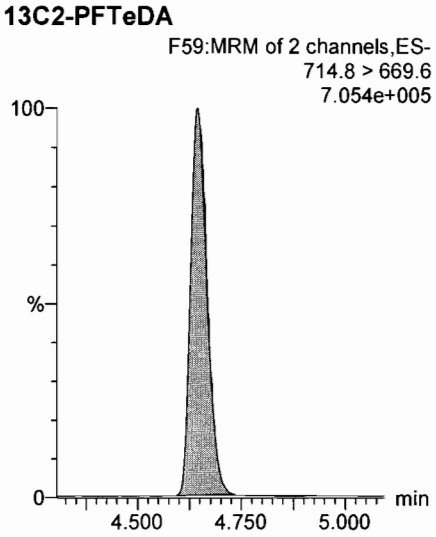
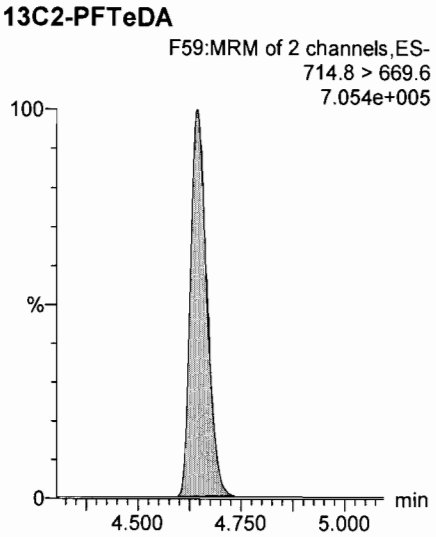
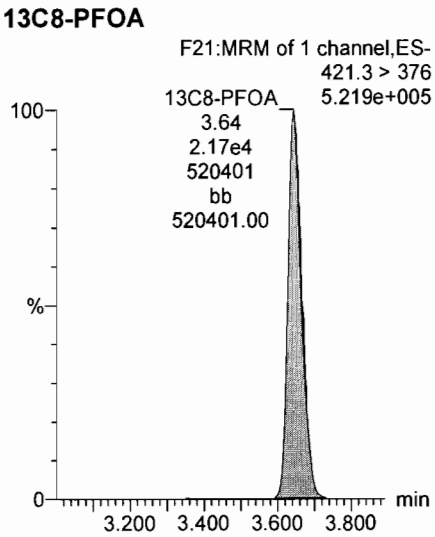


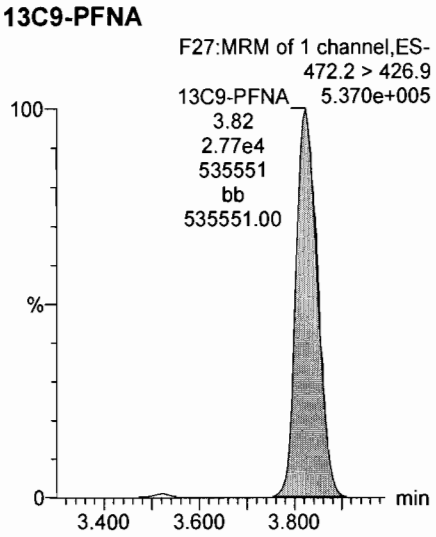

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**



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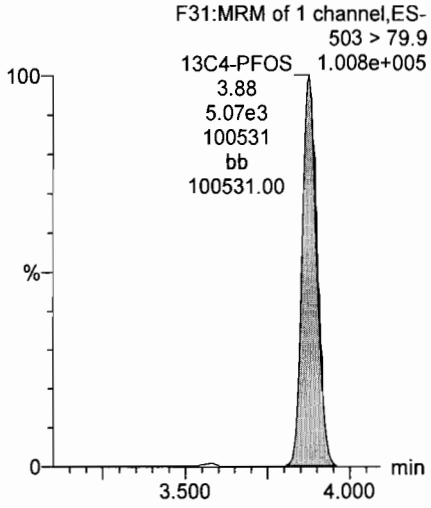
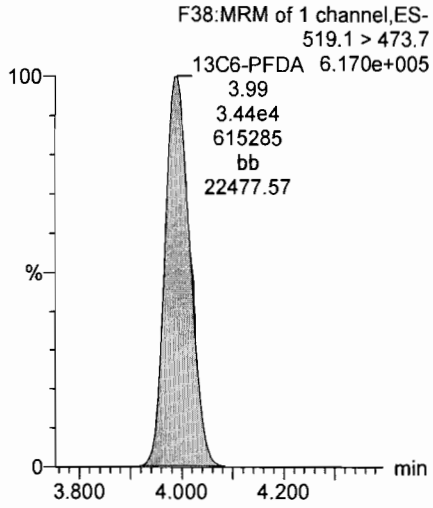
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_6, Date: 10-Jul-2017, Time: 17:18:21, ID: ST170710M3-5 PFC CS2 17G1007, Description: PFC CS2 17G1007**

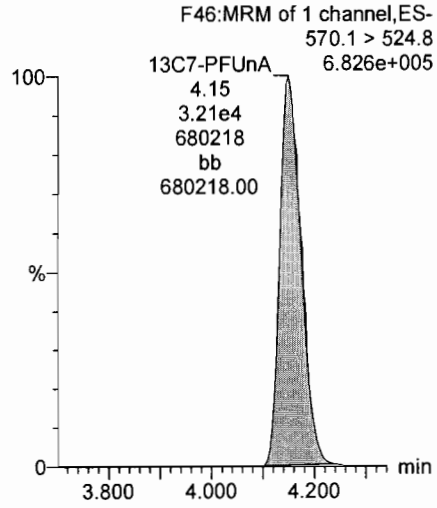
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



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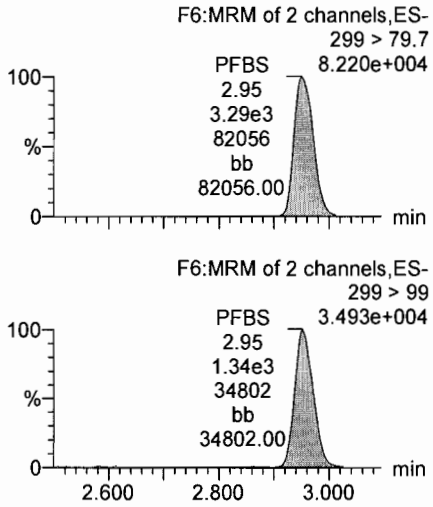
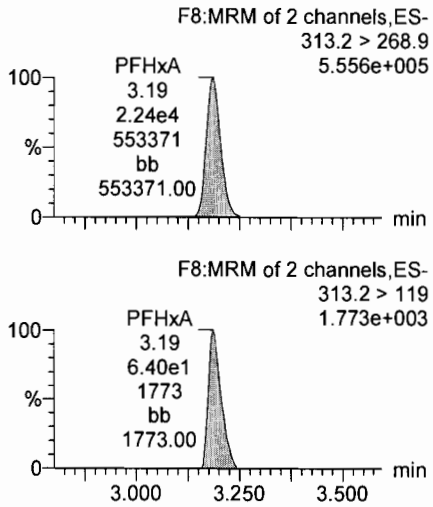
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_7, Date: 10-Jul-2017, Time: 17:28:59, ID: ST170710M3-6 PFC CS3 17G1008, Description: PFC CS3 17G1008**

**Total PFBS**




**PFHxA**

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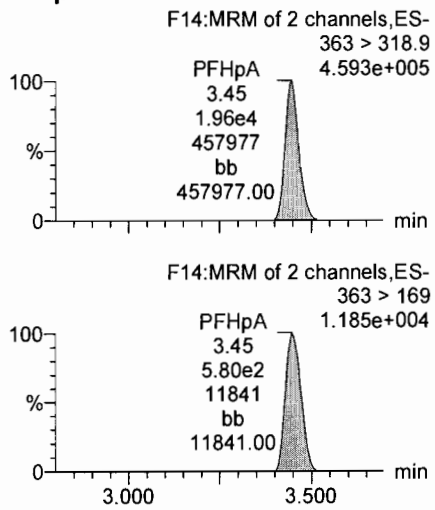
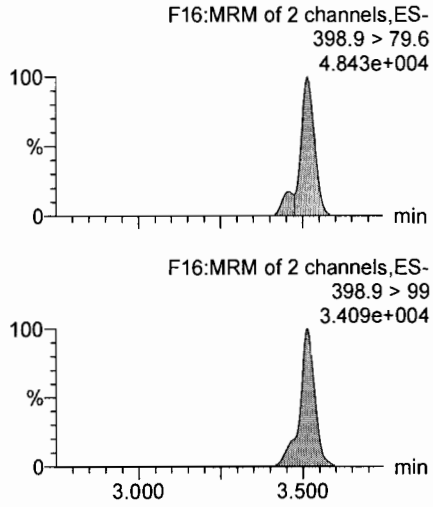



**Total PFHxS**

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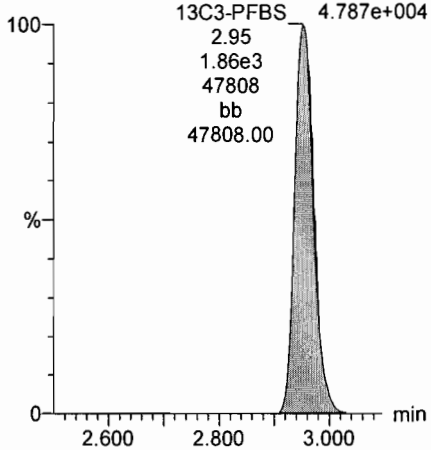
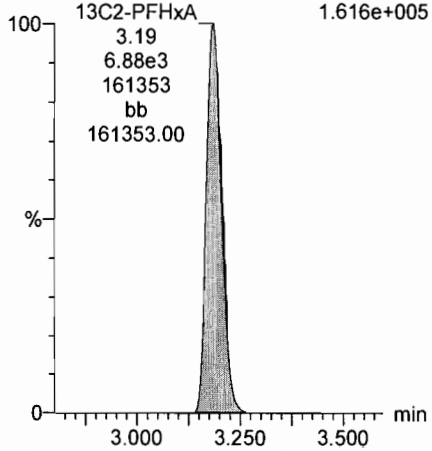
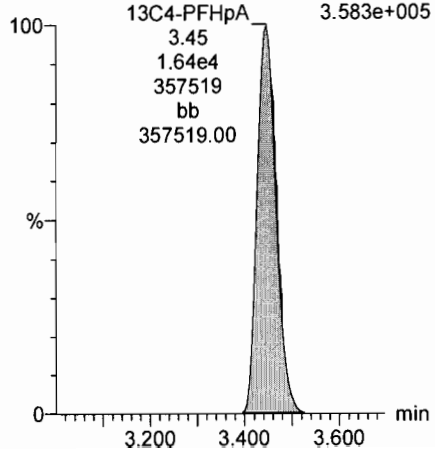


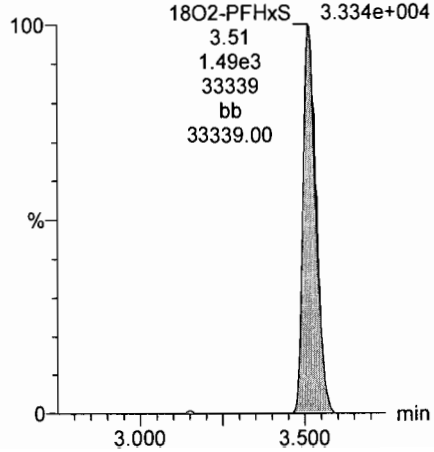

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**



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Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
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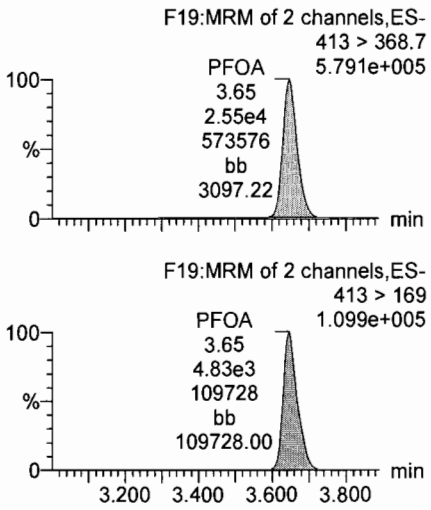
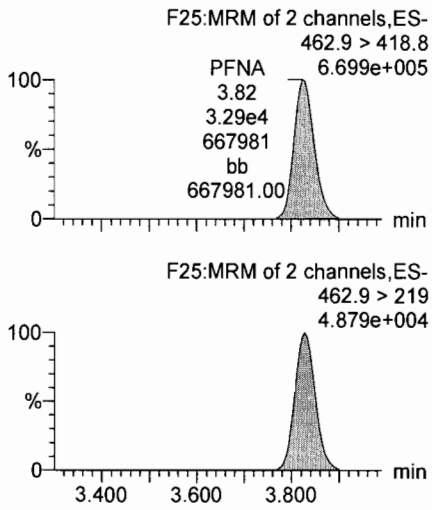
**Name: 170710M3_7, Date: 10-Jul-2017, Time: 17:28:59, ID: ST170710M3-6 PFC CS3 17G1008, Description: PFC CS3 17G1008**

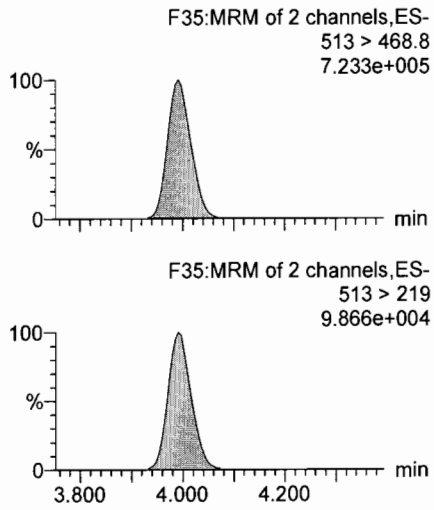
**Total PFOA**



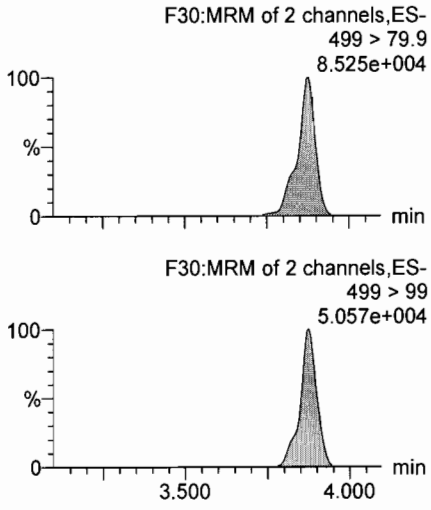

**PFNA**



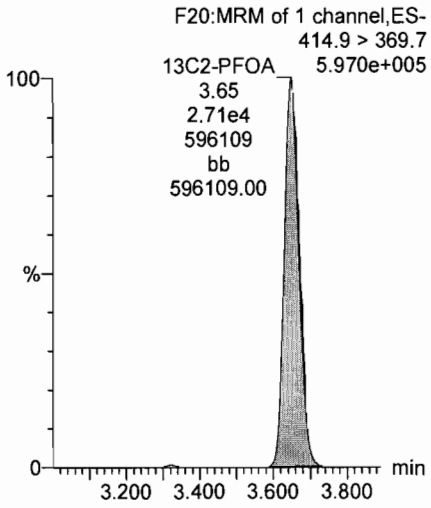

**PFDA**



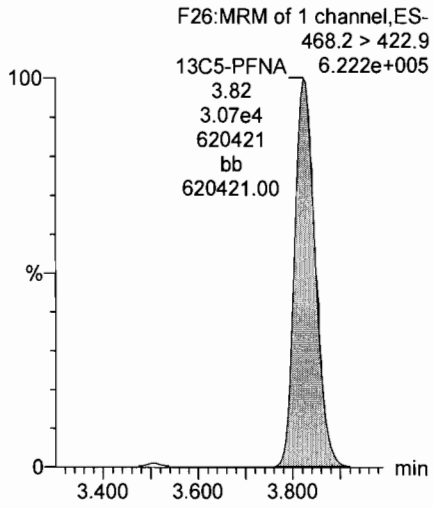

**Total PFOS**




**13C2-PFOA**




**13C5-PFNA**

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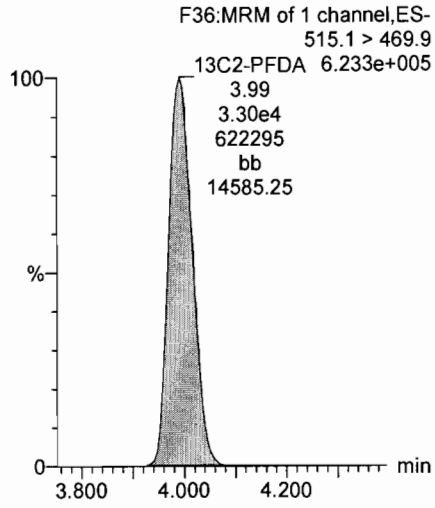
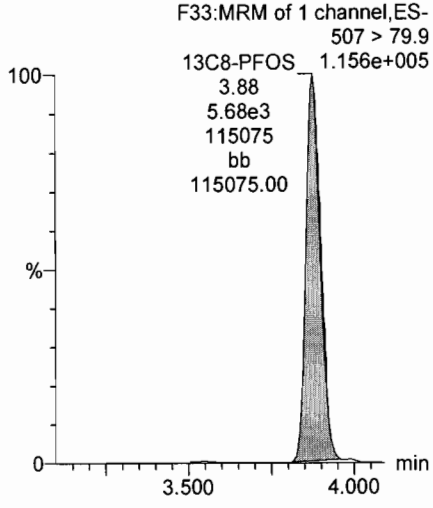



**13C8-PFOS**



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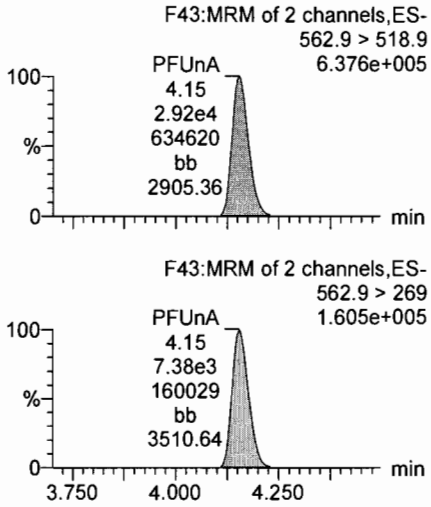
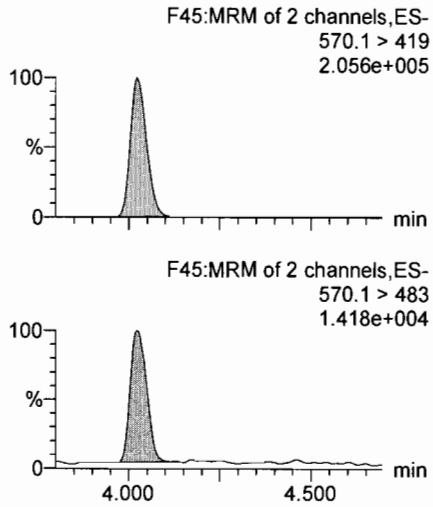
**Name: 170710M3_7, Date: 10-Jul-2017, Time: 17:28:59, ID: ST170710M3-6 PFC CS3 17G1008, Description: PFC CS3 17G1008**

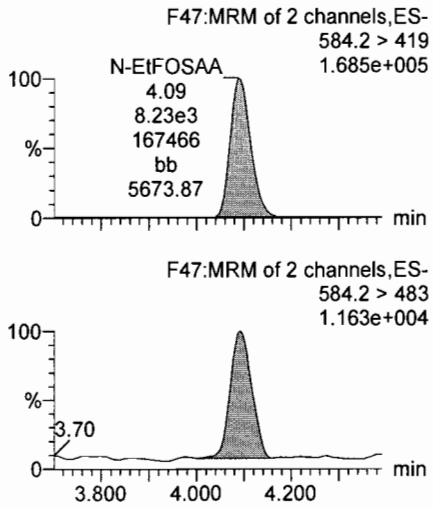
**PFUnA**



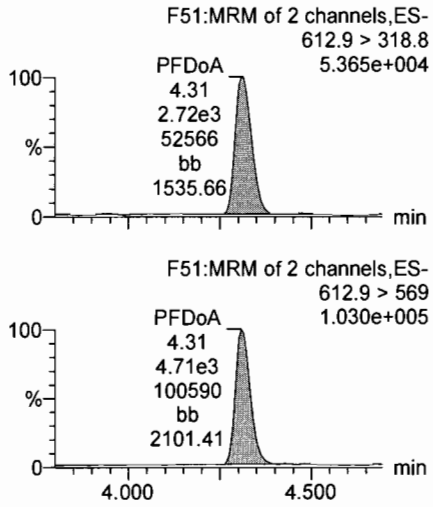

**N-MeFOSAA**



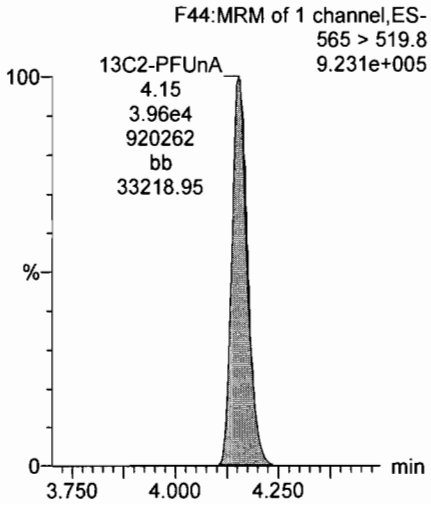

**N-EtFOSAA**



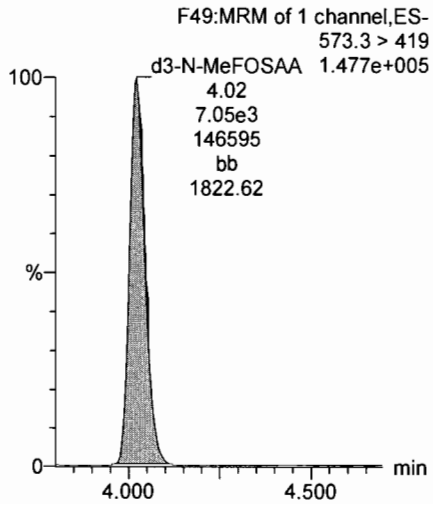

**PFDoA**



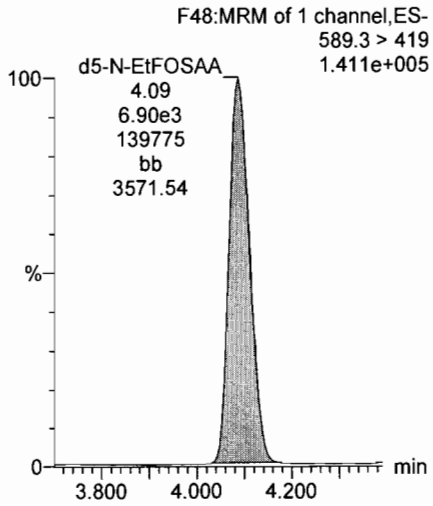

**13C2-PFUnA**




**d3-N-MeFOSAA**




**d5-N-EtFOSAA**

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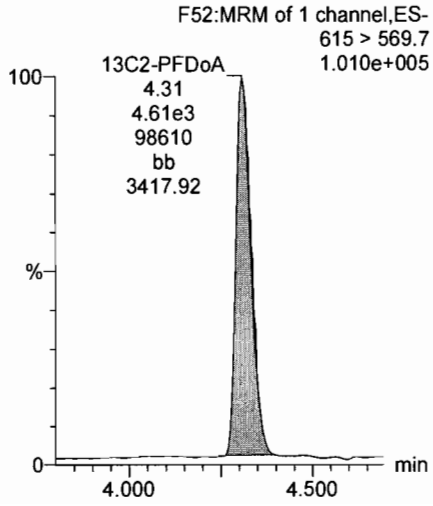

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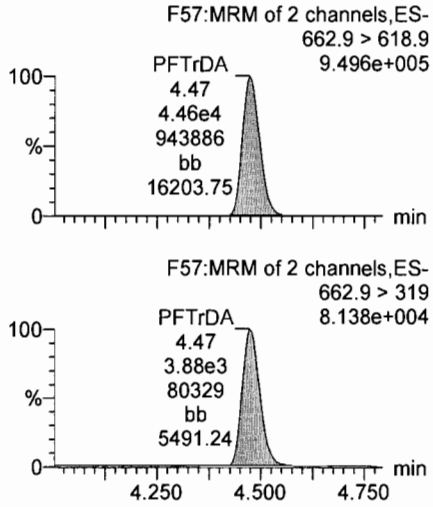
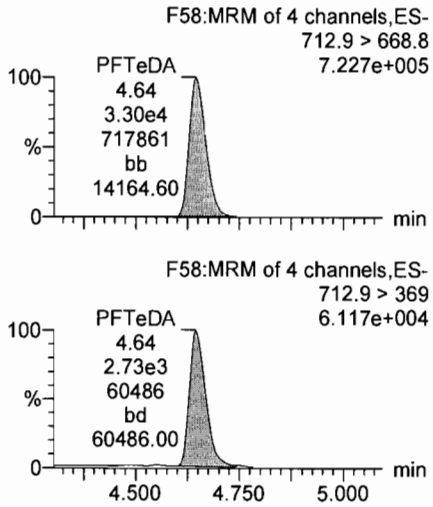
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_7, Date: 10-Jul-2017, Time: 17:28:59, ID: ST170710M3-6 PFC CS3 17G1008, Description: PFC CS3 17G1008**

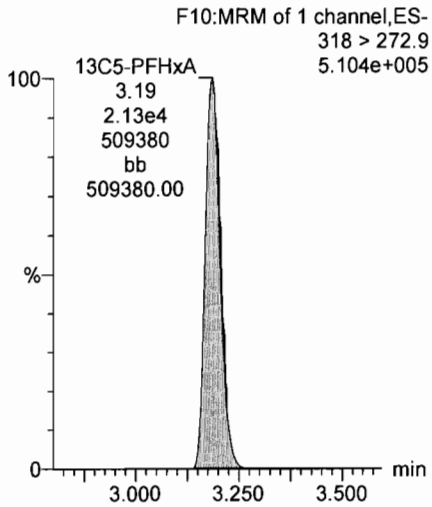
**PFTrDA**



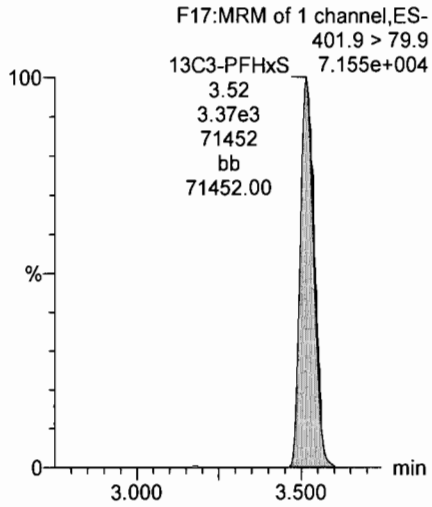

**PFTeDA**




**13C5-PFHxA**




**13C3-PFHxS**

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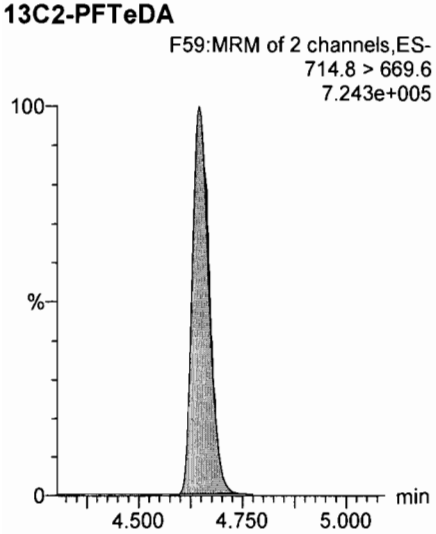
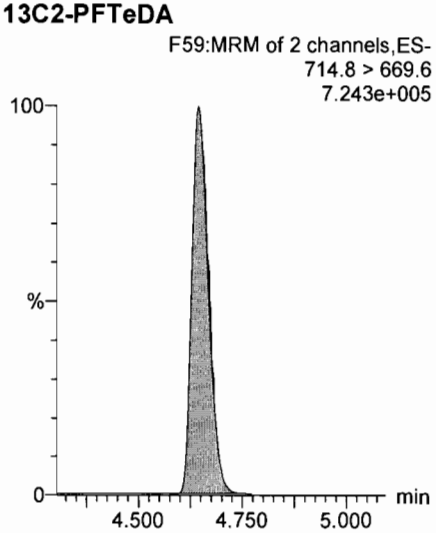
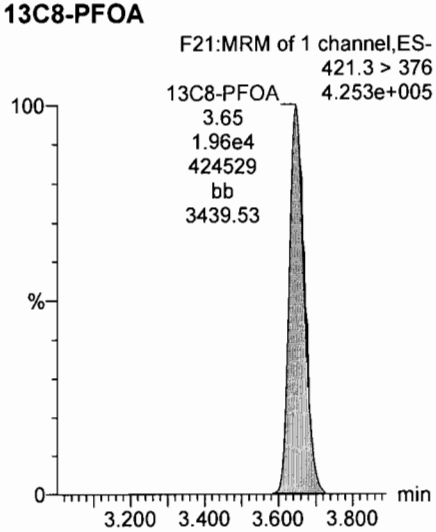


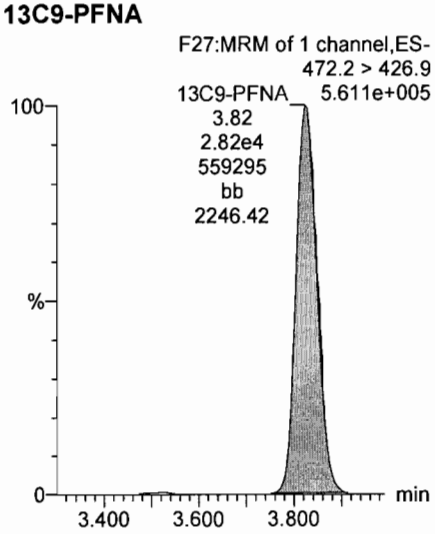

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

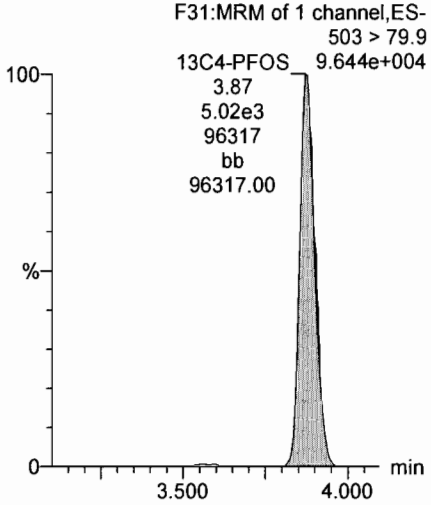


Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

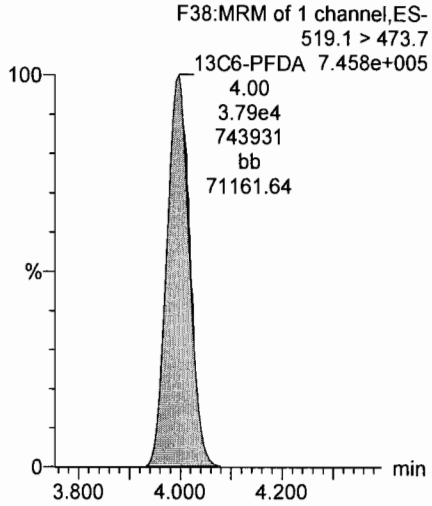
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_7, Date: 10-Jul-2017, Time: 17:28:59, ID: ST170710M3-6 PFC CS3 17G1008, Description: PFC CS3 17G1008**

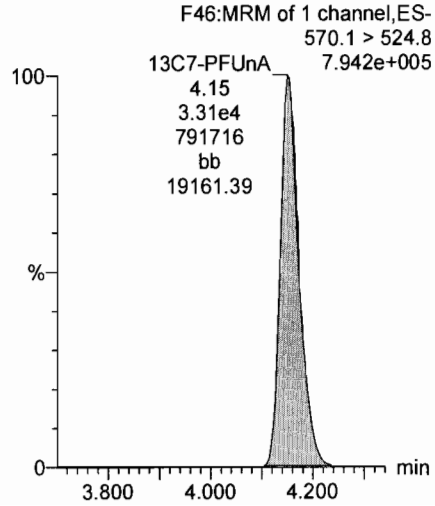
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



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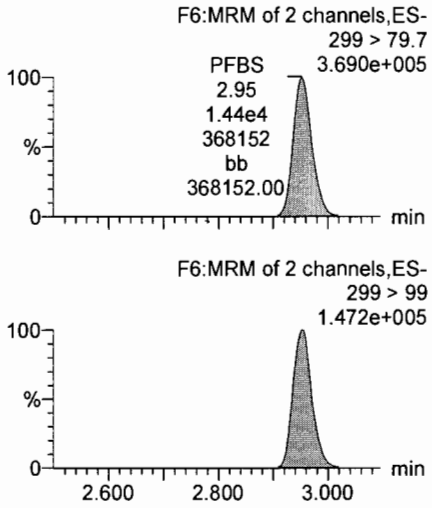
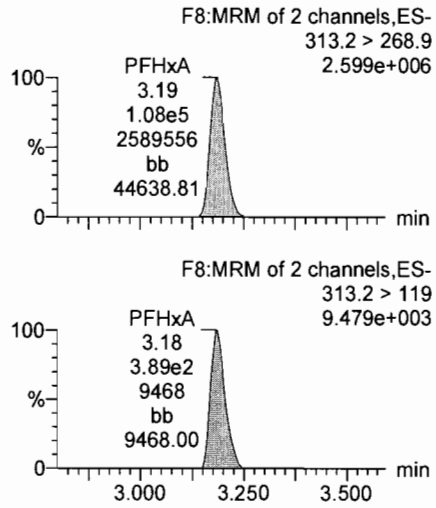
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_8, Date: 10-Jul-2017, Time: 17:39:46, ID: ST170710M3-7 PFC CS4 17G1009, Description: PFC CS4 17G1009**

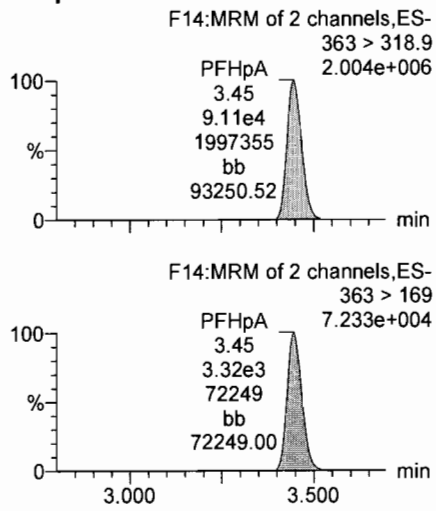
**Total PFBS**



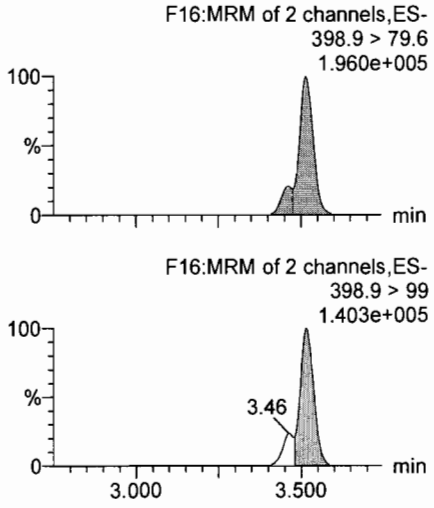

**PFHxA**



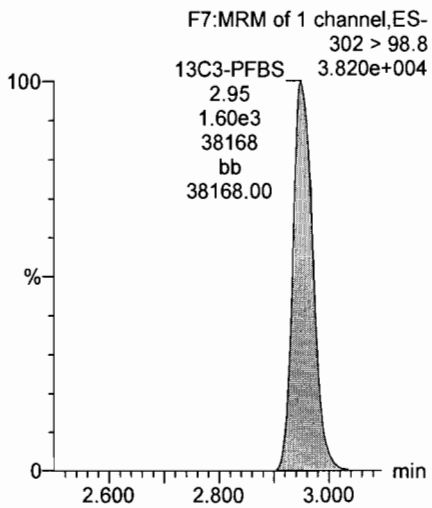

**PFHpA**



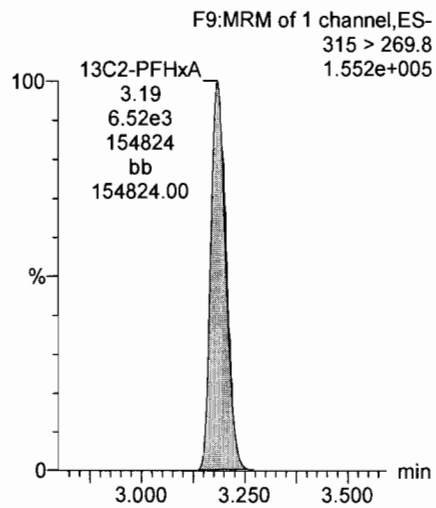

**Total PFHxS**



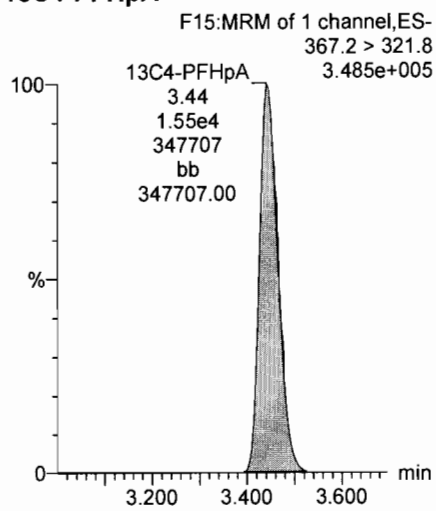

**13C3-PFBS**



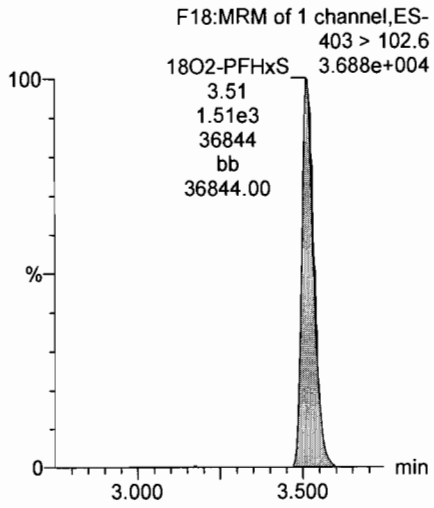

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**



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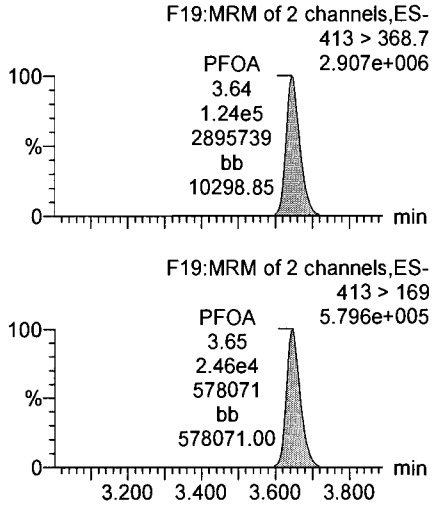
**Name: 170710M3_8, Date: 10-Jul-2017, Time: 17:39:46, ID: ST170710M3-7 PFC CS4 17G1009, Description: PFC CS4 17G1009**

**Total PFOA**

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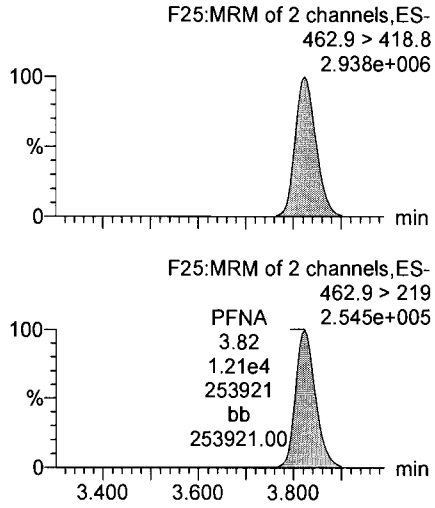
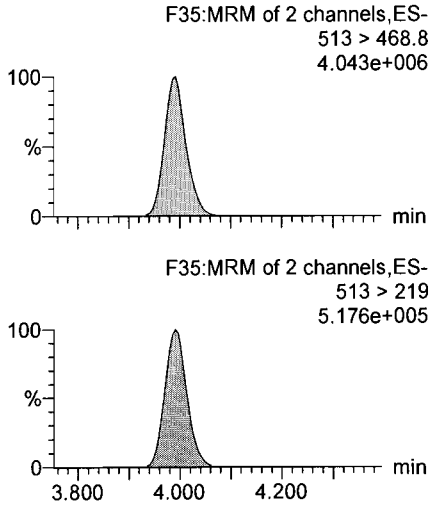
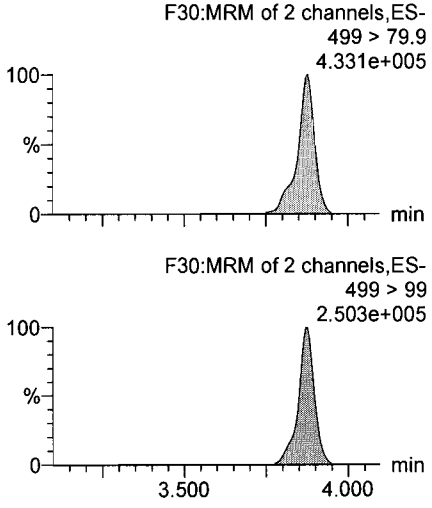


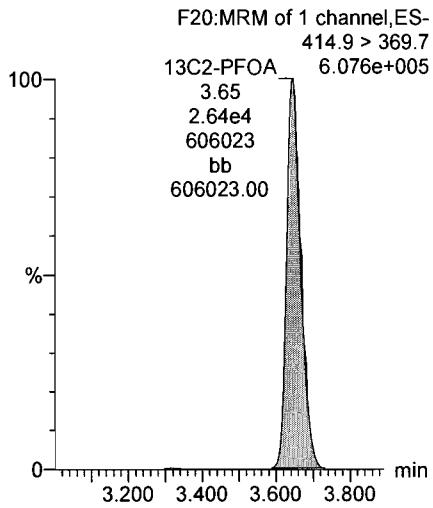

**PFDA**



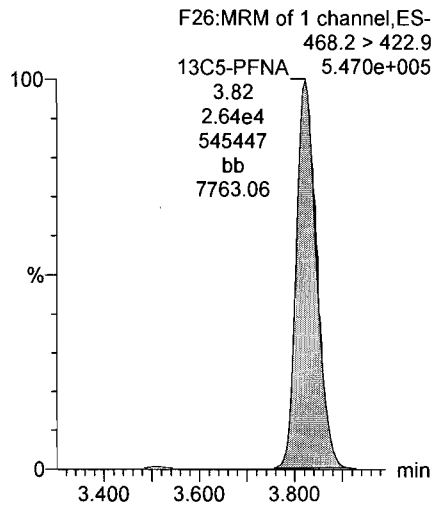

**Total PFOS**



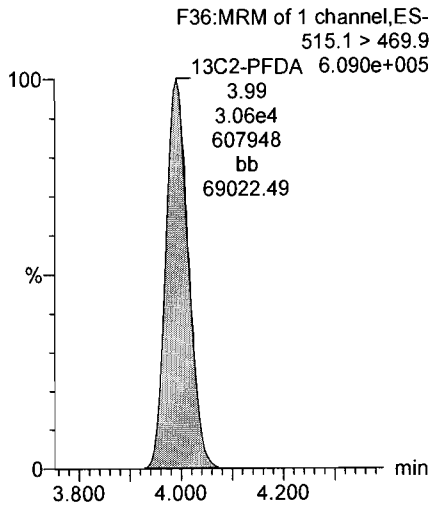

**13C2-PFOA**



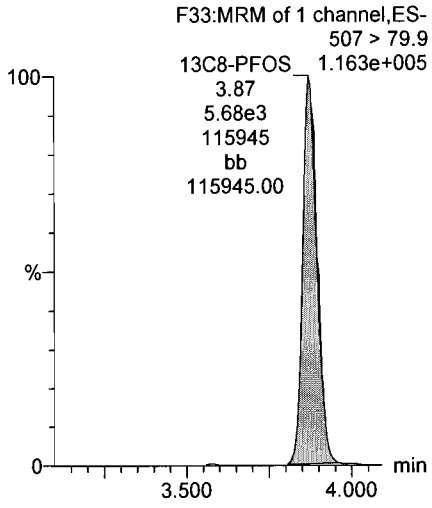

**13C5-PFNA**




**13C2-PFDA**




**13C8-PFOS**



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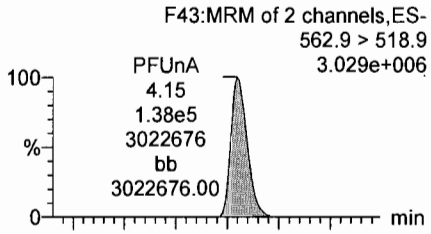
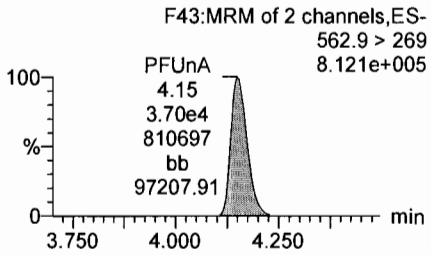
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

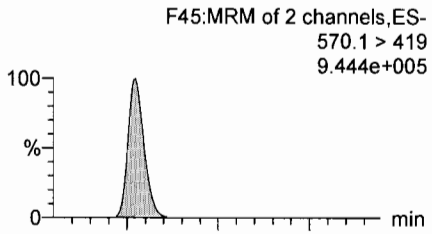
**Name: 170710M3_8, Date: 10-Jul-2017, Time: 17:39:46, ID: ST170710M3-7 PFC CS4 17G1009, Description: PFC CS4 17G1009**

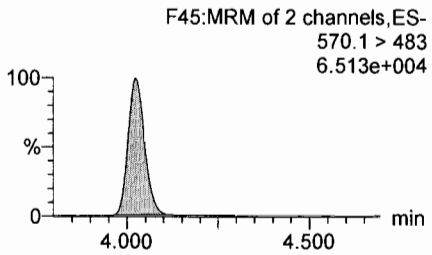
**PFUnA**



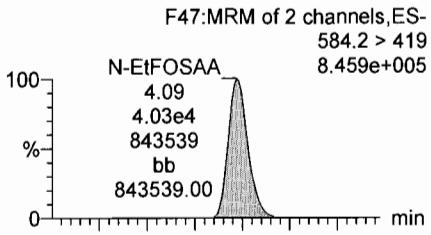



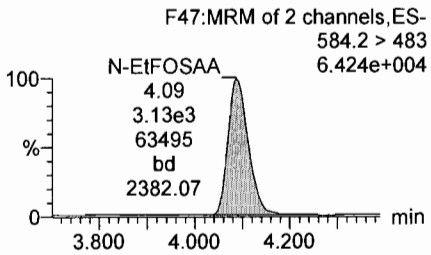

**N-MeFOSAA**



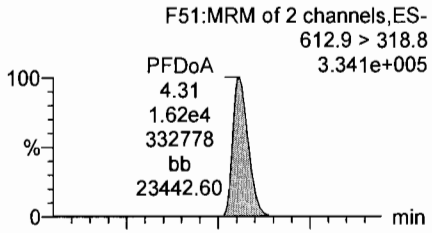



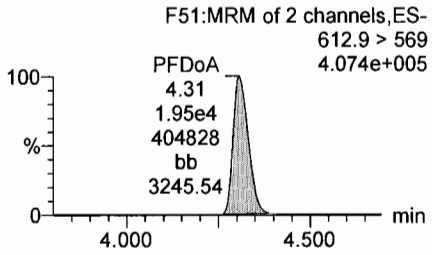

**N-EtFOSAA**



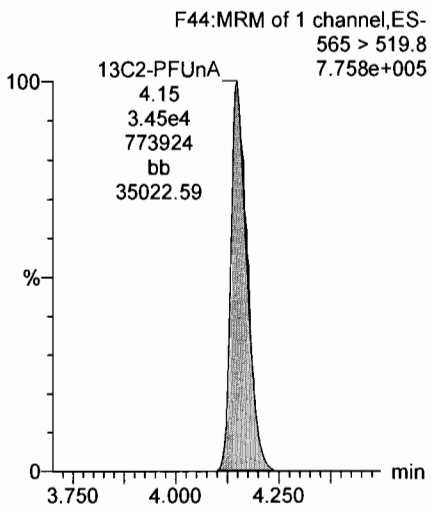




**PFDoA**

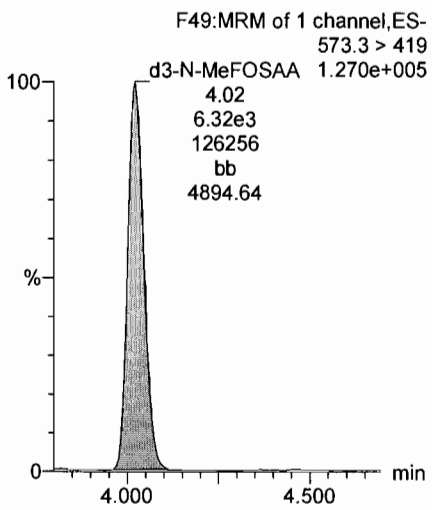


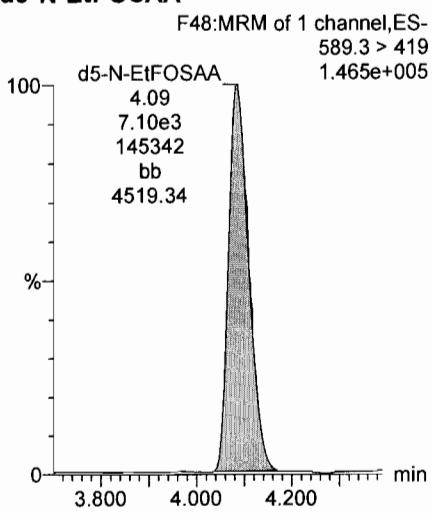

**13C2-PFUnA**



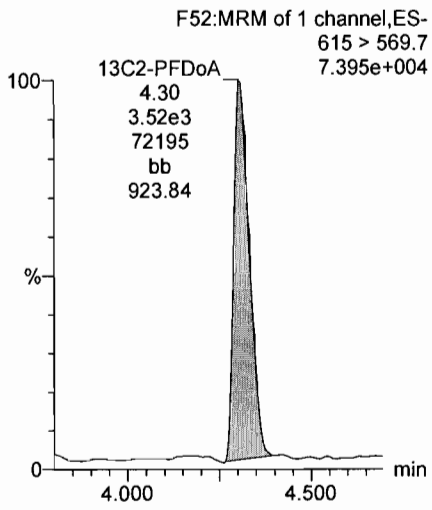

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**



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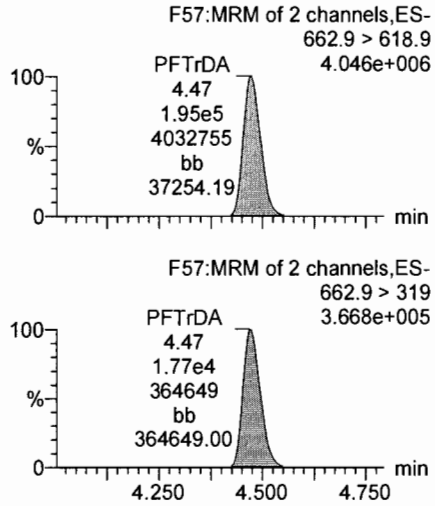
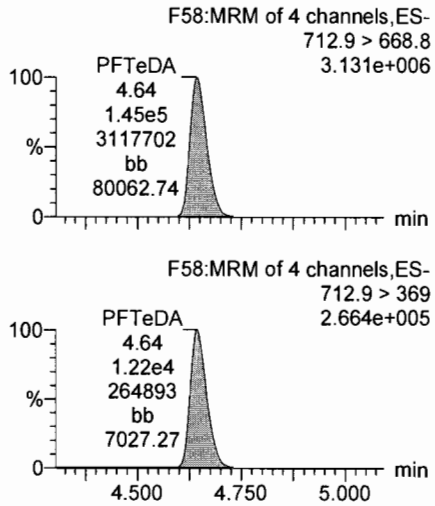
**Name: 170710M3_8, Date: 10-Jul-2017, Time: 17:39:46, ID: ST170710M3-7 PFC CS4 17G1009, Description: PFC CS4 17G1009**

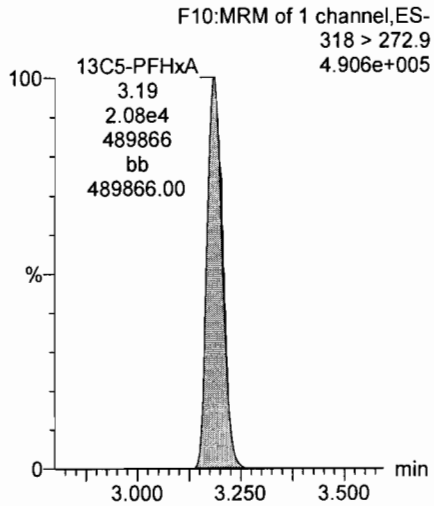
**PFTrDA**



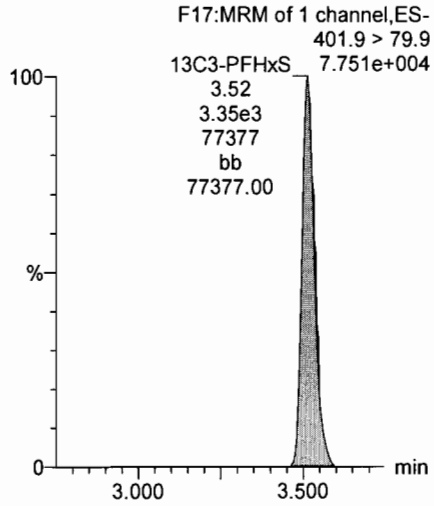

**PFTeDA**



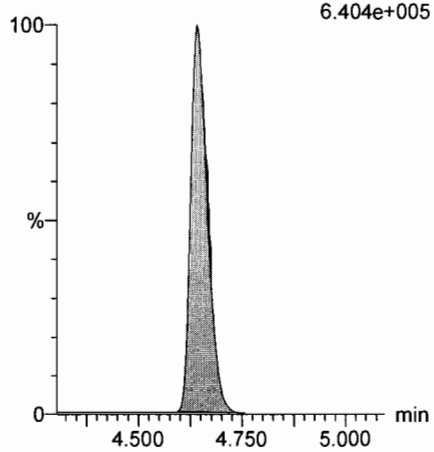

**13C5-PFHxA**



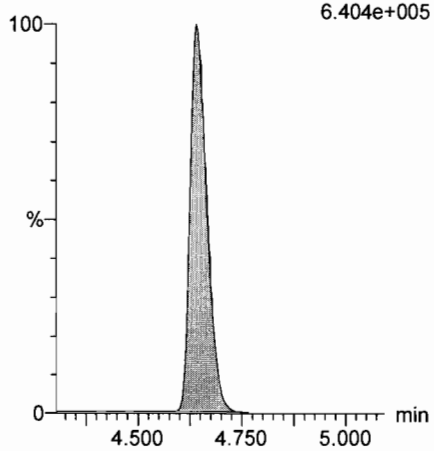

**13C3-PFHxS**



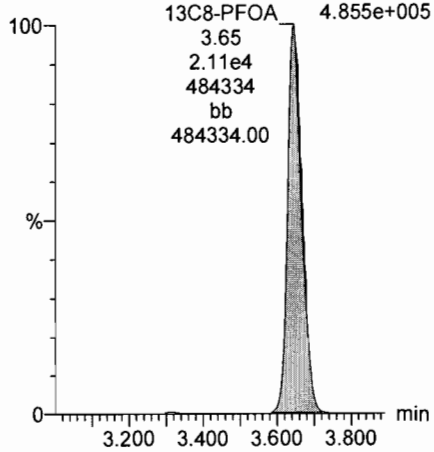

**13C2-PFTeDA**



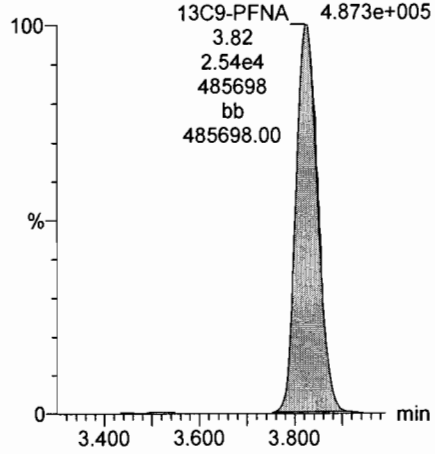

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**



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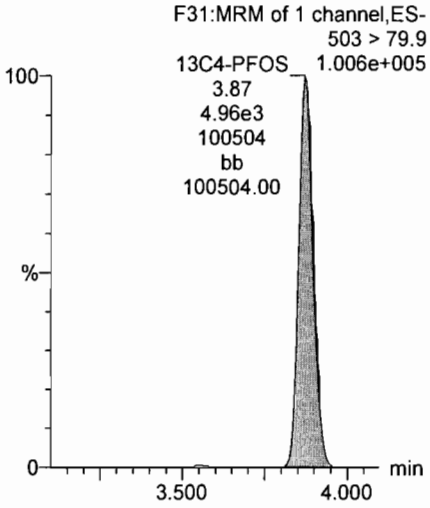
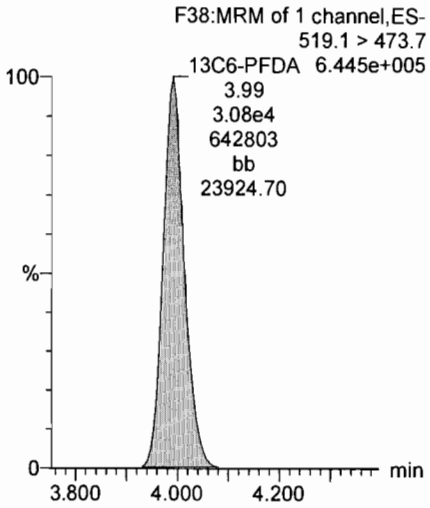
**Name: 170710M3_8, Date: 10-Jul-2017, Time: 17:39:46, ID: ST170710M3-7 PFC CS4 17G1009, Description: PFC CS4 17G1009**

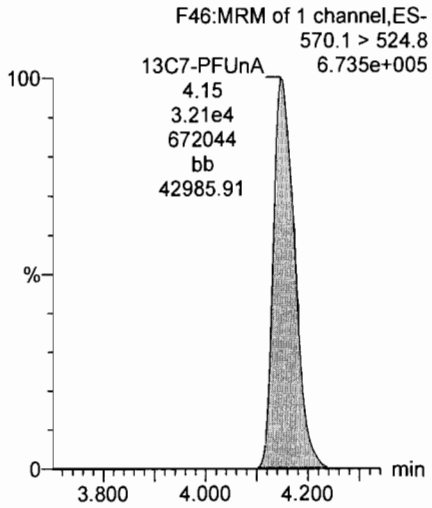
**13C4-PFOS**




**13C6-PFDA**




**13C7-PFUnA**



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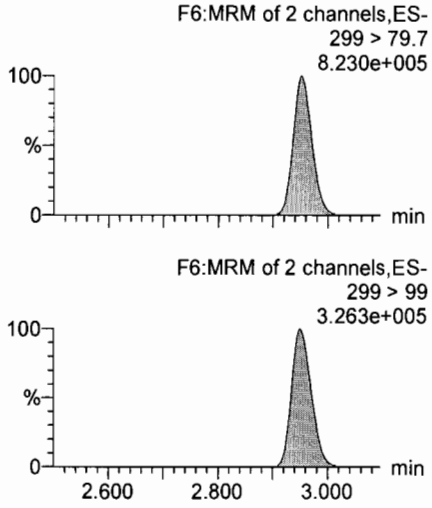
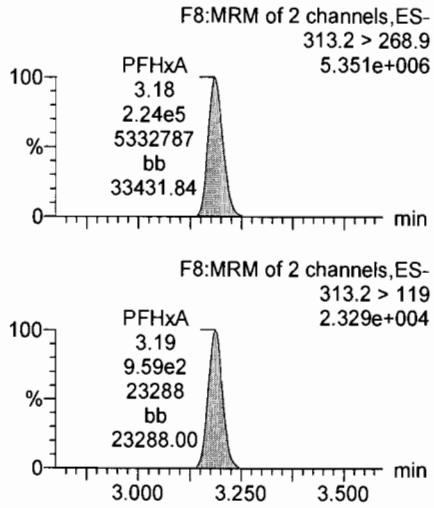
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_9, Date: 10-Jul-2017, Time: 17:50:33, ID: ST170710M3-8 PFC CS5 17G1010, Description: PFC CS5 17G1010**

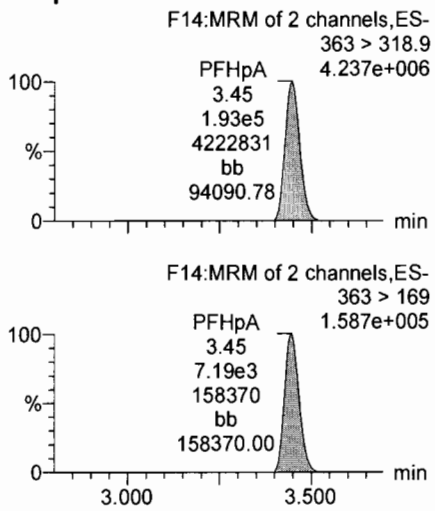
**Total PFBS**



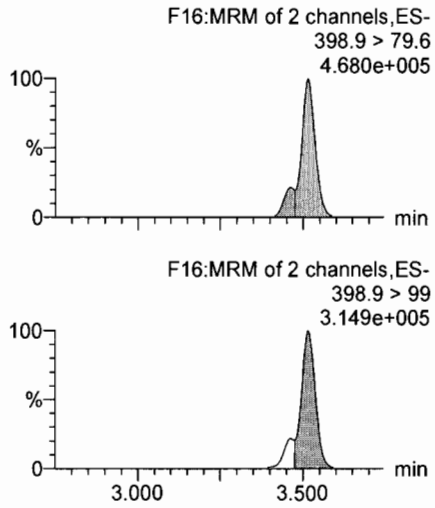

**PFHxA**



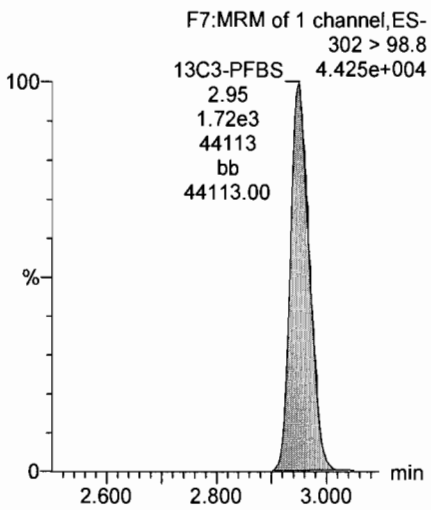

**PFHpA**



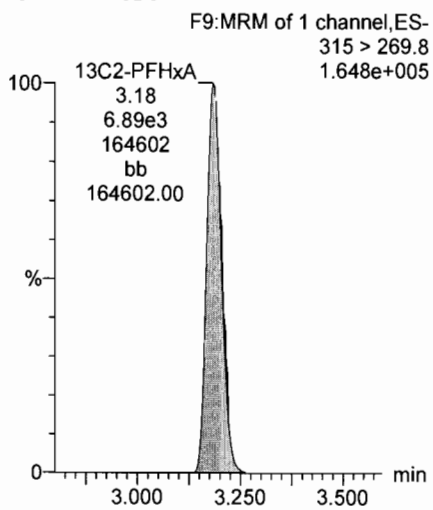

**Total PFHxS**



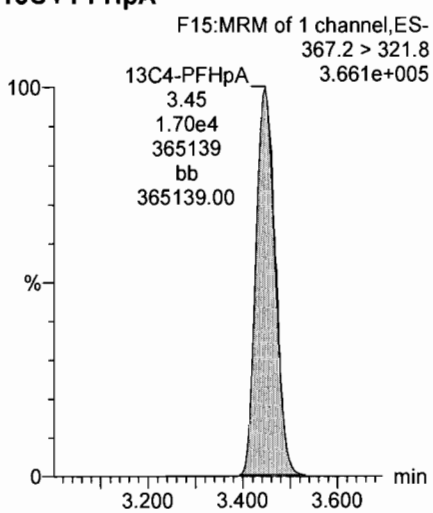

**13C3-PFBS**



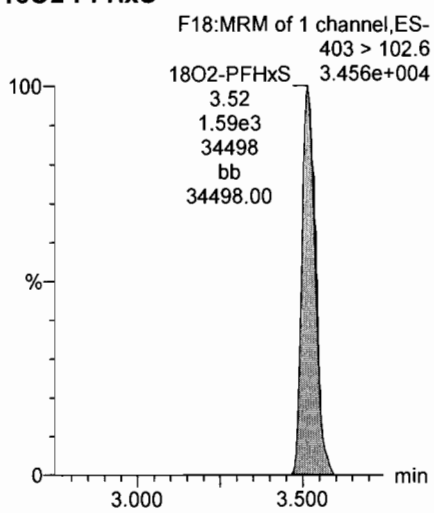

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

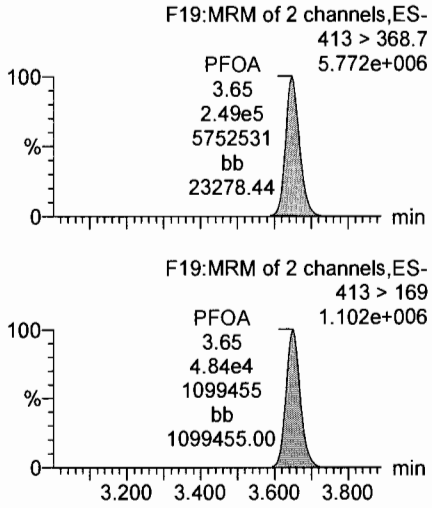


Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

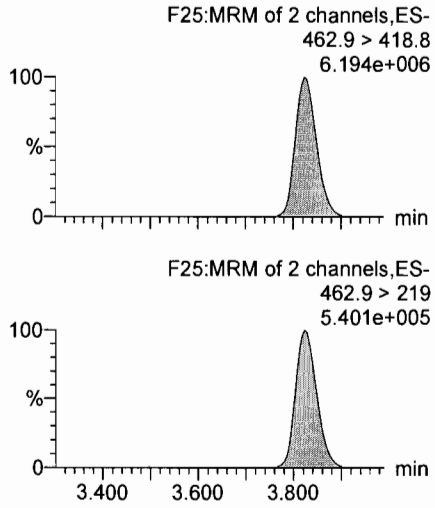
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_9, Date: 10-Jul-2017, Time: 17:50:33, ID: ST170710M3-8 PFC CS5 17G1010, Description: PFC CS5 17G1010**

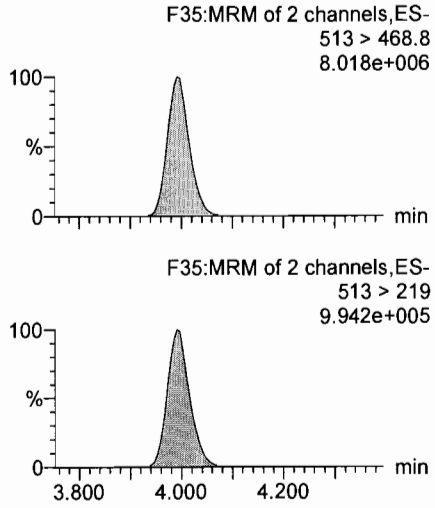
**Total PFOA**



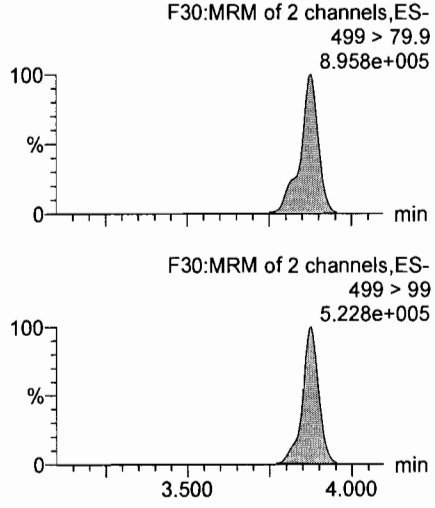

**PFNA**



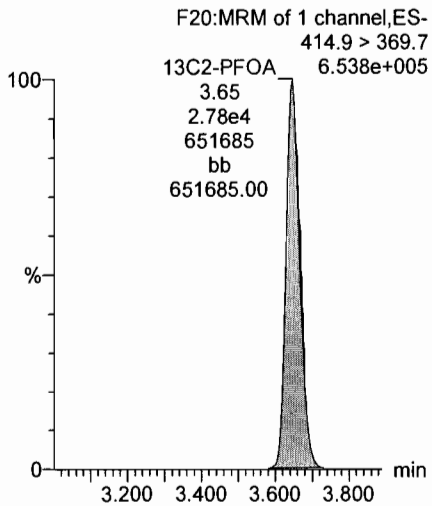

**PFDA**



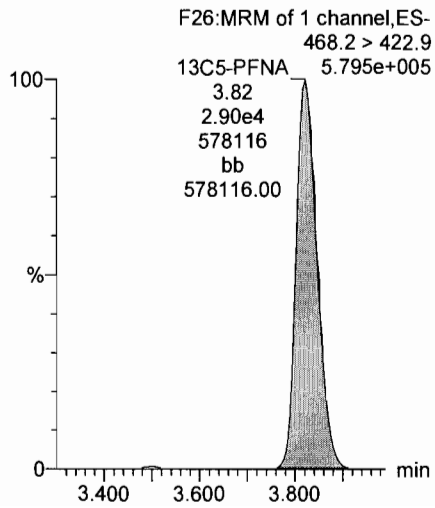

**Total PFOS**




**13C2-PFOA**




**13C5-PFNA**

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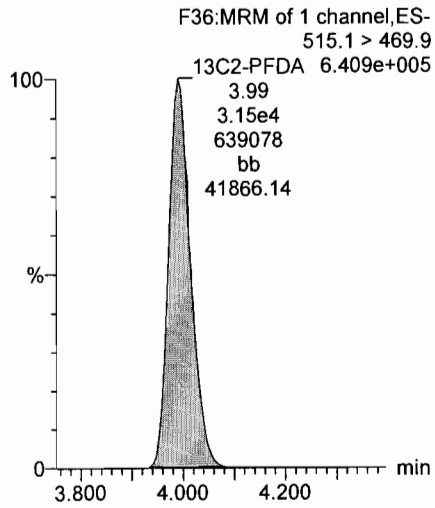
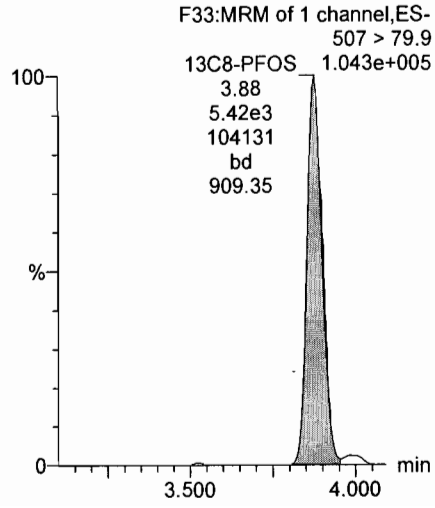



**13C8-PFOS**



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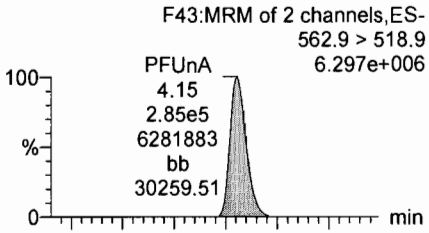
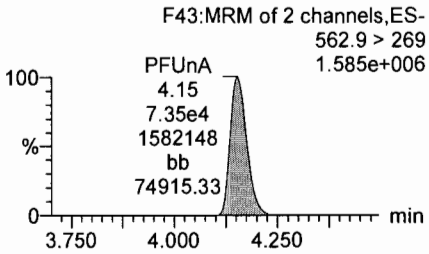
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

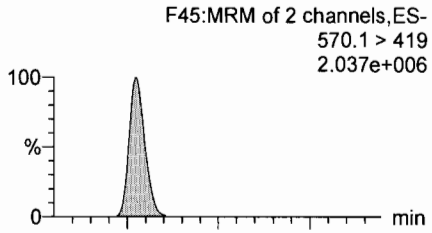
**Name: 170710M3_9, Date: 10-Jul-2017, Time: 17:50:33, ID: ST170710M3-8 PFC CS5 17G1010, Description: PFC CS5 17G1010**

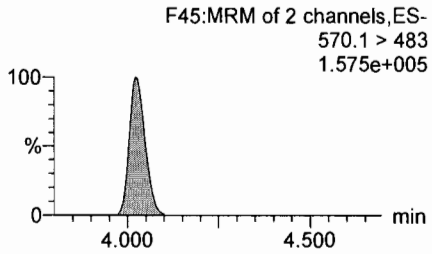
**PFUnA**



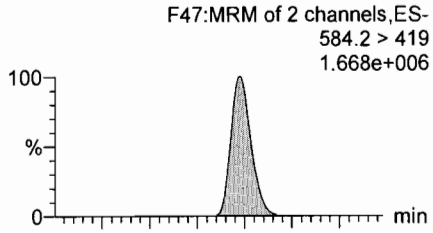



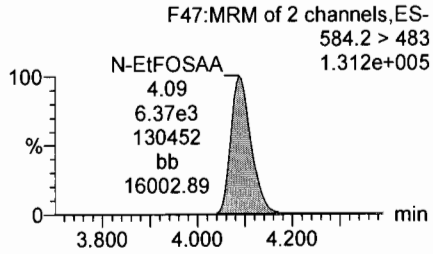

**N-MeFOSAA**



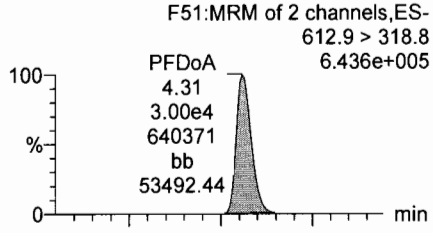



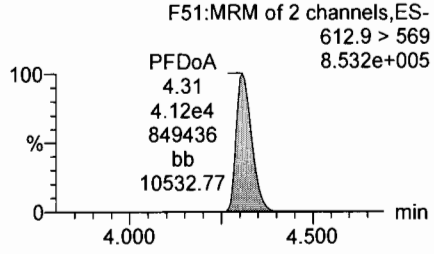

**N-EtFOSAA**



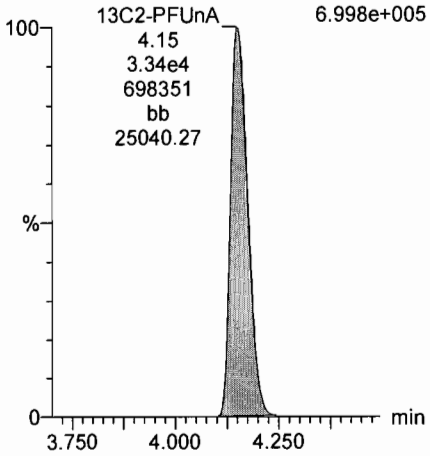




**PFDoA**

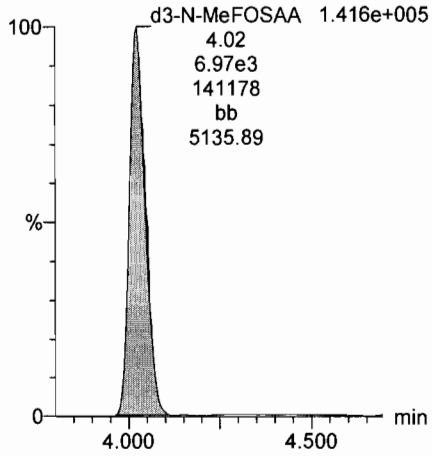


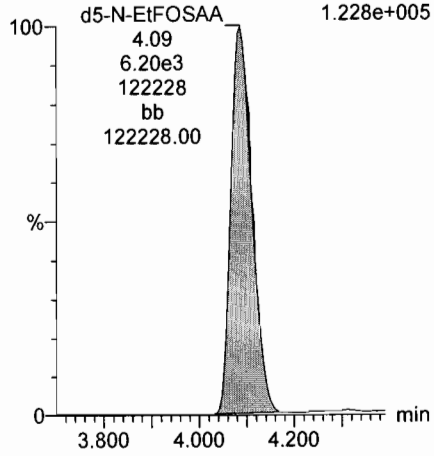

**13C2-PFUnA**



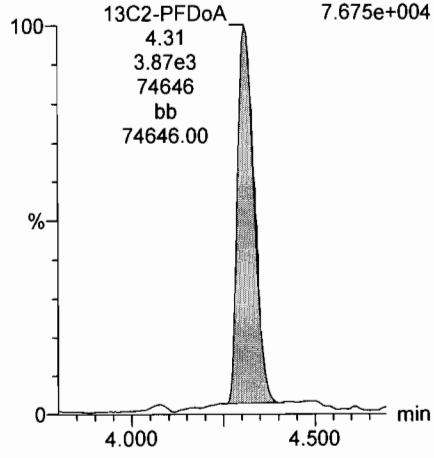

**d3-N-MeFOSAA**




**d5-N-EtFOSAA**




**13C2-PFDoA**



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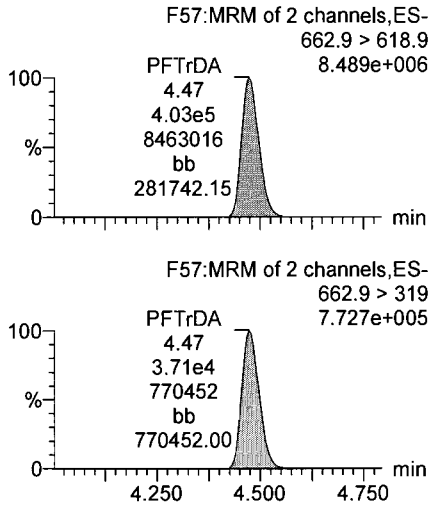
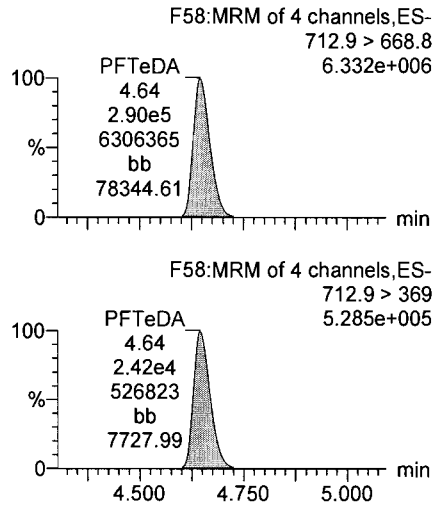
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_9, Date: 10-Jul-2017, Time: 17:50:33, ID: ST170710M3-8 PFC CS5 17G1010, Description: PFC CS5 17G1010**

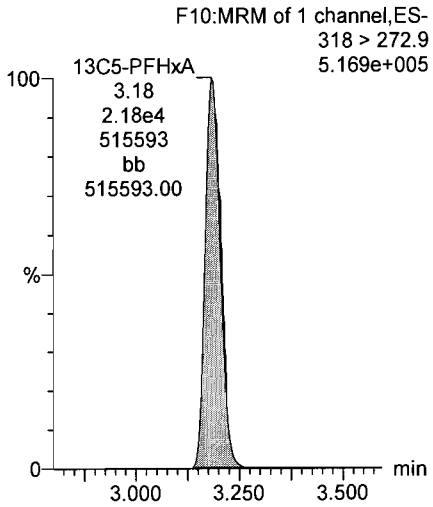
**PFTrDA**



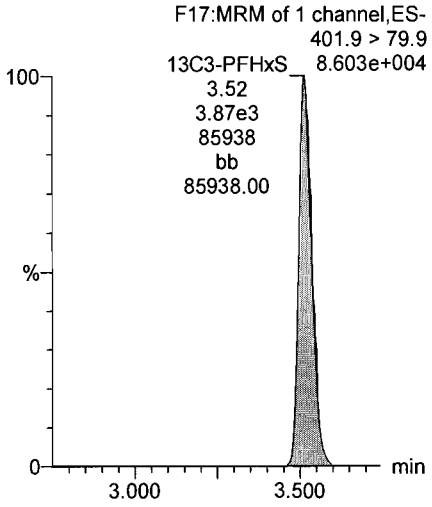

**PFTeDA**



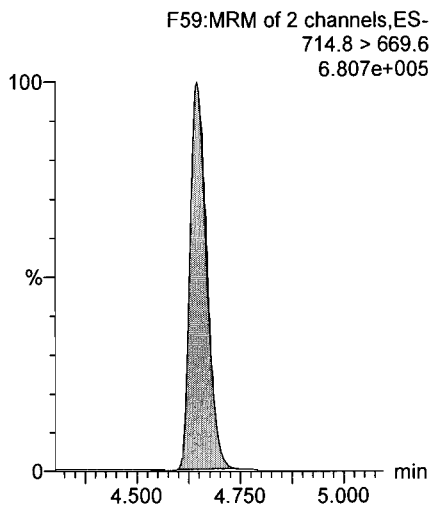

**13C5-PFHxA**



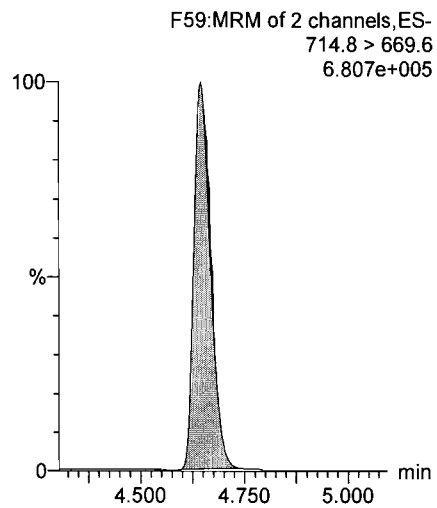

**13C3-PFHxS**



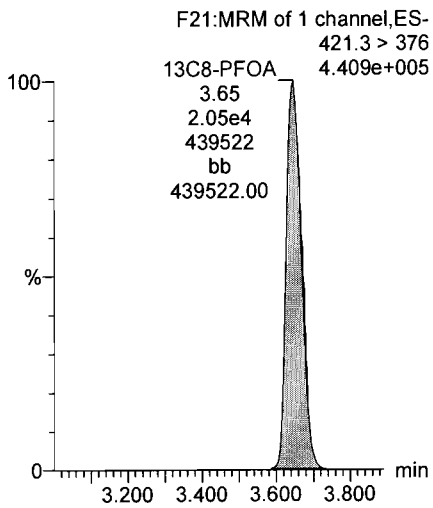

**13C2-PFTeDA**



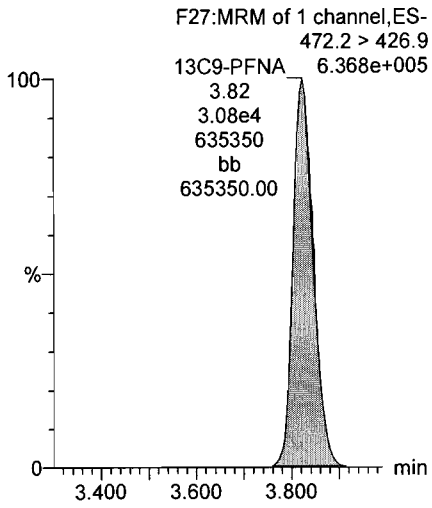

**13C2-PFTeDA**




**13C8-PFOA**




**13C9-PFNA**

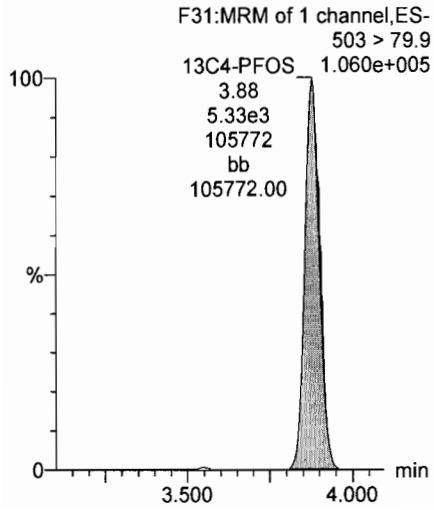


Dataset: U:\Q4.PRO\results\170710M3\170710M3-CRV-L14A.qld

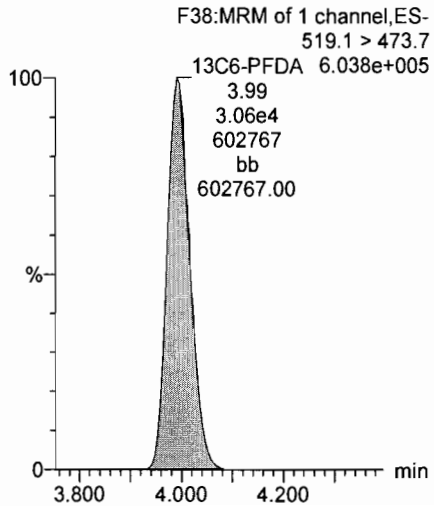
Last Altered: Friday, July 14, 2017 08:46:00 Pacific Daylight Time
Printed: Friday, July 14, 2017 08:49:41 Pacific Daylight Time

**Name: 170710M3_9, Date: 10-Jul-2017, Time: 17:50:33, ID: ST170710M3-8 PFC CS5 17G1010, Description: PFC CS5 17G1010**

**13C4-PFOS**




**13C6-PFDA**

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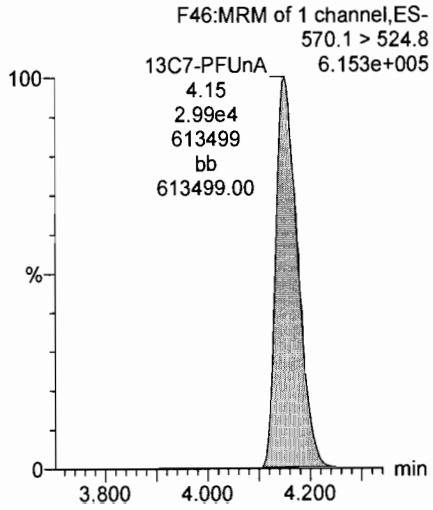

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170710M3\170710M3-11-L14A.qld

Last Altered: Friday, July 14, 2017 09:05:59 Pacific Daylight Time
Printed: Friday, July 14, 2017 09:06:30 Pacific Daylight Time

**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

AC 7/14/17

**Name: 170710M3_11, Date: 10-Jul-2017, Time: 18:11:57, ID: SS170710M3-1 PFC SSS 17G1011, Description: PFC SSS 17G1011**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | PFBS | 299 > 79.7 | 2.41e3 | 1.61e3 | 1.000 | | 2.92 | 2.95 | 18.7 | 8.27 | 82.7 |
| 2 | 2 | PFHxA | 313.2 > 268.9 | 1.88e4 | 6.57e3 | 1.000 | | 3.16 | 3.19 | 14.3 | 8.71 | 87.1 |
| 3 | 3 | PFHpA | 363 > 318.9 | 1.55e4 | 1.56e4 | 1.000 | | 3.43 | 3.45 | 12.4 | 8.62 | 86.2 |
| 4 | 4 | PFHxS | 398.9 > 79.6 | 1.79e3 | 1.43e3 | 1.000 | | 3.55 | 3.51 | 15.6 | 8.51 | 85.1 |
| 5 | 5 | PFOA | 413 > 368.7 | 2.07e4 | 2.44e4 | 1.000 | | 3.63 | 3.65 | 10.6 | 9.21 | 92.1 |
| 6 | 6 | PFNA | 462.9 > 418.8 | 2.58e4 | 2.82e4 | 1.000 | | 3.82 | 3.82 | 11.5 | 8.36 | 83.6 |
| 7 | 7 | PFOS | 499 > 79.9 | 4.20e3 | 4.85e3 | 1.000 | | 3.86 | 3.88 | 10.8 | 9.62 | 96.2 |
| 8 | 8 | PFDA | 513 > 468.8 | 3.07e4 | 2.87e4 | 1.000 | | 4.00 | 3.99 | 13.4 | 8.90 | 89.0 |
| 9 | 9 | PFUnA | 562.9 > 518.9 | 2.51e4 | 3.22e4 | 1.000 | | 4.16 | 4.15 | 9.72 | 9.23 | 92.3 |
| 10 | 10 | N-MeFOSAA | 570.1 > 419 | 8.56e3 | 6.40e3 | 1.000 | | 4.00 | 4.02 | 16.7 | 8.96 | 89.6 |
| 11 | 11 | N-EtFOSAA | 584.2 > 419 | 6.67e3 | 6.80e3 | 1.000 | | 4.08 | 4.09 | 12.3 | 9.02 | 90.2 |
| 12 | 12 | PFDoA | 612.9 > 318.8 | 2.76e3 | 3.66e3 | 1.000 | | 4.32 | 4.30 | 9.43 | 11.4 | 114.3 |
| 13 | 13 | PFTrDA | 662.9 > 618.9 | 3.48e4 | 3.66e3 | 1.000 | | 4.50 | 4.47 | 119 | 8.82 | 88.2 |
| 14 | 14 | PFTeDA | 712.9 > 668.8 | 2.52e4 | 2.75e4 | 1.000 | | 4.66 | 4.64 | 11.4 | 9.04 | 90.4 |
| 15 | 15 | 13C3-PFBA | 216.1 > 171.8 | 7.34e3 | 8.20e3 | 1.000 | 0.918 | 1.43 | 1.53 | 11.2 | 12.2 | 97.5 |
| 16 | 16 | 13C3-PFPeA | 266 > 221.8 | 1.36e4 | 2.07e4 | 1.000 | 0.275 | 2.72 | 2.75 | 3.28 | 11.9 | 95.6 |
| 17 | 17 | 13C3-PFBS | 302 > 98.8 | 1.61e3 | 2.07e4 | 1.000 | 0.033 | 2.92 | 2.96 | 0.389 | 11.7 | 93.8 |
| 18 | 18 | 13C2-PFHxA | 315 > 269.8 | 6.57e3 | 2.07e4 | 1.000 | 0.304 | 3.16 | 3.19 | 1.59 | 5.22 | 104.4 |
| 19 | 19 | 13C4-PFHpA | 367.2 > 321.8 | 1.56e4 | 2.07e4 | 1.000 | 0.306 | 3.43 | 3.45 | 3.77 | 12.3 | 98.6 |
| 20 | 20 | 18O2-PFHxS | 403 > 102.6 | 1.43e3 | 3.46e3 | 1.000 | 0.437 | 3.55 | 3.52 | 5.18 | 11.9 | 94.8 |
| 21 | 21 | 13C2-PFOA | 414.9 > 369.7 | 2.44e4 | 1.73e4 | 1.000 | 1.292 | 3.63 | 3.65 | 17.6 | 13.6 | 109.2 |
| 22 | 22 | 13C5-PFNA | 468.2 > 422.9 | 2.82e4 | 2.84e4 | 1.000 | 0.980 | 3.82 | 3.82 | 12.4 | 12.6 | 101.1 |
| 23 | 23 | 13C8-PFOS | 507 > 79.9 | 4.85e3 | 5.16e3 | 1.000 | 1.098 | 3.86 | 3.88 | 11.8 | 10.7 | 85.6 |
| 24 | 24 | 13C2-PFDA | 515.1 > 469.9 | 2.87e4 | 3.44e4 | 1.000 | 0.928 | 4.00 | 3.99 | 10.4 | 11.2 | 90.0 |
| 25 | 25 | 13C2-PFUnA | 565 > 519.8 | 3.22e4 | 3.24e4 | 1.000 | 1.083 | 4.16 | 4.15 | 12.4 | 11.5 | 91.9 |
| 26 | 26 | d3-N-MeFOSAA | 573.3 > 419 | 6.40e3 | 3.24e4 | 1.000 | 0.224 | 4.00 | 4.02 | 2.47 | 11.0 | 88.0 |
| 27 | 27 | d5-N-EtFOSAA | 589.3 > 419 | 6.80e3 | 3.24e4 | 1.000 | 0.230 | 4.08 | 4.08 | 2.62 | 11.4 | 91.3 |
| 28 | 28 | 13C2-PFDoA | 615 > 569.7 | 3.66e3 | 3.24e4 | 1.000 | 0.130 | 4.32 | 4.30 | 1.41 | 10.9 | 87.0 |
| 29 | 29 | 13C2-PFTeDA | 714.8 > 669.6 | 2.75e4 | 3.24e4 | 1.000 | 1.018 | 4.66 | 4.64 | 10.6 | 10.4 | 83.5 |
| 30 | 30 | 13C4-PFBA | 217 > 171.8 | 8.20e3 | 8.20e3 | 1.000 | 1.000 | 1.43 | 1.53 | 12.5 | 12.5 | 100.0 |
| 31 | 31 | 13C5-PFHxA | 318 > 272.9 | 2.07e4 | 2.07e4 | 1.000 | 1.000 | 3.18 | 3.18 | 5.00 | 5.00 | 100.0 |

70-130

50-150

Dataset: U:\Q4.PRO\results\170710M3\170710M3-11-L14A.qld

Last Altered: Friday, July 14, 2017 09:05:59 Pacific Daylight Time
Printed: Friday, July 14, 2017 09:06:30 Pacific Daylight Time

**Name: 170710M3_11, Date: 10-Jul-2017, Time: 18:11:57, ID: SS170710M3-1 PFC SSS 17G1011, Description: PFC SSS 17G1011**

| | # | Name | Trace | Area | IS Area | Wt./Vol. | RRF | Pred.RT | RT | y Axis Resp. | Conc. | %Rec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 32 | 13C3-PFHxS | 401.9 > 79.9 | 3.46e3 | 3.46e3 | 1.000 | 1.000 | 3.55 | 3.52 | 12.5 | 12.5 | 100.0 |
| 33 | 33 | 13C8-PFOA | 421.3 > 376 | 1.73e4 | 1.73e4 | 1.000 | 1.000 | 3.63 | 3.65 | 12.5 | 12.5 | 100.0 |
| 34 | 34 | 13C9-PFNA | 472.2 > 426.9 | 2.84e4 | 2.84e4 | 1.000 | 1.000 | 3.82 | 3.82 | 12.5 | 12.5 | 100.0 |
| 35 | 35 | 13C4-PFOS | 503 > 79.9 | 5.16e3 | 5.16e3 | 1.000 | 1.000 | 3.86 | 3.87 | 12.5 | 12.5 | 100.0 |
| 36 | 36 | 13C6-PFDA | 519.1 > 473.7 | 3.44e4 | 3.44e4 | 1.000 | 1.000 | 4.00 | 3.99 | 12.5 | 12.5 | 100.0 |
| 37 | 37 | 13C7-PFUnA | 570.1 > 524.8 | 3.24e4 | 3.24e4 | 1.000 | 1.000 | 4.16 | 4.15 | 12.5 | 12.5 | 100.0 |

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170710M3\170710M3-11-L14A.qld

Last Altered: Friday, July 14, 2017 09:05:59 Pacific Daylight Time
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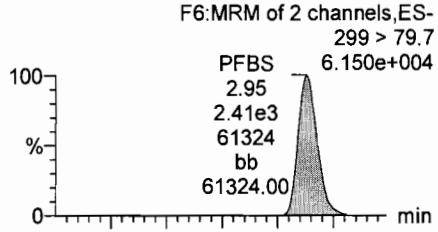
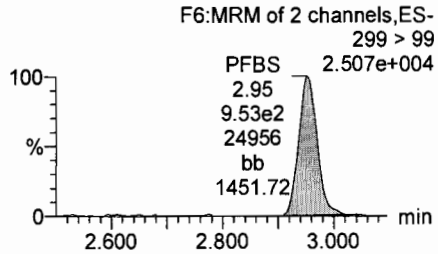
**Method: U:\Q4.PRO\MethDB\PFAS_L14-7-13-17.mdb 14 Jul 2017 08:41:09**
**Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-10-17-L14A.cdb 14 Jul 2017 08:57:46**

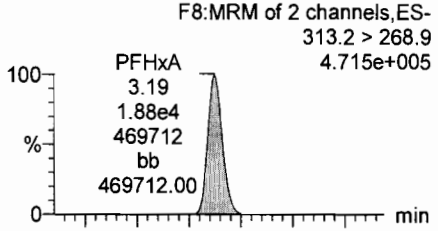
**Name: 170710M3_11, Date: 10-Jul-2017, Time: 18:11:57, ID: SS170710M3-1 PFC SSS 17G1011, Description: PFC SSS 17G1011**

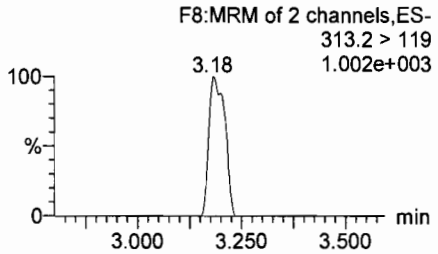
**Total PFBS**



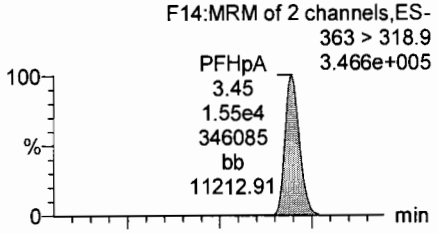



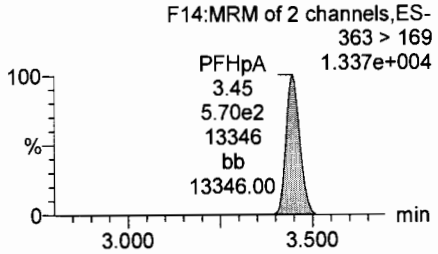

**PFHxA**



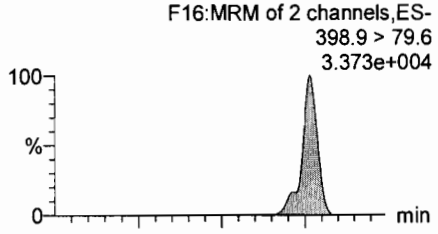



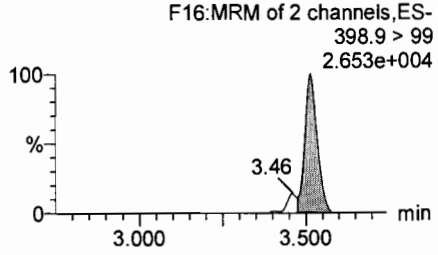

**PFHpA**




**Total PFHxS**

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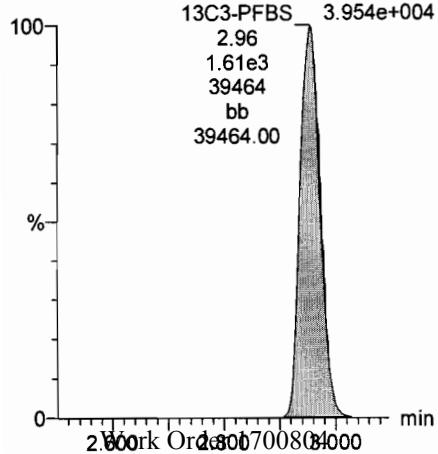
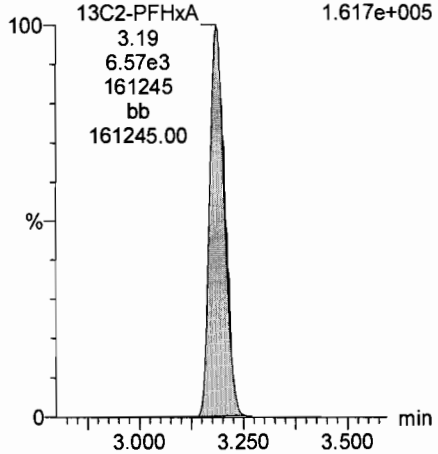
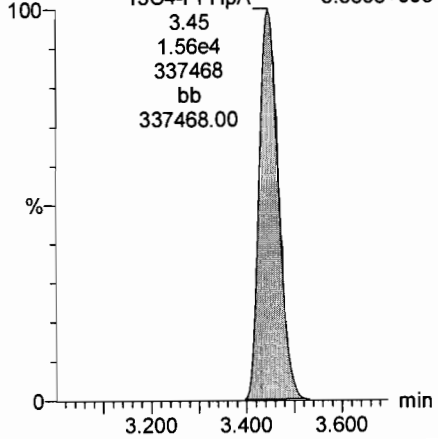


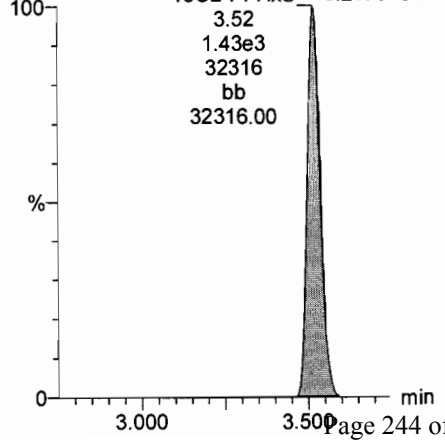

**13C2-PFHxA**




**13C4-PFHpA**




**18O2-PFHxS**

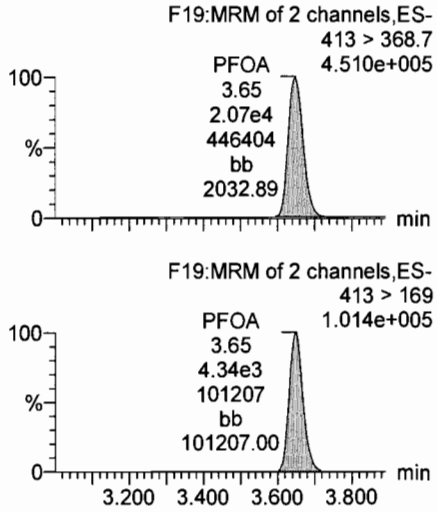


Dataset: U:\Q4.PRO\results\170710M3\170710M3-11-L14A.qld

Last Altered: Friday, July 14, 2017 09:05:59 Pacific Daylight Time
Printed: Friday, July 14, 2017 09:06:30 Pacific Daylight Time

**Name: 170710M3_11, Date: 10-Jul-2017, Time: 18:11:57, ID: SS170710M3-1 PFC SSS 17G1011, Description: PFC SSS 17G1011**

**Total PFOA**

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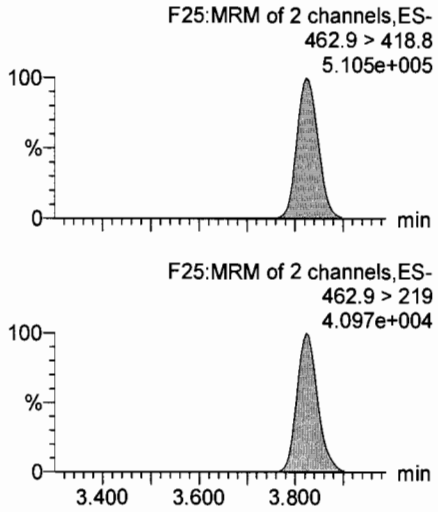
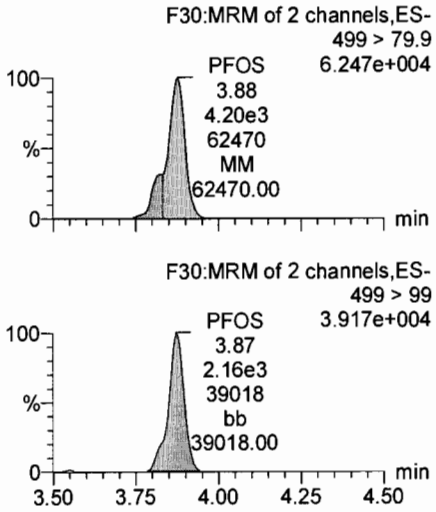
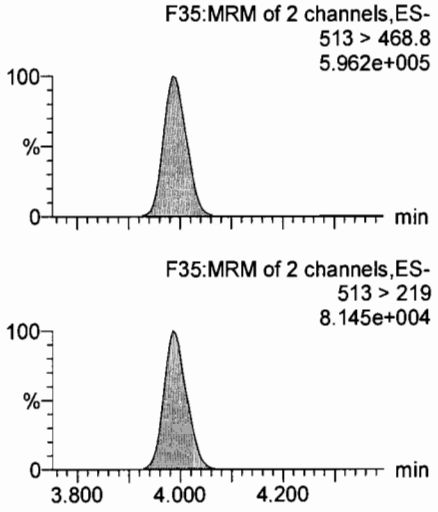


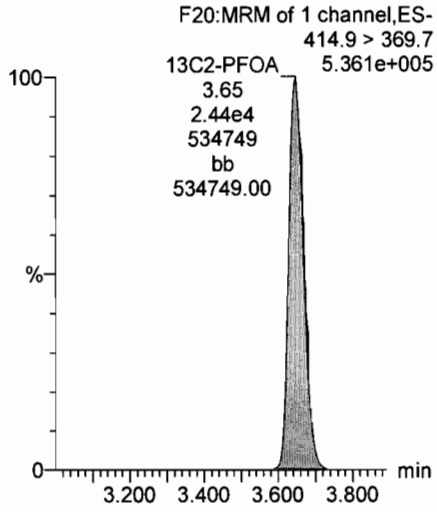

**Total PFOS**



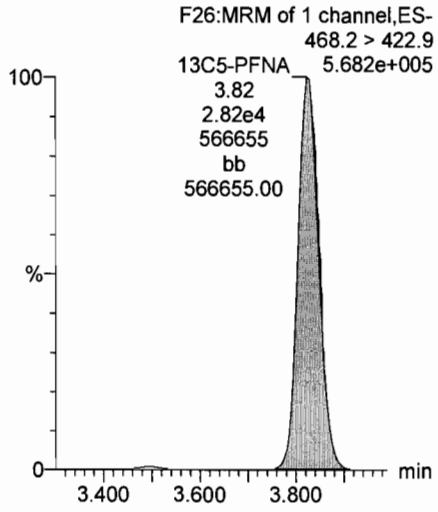

**PFDA**




**13C2-PFOA**




**13C5-PFNA**

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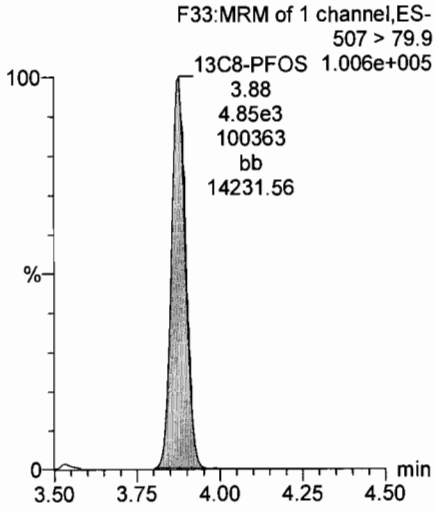


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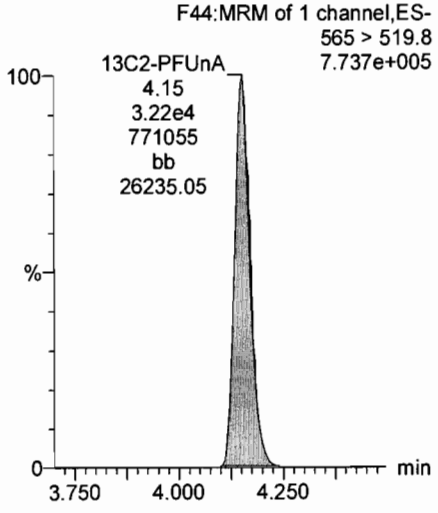

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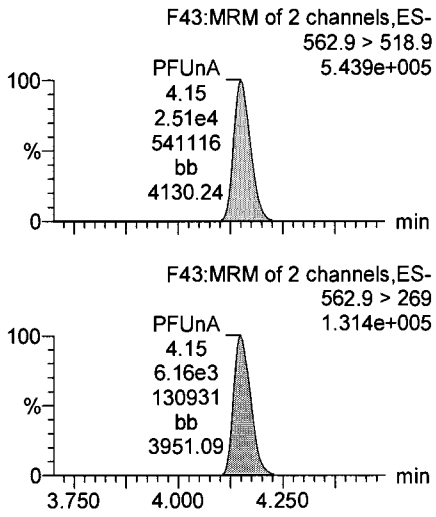
Last Altered: Friday, July 14, 2017 09:05:59 Pacific Daylight Time
Printed: Friday, July 14, 2017 09:06:30 Pacific Daylight Time

**Name: 170710M3_11, Date: 10-Jul-2017, Time: 18:11:57, ID: SS170710M3-1 PFC SSS 17G1011, Description: PFC SSS 17G1011**

**PFUnA**

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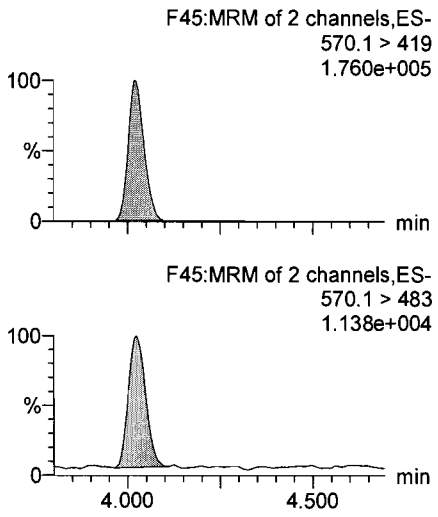


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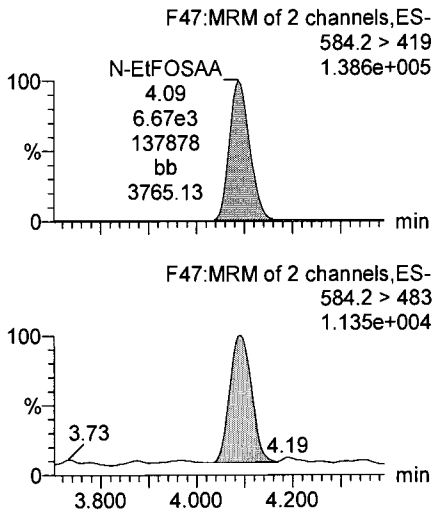
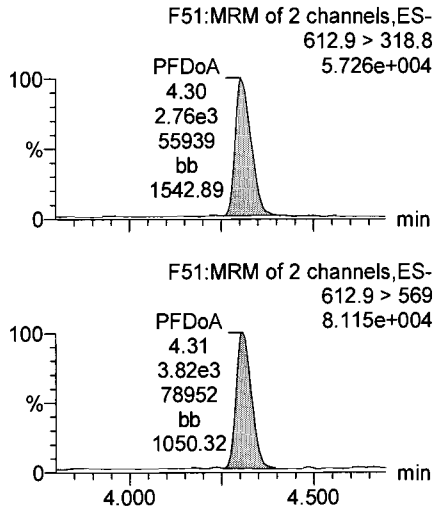



**PFDoA**

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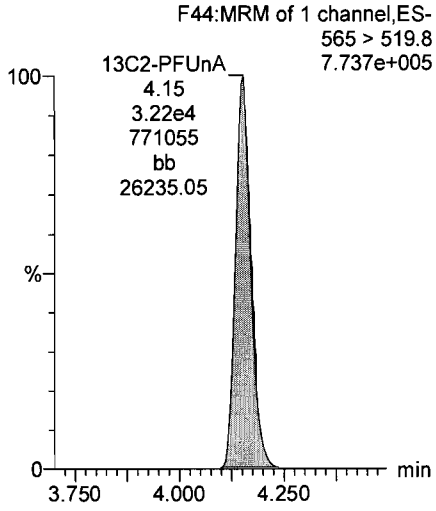
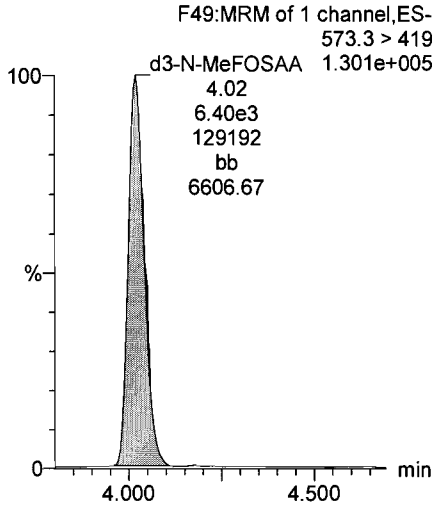
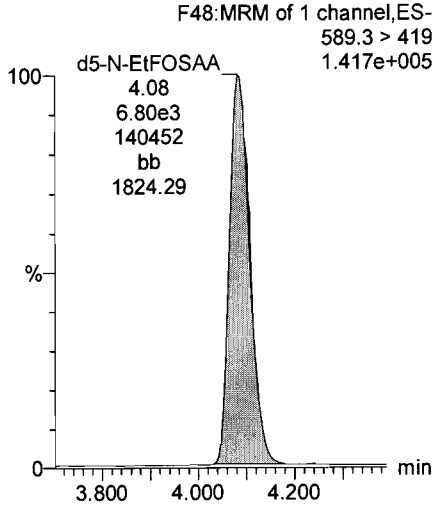



**d3-N-MeFOSAA**




**d5-N-EtFOSAA**

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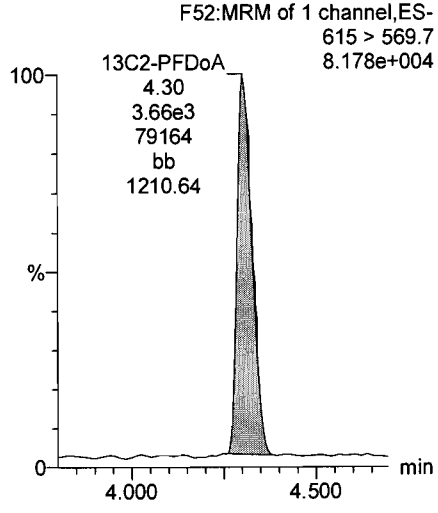

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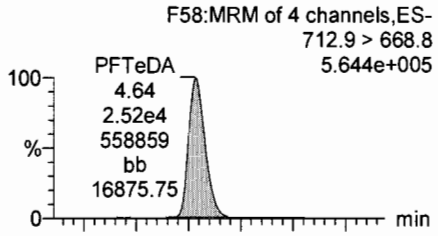
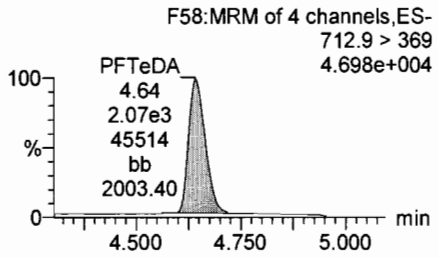
Printed: Friday, July 14, 2017 09:06:30 Pacific Daylight Time

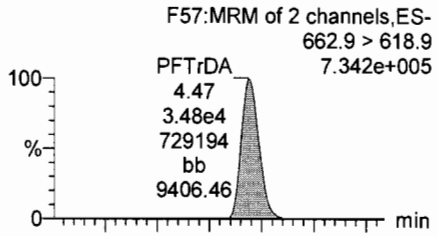
**Name: 170710M3_11, Date: 10-Jul-2017, Time: 18:11:57, ID: SS170710M3-1 PFC SSS 17G1011, Description: PFC SSS 17G1011**

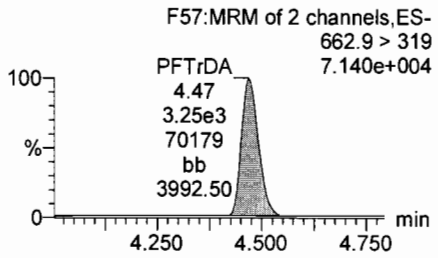
**PFTeDA**




**PFTrDA**

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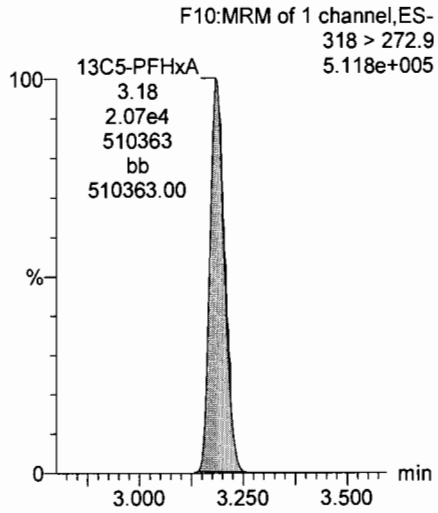


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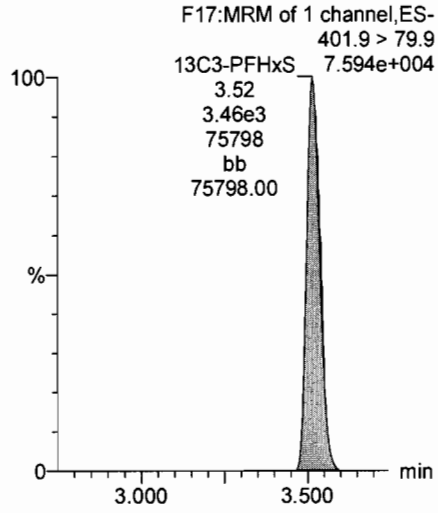


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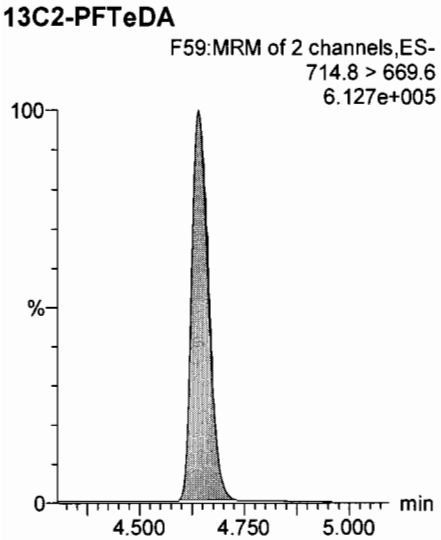
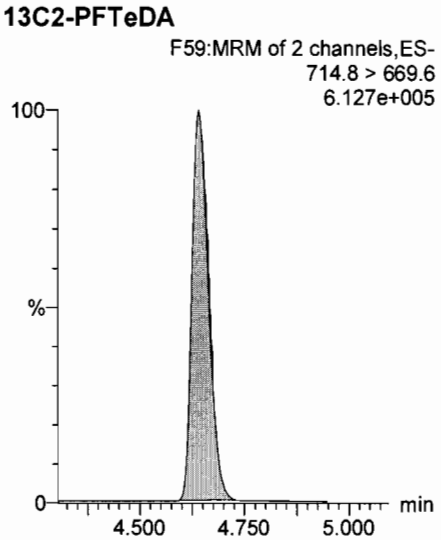



**13C2-PFTeDA**

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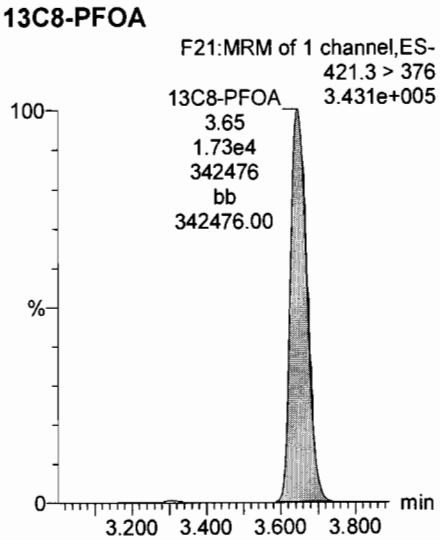


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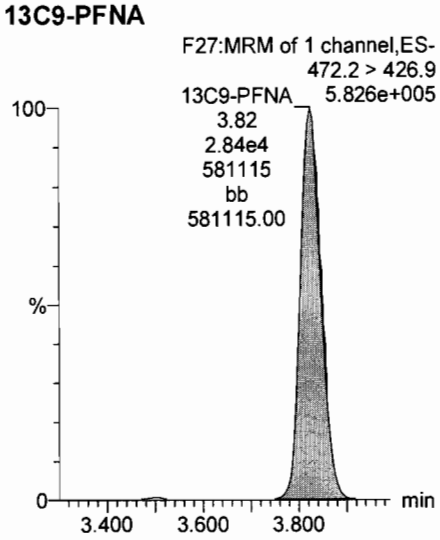

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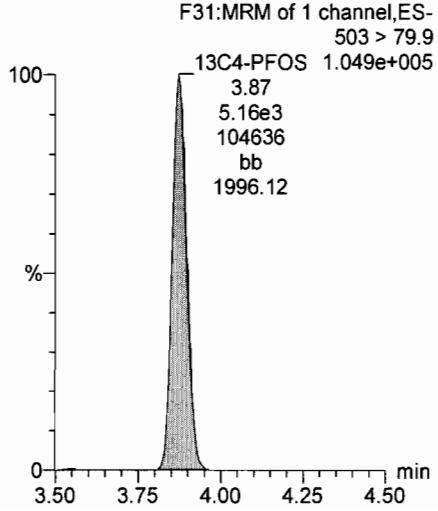
Printed: Friday, July 14, 2017 09:06:30 Pacific Daylight Time

**Name: 170710M3_11, Date: 10-Jul-2017, Time: 18:11:57, ID: SS170710M3-1 PFC SSS 17G1011, Description: PFC SSS 17G1011**

**13C4-PFOS**

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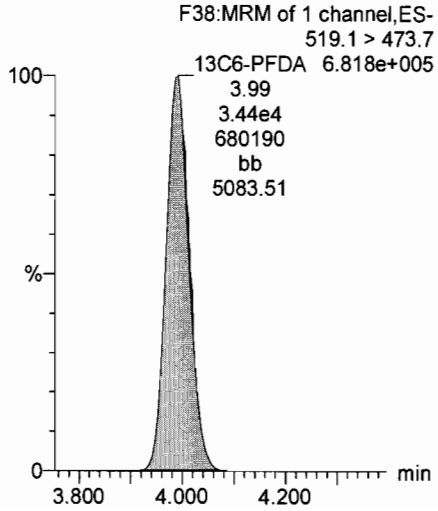
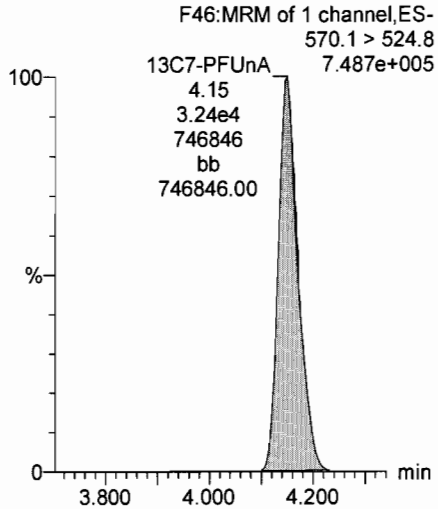



**13C7-PFUnA**



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"","","","

PFOA","91.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","91.0","91.0","","","","","","50","150","","","","",""
"IRPSite5-GW-05GW01-20170629","537_MOD","07/13/17","17:44","N","NA","000","13C8-PFOS","13C8-PFOS","110","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","110","110","","","","","","50","150","","","","",""
"IRPSite5-GW-05GW01-20170629","537_MOD","07/13/17","17:44","N","NA","000","13C5-PFNA","13C5-PFNA","93.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","93.8","93.8","","","","","","50","150","","","","",""
"IRPSite5-GW-05GW01-20170629","537_MOD","07/13/17","17:44","N","NA","000","13C2-PFDA","13C2-PFDA","82.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","82.2","82.2","","","","","","50","150","","","","",""
"IRPSite5-GW-05GW01-20170629","537_MOD","07/13/17","17:44","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","107","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","107","107","","","","","","50","150","","","","","",""
"IRPSite5-GW-05GW01-20170629","537_MOD","07/13/17","17:44","N","NA","000","13C2-PFUnA","13C2-PFUnA","79.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","79.1","79.1","","","","","","50","150","","","","",""
"IRPSite5-GW-05GW01-20170629","537_MOD","07/13/17","17:44","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","87.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","87.3","87.3","","","","","","50","150","","","","","",""
"IRPSite5-GW-05GW01-20170629","537_MOD","07/13/17","17:44","N","NA","000","13C2-PFDoA","13C2-PFDoA","37.4","","IS","Yes","Y","H","Y","","","","PCT_REC","","","","","100","37.4","37.4","","","","","","50","150","","*","","",""
"IRPSite5-GW-05GW01-20170629","537_MOD","07/13/17","17:44","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","118","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","118","118","","","","","","50","150","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","375-73-5","PFBS","2.30","","TRG","Yes","Y","J","Y","1.99","5.53","8.88","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","6.86","","TRG","Yes","Y","J","Y","2.42","5.53","8.88","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","3.17","","TRG","Yes","Y","J","Y","0.656","5.53","8.88","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","64.9","","TRG","Yes","Y","","Y","1.05","5.53","8.88","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","51.3","","TRG","Yes","Y","","Y","0.723","5.53","8.88","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","199","","TRG","Yes","Y","","Y","0.896","5.53","8.88","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","2.82","","TRG","Yes","Y","J","Y","0.899","5.53","8.88","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","335-76-

2","PERFLUORODECANOIC ACID
(PFDA)","","","TRG","Yes","N","U","Y","1.65","5.53","8.88","NG_L","NG_L","","","

EtFOSAA","93.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","93.6","93.6","","","","","","50","150
","","","","",""
","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","13C2-PFDoA","13C2-
PFDoA","62.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","62.3","62.3","","","","","","50","150","
","","","","",""
"IRPSite5-GW-FD01-20170629","537_MOD","07/13/17","17:54","N","NA","000","13C2-PFTeDA","13C2-
PFTeDA","92.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","92.3","92.3","","","","","","50","150"
,"","","","",""
","","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","375-73-
5","PFBS","","","TRG","Yes","N","U","Y","1.82","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
","","","",""
","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","307-24-
4","PERFLUOROHEXANOIC ACID
(PFHXA)","","","TRG","Yes","N","U","Y","2.22","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
","","","",""
","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","375-85-
9","PERFLUOROHEPTANOIC ACID
(PFHPA)","","","TRG","Yes","N","U","Y","0.602","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
","","","",""
","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","355-46-
4","PERFLUOROHEXANESULFONIC ACID
(PFHXS)","","","TRG","Yes","N","U","Y","0.965","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
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","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","335-67-
1","PERFLUOROOCTANOIC ACID
(PFOA)","","","TRG","Yes","N","U","Y","0.663","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
","","","",""
","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","1763-23-
1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION
","","","TRG","Yes","N","U","Y","0.822","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","375-95-
1","PERFLUORONONANOIC ACID
(PFNA)","","","TRG","Yes","N","U","Y","0.825","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
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"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","335-76-
2","PERFLUORODECANOIC ACID
(PFDA)","","","TRG","Yes","N","U","Y","1.52","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
","","","",""
","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","2355-31-
9","MeFOSAA","","","TRG","Yes","N","U","Y","1.68","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","
","","","","","",""
","","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","2058-94-
8","PERFLUOROUNDECANOIC ACID
(PFUNA)","","","TRG","Yes","N","U","Y","1.07","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
","","","",""
","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","2991-50-
6","EtFOSAA","","","TRG","Yes","N","U","Y","1.40","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
","","","","","",""
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"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","307-55-
1","PERFLUORODODECANOIC ACID
(PFDOA)","","","TRG","Yes","N","U","Y","0.807","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
","","","",""
","","","",""
"IRPSite33-GW-FRB01-20170629","537_MOD","07/13/17","18:05","N","NA","000","72629-94-
8","PFTrDA","","","TRG","Yes","N","U","Y","0.503","5.08","8.15","NG_L","NG_L","","","","","","","","","","","","","","","","","
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"IRPSite33-GW-11MW204D-20170629","537_MOD","07/13/17","18:15","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","62.9","","TRG","Yes","Y","","Y","1.01","5.34","8.53","NG_L","NG_L","","","

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,"","","
"IRPSite33-GW-11MW204D-20170629","537_MOD","07/13/17","18:15","N","NA","000","13C8-PFOS","13C8-PFOS","105","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","105","105","","","","","","50","150","","","","",""
,"","","
"IRPSite33-GW-11MW204D-20170629","537_MOD","07/13/17","18:15","N","NA","000","13C5-PFNA","13C5-PFNA","88.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","88.7","88.7","","","","","","50","150","","","","",""
,"","","
"IRPSite33-GW-11MW204D-20170629","537_MOD","07/13/17","18:15","N","NA","000","13C2-PFDA","13C2-PFDA","85.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","85.5","85.5","","","","","","50","150","","","","","",""
,"","","
"IRPSite33-GW-11MW204D-20170629","537_MOD","07/13/17","18:15","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","73.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","73.4","73.4","","","","","","50","150","","","","","","",""
"IRPSite33-GW-11MW204D-20170629","537_MOD","07/13/17","18:15","N","NA","000","13C2-PFUnA","13C2-PFUnA","78.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","78.7","78.7","","","","","","50","150","","","","","",""
"IRPSite33-GW-11MW204D-20170629","537_MOD","07/13/17","18:15","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","75.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.4","75.4","","","","","","50","150","","","","","","",""
"IRPSite33-GW-11MW204D-20170629","537_MOD","07/13/17","18:15","N","NA","000","13C2-PFDoA","13C2-PFDoA","37.4","","IS","Yes","Y","H","Y","","","","PCT_REC","","","","","100","37.4","37.4","","","","","","50","150","","","*","",""
"IRPSite33-GW-11MW204D-20170629","537_MOD","07/13/17","18:15","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","63.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","63.7","63.7","","","","","","50","150","","","","","",""
"IRPSite33-GW-11MW204S-20170629","537_MOD","07/13/17","18:26","N","NA","000","375-73-5","PFBS","9.66","","TRG","Yes","Y","","Y","1.92","5.34","8.58","NG_L","NG_L","","","","","","

(PFDA)","","","TRG","Yes","N","U","Y","1.60","5.34","8.58","NG_L","NG_L","","","

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"Bldg 110-GW-FRB01-20170629","537_MOD","07/13/17","18:47","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","","","TRG","Yes","N","U","Y","0.988","5.21","8.35","NG_L","NG_L","","","

"Bldg 110-GW-FRB01-20170629","537_MOD","07/13/17","18:47","N","NA","000","13C8-PFOS","13C8-PFOS","103","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","103","103","","","","","","50","150","","","","",""
"Bldg 110-GW-FRB01-20170629","537_MOD","07/13/17","18:47","N","NA","000","13C5-PFNA","13C5-PFNA","102","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","102","102","","","","","","50","150","","","","",""
"Bldg 110-GW-FRB01-20170629","537_MOD","07/13/17","18:47","N","NA","000","13C2-PFDA","13C2-PFDA","77.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","77.2","77.2","","","","","","50","150","","","","",""
"Bldg 110-GW-FRB01-20170629","537_MOD","07/13/17","18:47","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","107","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","107","107","","","","","","50","150","","","","","",""
"Bldg 110-GW-FRB01-20170629","537_MOD","07/13/17","18:47","N","NA","000","13C2-PFUnA","13C2-PFUnA","85.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","85.9","85.9","","","","","","50","150","","","","","",""
"Bldg 110-GW-FRB01-20170629","537_MOD","07/13/17","18:47","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","107","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","107","107","","","","","","50","150","","","","","",""
"Bldg 110-GW-FRB01-20170629","537_MOD","07/13/17","18:47","N","NA","000","13C2-PFDoA","13C2-PFDoA","28.2","","IS","Yes","Y","H","Y","","","","PCT_REC","","","","","100","28.2","28.2","","","","","","50","150","","*","","",""
"Bldg 110-GW-FRB01-20170629","537_MOD","07/13/17","18:47","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","6.10","","IS","Yes","Y","H","Y","","","","PCT_REC","","","","","100","6.10","6.10","","","","","","50","150","","*","","",""
"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","375-73-5","PFBS","6.18","","TRG","Yes","Y","J","Y","2.00","5.58","8.95","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""
"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","21.5","","TRG","Yes","Y","","Y","2.44","5.58","8.95","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""
"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","5.44","","TRG","Yes","Y","J","Y","0.661","5.58","8.95","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""
"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","53.2","","TRG","Yes","Y","","Y","1.06","5.58","8.95","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""
"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","14.7","","TRG","Yes","Y","","Y","0.729","5.58","8.95","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""
"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","36.8","","TRG","Yes","Y","","Y","0.903","5.58","8.95","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""
"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","","","TRG","Yes","N","U","Y","0.906","5.58","8.95","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""
"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","2.21","","TRG","Yes","Y","J","Y","1.67","5.58","8.95","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""

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"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","2355-31-9","MeFOSAA","","","TRG","Yes","N","U","Y","1.85","5.58","8.95","NG_L","NG_L","","","","

"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","13C2-PFDoA","13C2-PFDoA","86.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","86.9","86.9","","","","","","50","150","","","","",""
"Bldg 110-GW-11MW205S-20170629","537_MOD","07/13/17","18:58","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","121","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","121","121","","","","","","50","150","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","375-73-5","PFBS","9.06","","TRG","Yes","Y","","Y","1.85","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","51.7","","TRG","Yes","Y","","Y","2.26","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","30.6","","TRG","Yes","Y","","Y","0.612","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","309","","TRG","Yes","Y","","Y","0.980","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","73.9","","TRG","Yes","Y","","Y","0.674","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","433","","TRG","Yes","Y","","Y","0.835","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","3.84","","TRG","Yes","Y","J","Y","0.838","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","","","TRG","Yes","N","U","Y","1.54","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","2355-31-9","MeFOSAA","","","TRG","Yes","N","U","Y","1.71","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID (PFUNA)","","","TRG","Yes","N","U","Y","1.09","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","2991-50-6","EtFOSAA","","","TRG","Yes","N","U","Y","1.42","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID (PFDOA)","","","TRG","Yes","N","U","Y","0.820","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","",""
"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","72629-94-8","PFTrDA","","","TRG","Yes","N","U","Y","0.511","5.17","8.28","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","",""

"IRPSite7-GW-07GW102-20170629","537_MOD","07/13/17","19:09","N","NA","000","376-06-7","PFTeDA","","","TRG","Yes","N","U","Y","0.781","5.17","8.28","NG_L","NG_L","","","

4","PERFLUOROHEXANESULFONIC ACID
(PFHXS)","15.4","","TRG","Yes","Y","","Y","1.02","5.34","8.58","NG_L","NG_L","","","

PFOS","102","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","102","102","","","","","","50","150","","","","",""
"IRPSite5-GW-04GW82-20170629","537_MOD","07/13/17","19:51","N","NA","000","13C5-PFNA","13C5-PFNA","97.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","97.0","97.0","","","","","","50","150","","","","",""
"IRPSite5-GW-04GW82-20170629","537_MOD","07/13/17","19:51","N","NA","000","13C2-PFDA","13C2-PFDA","81.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","81.0","81.0","","","","","","50","150","","","","",""
"IRPSite5-GW-04GW82-20170629","537_MOD","07/13/17","19:51","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","129","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","129","129","","","","","","50","150","","","","","",""
"IRPSite5-GW-04GW82-20170629","537_MOD","07/13/17","19:51","N","NA","000","13C2-PFUnA","13C2-PFUnA","85.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","85.0","85.0","","","","","","50","150","","","","",""
"IRPSite5-GW-04GW82-20170629","537_MOD","07/13/17","19:51","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","91.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","91.8","91.8","","","","","","50","150","","","","","",""
"IRPSite5-GW-04GW82-20170629","537_MOD","07/13/17","19:51","N","NA","000","13C2-PFDoA","13C2-PFDoA","37.0","","IS","Yes","Y","H","Y","","","","PCT_REC","","","","","100","37.0","37.0","","","","","","50","150","","*","","",""
"IRPSite5-GW-04GW82-20170629","537_MOD","07/13/17","19:51","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","82.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","82.9","82.9","","","","","","50","150","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","375-73-5","PFBS","","","TRG","Yes","N","U","Y","1.79","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","","","TRG","Yes","N","U","Y","2.18","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","","","TRG","Yes","N","U","Y","0.591","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","","","TRG","Yes","N","U","Y","0.947","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","","","TRG","Yes","N","U","Y","0.651","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","","","TRG","Yes","N","U","Y","0.807","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","","","TRG","Yes","N","U","Y","0.810","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","","","TRG","Yes","N","U","Y","1.49","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","2355-31-9","MeFOSAA","","","TRG","Yes","N","U","Y","1.65","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID (PFUNA)","","","TRG","Yes","N","U","Y","1.05","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","","","","","","","","",""

,"","","","
","","","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","2991-50-
6","EtFOSAA","","","TRG","Yes","N","U","Y","1.37","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","
","","","","","","
","","","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","","","TRG","Yes","N","U","Y","0.792","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","","
","","","","
","","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","72629-94-
8","PFTrDA","","","TRG","Yes","N","U","Y","0.494","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","
","","","","","","
","","","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","376-06-
7","PFTeDA","","","TRG","Yes","N","U","Y","0.755","5.00","8.00","NG_L","NG_L","","","","","","","","","","","","","","","","
","","","","","","
","","","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C3-PFBS","13C3-
PFBS","122","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","122","122","","","","","","50","150","","","
","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C2-PFHxA","13C2-
PFHxA","107","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","107","107","","","","","","50","150","","","
","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C4-PFHpA","13C4-
PFHpA","93.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","93.2","93.2","","","","","","50","150","
","","","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","18O2-PFHxS","18O2-
PFHxS","118","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","118","118","","","","","","50","150","","","
","","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C2-PFOA","13C2-
PFOA","91.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","91.4","91.4","","","","","","50","150","","
","","","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C8-PFOS","13C8-
PFOS","97.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","97.0","97.0","","","","","","50","150","","","
","","","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C5-PFNA","13C5-
PFNA","100","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","100","100","","","","","","50","150","","","
","","","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C2-PFDA","13C2-
PFDA","96.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","96.5","96.5","","","","","","50","150","","
","","","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","d3-MeFOSAA","d3-
MeFOSAA","96.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","96.9","96.9","","","","","","50","15
0","","","","","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C2-PFUnA","13C2-
PFUnA","80.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","80.2","80.2","","","","","","50","150","","
","","","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","d5-EtFOSAA","d5-
EtFOSAA","98.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","98.5","98.5","","","","","","50","150
","","","","","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C2-PFDoA","13C2-
PFDoA","56.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","56.7","56.7","","","","","","50","150","","
","","","","
","","
"B7G0049-BLK1","537_MOD","07/13/17","17:10","N","NA","000","13C2-PFTeDA","13C2-
PFTeDA","148","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","148","148","","","","","","50","150","","
","","","","
","","
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","375-73-
5","PFBS","65.5","","TRG","Yes","Y","","Y","1.79","5.00","8.00","NG_L","NG_L","","","","80.0","65.5","81.9","","",

"","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","72.1","","TRG","Yes","Y","","Y","2.18","5.00","8.00","NG_L","NG_L","","","","80.0","72.1","90.1","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","67.1","","TRG","Yes","Y","","Y","0.591","5.00","8.00","NG_L","NG_L","","","","80.0","67.1","83.8","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","76.3","","TRG","Yes","Y","","Y","0.947","5.00","8.00","NG_L","NG_L","","","","80.0","76.3","95.3","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","67.8","","TRG","Yes","Y","","Y","0.651","5.00","8.00","NG_L","NG_L","","","","80.0","67.8","84.8","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","78.0","","TRG","Yes","Y","","Y","0.807","5.00","8.00","NG_L","NG_L","","","","80.0","78.0","97.5","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","68.2","","TRG","Yes","Y","","Y","0.810","5.00","8.00","NG_L","NG_L","","","","80.0","68.2","85.2","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","64.5","","TRG","Yes","Y","","Y","1.49","5.00","8.00","NG_L","NG_L","","","","80.0","64.5","80.7","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","2355-31-9","MeFOSAA","69.9","","TRG","Yes","Y","","Y","1.65","5.00","8.00","NG_L","NG_L","","","","80.0","69.9","87.3","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID (PFUNA)","73.5","","TRG","Yes","Y","","Y","1.05","5.00","8.00","NG_L","NG_L","","","","80.0","73.5","91.9","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","2991-50-6","EtFOSAA","75.6","","TRG","Yes","Y","","Y","1.37","5.00","8.00","NG_L","NG_L","","","","80.0","75.6","94.5","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID (PFDOA)","102","","TRG","Yes","Y","","Y","0.792","5.00","8.00","NG_L","NG_L","","","","80.0","102","127","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","72629-94-8","PFTrDA","95.0","","TRG","Yes","Y","","Y","0.494","5.00","8.00","NG_L","NG_L","","","","80.0","95.0","119","","","","","","60","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","376-06-7","PFTeDA","79.0","","TRG","Yes","Y","","Y","0.755","5.00","8.00","NG_L","NG_L","","","","80.0","79.0","98.8","","","","","","70","130","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C3-PFBS","13C3-PFBS","126","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","126","126","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C2-PFHxA","13C2-PFHxA","102","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","102","102","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C4-PFHpA","13C4-PFHpA","88.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","88.2","88.2","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","18O2-PFHxS","18O2-PFHxS","109","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","109","109","","","","","","50","150","","","","",""

"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C2-PFOA","13C2-PFOA","104","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","104","104","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C8-PFOS","13C8-PFOS","106","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","106","106","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C5-PFNA","13C5-PFNA","101","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","101","101","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C2-PFDA","13C2-PFDA","93.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","93.1","93.1","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","68.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","68.2","68.2","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C2-PFUnA","13C2-PFUnA","65.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","65.4","65.4","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","77.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","77.0","77.0","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C2-PFDoA","13C2-PFDoA","62.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","62.5","62.5","","","","","","50","150","","","","",""
"B7G0049-BS1","537_MOD","07/13/17","16:38","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","77.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","77.8","77.8","","","","","","50","150","","","","",""

**LABORATORY DATA CONSULTANTS, INC.**
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AMEC Foster Wheeler, Inc.
7376 SW Durham Road
Portland, OR 97224
Attn: Ms. Medora Hackler

August 8, 2017

SUBJECT: White Oak, Data Validation

Dear Ms. Hackler,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on August 2, 2017. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #39198:**

| **SDG #** | **Fraction** |
|---|---|
| 1700803, 1700804, 1700887 | Perfluorinated Alkyl Acids |

The data validation was performed under Stage 2B & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan for Initial Assessment of Perf-fluorinated Compounds or Per-and Polyfluoralkyl Substances Sites at Various Base Realignment and Closure Installations, June 2017
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1, 2017
- USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review, January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
Project Manager/Senior Chemist

946 pages-SF

Attachment 1

**Client Select** **Stage 2B/4**

# LDC #39198 (AMEC Foster Wheeler - San Diego, CA / White Oak)

| LDC | SDG# | DATE REC'D | (1) DATE DUE | PFAs (537) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Matrix: | Water/Soil | | | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S |
| A | 1700803 | 08/02/17 | 08/09/17 | 5 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 1700804 | 08/02/17 | 08/09/17 | 8 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 1700804 | 08/02/17 | 08/09/17 | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 1700887 | 08/02/17 | 08/09/17 | 4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 1700887 | 08/02/17 | 08/09/17 | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | J/PG | | | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

V:\LOGIN\AMEC FW\White Oaks\39198ST.wpd

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** White Oak

**LDC Report Date:** August 4, 2017

**Parameters:** Perfluorinated Alkyl Acids

**Validation Level:** Stage 2B

**Laboratory:** Vista Analytical Laboratory

**Sample Delivery Group (SDG):** 1700803

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| IRPSite7-GW-46GW205-20170628 | 1700803-03 | Water | 06/28/17 |
| IRPSite7-GW-FD01-20170628 | 1700803-04 | Water | 06/28/17 |
| IRPSite7-GW-07GW202-20170628 | 1700803-05 | Water | 06/28/17 |
| IRPSite5-GW-04GW81S-20170628 | 1700803-08 | Water | 06/28/17 |
| IRPSite5-GW-04GW80-20170628 | 1700803-09 | Water | 06/28/17 |
| IRPSite5-GW-04GW80-20170628MS | 1700803-09MS | Water | 06/28/17 |
| IRPSite5-GW-04GW80-20170628MSD | 1700803-09MSD | Water | 06/28/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling and Analysis Plan) for Initial Assessment of Perf-fluorinated Compounds (PFCS) or Per- and Polyfluoralkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. LC/MS Instrument Performance Check

Instrument performance check was performed prior to initial calibration.

## III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination ($r^2$) were greater than or equal to 0.990.

For each calibration point, the percent differences (%D) of its true value were less than or equal to 30.0% for all compounds with the following exceptions:

| Date | Standard | Compound | %D | Associated Samples | Flag | A or P |
|---|---|---|---|---|---|---|
| 07/10/17 | ICAL-CS02 | PFDoA | -56.9 | All samples in SDG 1700803 | UJ (all non-detects) | P |
| 07/10/17 | ICAL-CS2 | PFDoA | +36.9 | All samples in SDG 1700803 | NA | - |

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Samples IRPSite7-GW-FRB01-20170628 and IRPSite5-GW-FRB01-20170628 were identified as field rinsate blanks. No contaminants were found.

Samples EB01 and EB02 were identified as equipment blanks. No contaminants were found.

Sample SB01 was identified as a source blank. No contaminants were found.

## VII. Surrogates

Surrogates were not performed for this SDG.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Compound | MS (%R) (Limits) | MSD (%R) (Limits) | Flag | A or P |
|---|---|---|---|---|---|
| IRPSite5-GW-04GW80-20170628MS/MSD (IRPSite5-GW-04GW80-20170628) | PFDoA | - | 185 (70-130) | NA | - |

Relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Compound | RPD (Limits) | Flag | A or P |
|---|---|---|---|---|
| IRPSite5-GW-04GW80-20170628MS/MSD (IRPSite5-GW-04GW80-20170628) | PFDoA<br>PFTrDA | 66.2 (≤30)<br>70.1 (≤30) | NA | - |

## IX. Ongoing Precision Recovery Samples

Ongoing precision recovery (OPR) samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## X. Field Duplicates

Samples IRPSite7-GW-46GW205-20170628 and IRPSite7-GW-FD01-20170628 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

| Compound | Concentration (ng/L) | | RPD (Limits) | Differences (Limits) | Flag | A or P |
|---|---|---|---|---|---|---|
| | IRPSite7-GW-46GW205-20170628 | IRPSite7-GW-FD01-20170628 | | | | |
| PFBS | 6.05 | 2.48 | - | 3.57 (≤8.49) | - | - |
| PFHpA | 2.92 | 4.95 | - | 2.03 (≤8.49) | - | - |
| PFHxS | 7.69 | 20.2 | - | 12.51 (≤8.49) | J (all detects) | A |
| PFOA | 7.05 | 15.2 | - | 8.15 (≤8.49) | - | - |
| PFOS | 6.07 | 22.6 | - | 16.53 (≤8.49) | J (all detects) | A |
| PFHxA | 5.30U | 8.15 | - | 2.85 (≤8.49) | - | - |
| PFNA | 5.30U | 1.02 | - | 4.28 (≤8.49) | - | - |

## XI. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

| Sample | Internal Standards | Area (Limits) | Affected Compound | Flag | A or P |
|---|---|---|---|---|---|
| IRPSite7-GW-46GW205-20170628 | $^{13}C_2$-PFDoA<br>$^{13}C_2$-PFTeDA | 4.20 (50-150)<br>4.90 (50-150) | PFDoA<br>PFTrDA<br>PFTeDA | UJ (all non-detects)<br>UJ (all non-detects)<br>UJ (all non-detects) | P |
| IRPSite7-GW-FD01-20170628 | $^{13}C_2$-PFDoA<br>$^{13}C_2$-PFTeDA | 19.4 (50-150)<br>9.60 (50-150) | PFDoA<br>PFTrDA<br>PFTeDA | UJ (all non-detects)<br>UJ (all non-detects)<br>UJ (all non-detects) | P |
| IRPSite7-GW-07GW202-20170628 | $^{13}C_2$-PFDoA<br>$^{13}C_2$-PFTeDA | 31.2 (50-150)<br>20.1 (50-150) | PFDoA<br>PFTrDA<br>PFTeDA | UJ (all non-detects)<br>UJ (all non-detects)<br>UJ (all non-detects) | P |
| IRPSite5-GW-04GW81S-20170628 | $^{13}C_2$-PFDoA<br>$^{13}C_2$-PFTeDA | 10.7 (50-150)<br>25.6 (50-150) | PFDoA<br>PFTrDA<br>PFTeDA | UJ (all non-detects)<br>UJ (all non-detects)<br>UJ (all non-detects) | P |
| IRPSite5-GW-04GW80-20170628 | $^{13}C_2$-PFDoA<br>$^{13}C_2$-PFTeDA | 36.6 (50-150)<br>26.3 (50-150) | PFDoA<br>PFTrDA<br>PFTeDA | UJ (all non-detects)<br>UJ (all non-detects)<br>UJ (all non-detects) | P |

## XII. Compound Quantitation

The laboratory limit of quantitation (LOQ) and limit of detection (LOD) with no moisture or dilution are higher than the QAPP LOQ and LOD.

The laboratory detection limit (DL) with no moisture or dilution for PFOS is higher than the QAPP DL.

Raw data were not reviewed for Stage 2B validation.

## XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

## XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

## XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration %D, field duplicate differences, and internal standards area, data were qualified as estimated in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

## White Oak
## Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1700803

| Sample | Compound | Flag | A or P | Reason |
|---|---|---|---|---|
| IRPSite7-GW-46GW205-20170628<br>IRPSite7-GW-FD01-20170628<br>IRPSite7-GW-07GW202-20170628<br>IRPSite5-GW-04GW81S-20170628<br>IRPSite5-GW-04GW80-20170628 | PFDoA | UJ (all non-detects) | P | Initial calibration (%D) |
| IRPSite7-GW-46GW205-20170628<br>IRPSite7-GW-FD01-20170628 | PFHxS<br>PFOS | J (all detects)<br>J (all detects) | A | Field duplicates (RPD) |
| IRPSite7-GW-46GW205-20170628<br>IRPSite7-GW-FD01-20170628<br>IRPSite7-GW-07GW202-20170628<br>IRPSite5-GW-04GW81S-20170628<br>IRPSite5-GW-04GW80-20170628 | PFDoA<br>PFTrDA<br>PFTeDA | UJ (all non-detects)<br>UJ (all non-detects)<br>UJ (all non-detects) | P | Internal standards (area) |

## White Oak
## Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1700803

No Sample Data Qualified in this SDG

LDC #: 39198A96 **VALIDATION COMPLETENESS WORKSHEET** Date: 8/3/17
SDG #: 1700803 Stage 2B Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: CV
2nd Reviewer: 97

**METHOD:** LCMS Perfluorinated Alkyl Acids (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A | |
| II. | LC/MS Instrument performance check | A | |
| III. | Initial calibration/ICV | ~~A~~ / A | RSD ≤ 20%. $r^2$ 30%* ICV ≤ 30% |
| IV. | Continuing calibration | A | RSD ≤ 30%. |
| V. | Laboratory Blanks | A | |
| VI. | Field blanks | ND | ~~EB~~=1. EB=2. 10. ~~FB~~=6.7 |
| VII. | Surrogate spikes | N | |
| VIII. | Matrix spike/Matrix spike duplicates | SW | |
| IX. | Laboratory control samples | A | OPR |
| X. | Field duplicates | SW | D=3+4 |
| XI. | Internal standards | SW | |
| XII. | Compound quantitation RL/LOQ/LODs | SW | |
| XIII. | Target compound identification | N | |
| XIV. | System performance | N | |
| XV. | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| ~~1~~ | ~~SB01~~ | ~~1700803-01~~ | ~~Water~~ | ~~06/28/17~~ |
| ~~2~~ | ~~EB01~~ | ~~1700803-02~~ | ~~Water~~ | ~~06/28/17~~ |
| 3 | IRPSite7-GW-46GW205-20170628 | 1700803-03 | Water | 06/28/17 |
| 4 | IRPSite7-GW-FD01-20170628 | 1700803-04 | Water | 06/28/17 |
| 5 | IRPSite7-GW-07GW202-20170628 | 1700803-05 | Water | 06/28/17 |
| ~~6~~ | ~~IRPSite7-GW-FRB01-20170628~~ | ~~1700803-06~~ | ~~Water~~ | ~~06/28/17~~ |
| ~~7~~ | ~~IRPSite5-GW-FRB01-20170628~~ | ~~1700803-07~~ | ~~Water~~ | ~~06/28/17~~ |
| 8 | IRPSite5-GW-04GW81S-20170628 | 1700803-08 | Water | 06/28/17 |
| 9 | IRPSite5-GW-04GW80-20170628 | 1700803-09 | Water | 06/28/17 |
| ~~10~~ | ~~EB02~~ | ~~1700803-10~~ | ~~Water~~ | ~~06/28/17~~ |
| 11 | IRPSite5-GW-04GW80-20170628MS | 1700803-09MS | Water | 06/28/17 |
| 12 | IRPSite5-GW-04GW80-20170628MSD | 1700803-09MSD | Water | 06/28/17 |
| 13 | | | | |

* 30% for each calibration pt. and ~~50%~~ for lowest pt.

# TARGET COMPOUND WORKSHEET

**METHOD: PFOS/PFOAs**

| | | | | |
|---|---|---|---|---|
| A. Perfluorohexanoic acid (PFHxA) | | | | |
| B. Perfluoroheptanoic acid (PFHpA) | | | | |
| C. Perfluorooctanoic acid (PFOA) | | | | |
| D. Perfluorononanoic acid (PFNA) | | | | |
| E. Perfluorodecanoic acid (PFDA) | | | | |
| F. Perfluoroundecanoic acid (PFUnA) | | | | |
| G. Perfluorododecanoic acid (PFDoA) | | | | |
| H. Perfluorotridecanoic acid (PFTriA) | | | | |
| I. Perfluorotetradecanoic acid (PFTeA) | | | | |
| J. Perfluorobutanesulfonic acid (PFBS) | | | | |
| K. Perfluorohexanesulfonic acid (PFHxS) | | | | |
| L. Perfluoroheptanesulfonic acid (PFHpS) | | | | |
| M. Perfluorooctanesulfonic acid (PFOS) | | | | |
| N.Perfluorodecanesulfonic acid (PFDS) | | | | |
| O. Perfluorooctane Sulfonamide (FOSA) | | | | |
| P. Perfluorobutanoic acid (PFBA) | | | | |
| Q. Perfluoropentanoic acis (PFPeA) | | | | |
| R. 6:2FTS | | | | |
| S. 8:2FTS | | | | |
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LDC #: 39198A96

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration


Reviewer: 9
2nd Reviewer: M

**METHOD:** LCMS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
Y N N/A Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?
Y N N/A Were all percent relative standard deviations (%RSD) ≤ 20%?
Y N N/A Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?

| # | Date | Standard ID | Compound | Finding %RSD/$r^2$ | Finding %D | Associated Samples | Qualifications |
|---|---|---|---|---|---|---|---|
| | 7/10/17 | ICAL-CS02 | PFDoA | 0. | -56.9 | All (ND) | J+/UN/AP |
| | | ↓ CS2 | ↓ | | +36.9 | | J+ Lots/AP |
| | | | | | | | |
| | | | | | | | |
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LDC #: 39198A96

# VALIDATION FINDINGS WORKSHEET
## Matrix Spike/Matrix Spike Duplicates/Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: FM

**METHOD:** LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) or duplicate sample analyzed for each matrix in this SDG?
(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?
Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?
Y N (N/A) Were all duplicate sample relative percent differences (RPD) or differences within QC limits?

| # | Date | MS/MSD/DUP ID | Compound | MS %R (Limits) | MSD %R (Limits) | RPD (Limits) | Associated Samples | Qualifications |
|---|---|---|---|---|---|---|---|---|
| | | 11/12 | PFDoA | | 185(70-130) | | 9 (ND) | J det 3/A |
| | | | PFDoA | | | 66.2 (≤ 30) | | |
| | | | PFTrDA | | | 70.1 ↓ | | ↓ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | |

LDC#: 39198A96

# VALIDATION FINDINGS WORKSHEET
## Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 9

**METHOD**: PFCs (Method 537 mod)

| Compound | Concentration (ng/L) | | (≤30) RPD | Difference | Limits | Qual |
|---|---|---|---|---|---|---|
| | 3 | 4 | | | | |
| J | 6.05 | 2.48 | | 3.57 | ≤8.49 | |
| B | 2.92 | 4.95 | | 2.03 | ≤8.49 | |
| K | 7.69 | 20.2 | | 12.51 | ≤8.49 | Det/A |
| C | 7.05 | 15.2 | | 8.15 | ≤8.49 | |
| M | 6.07 | 22.6 | | 16.53 | ≤8.49 | Det/A |
| A | 5.30U | 8.15 | | 2.85 | ≤8.49 | |
| D | 5.30U | 1.02 | | 4.28 | ≤8.49 | |

LDC #: 39198A96

# VALIDATION FINDINGS WORKSHEET
## Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: FT

**METHOD:** LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all internal standard area counts within 50-150% limits?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

| # | Date | Sample ID | Internal Standard | Area (Limits) | RT (Limits) | Qualifications |
|---|---|---|---|---|---|---|
| | | BT40014-BLK1 | 13C2-PFDoA | 29.5 (50-150) | | J/UJ/P (PFDoA) |
| | | | 13C2-PFTeDA | 11.3 ↓ | | (PFTeDA) |
| | | | | | | (PFTrDA) |
| | | BT40054-BLK1 | 13C2-PFDoA | 14.0 (50-150) | | J/UJ/P (PFDoA) |
| | | | 13C2-PFTeDA | 39.8 ↓ | | (PFTeDA) |
| | | | | | | (PFTrDA) |
| | | 3 | 13C2-PFDoA | 4.20 (50-150) | | J/UJ/P* (ND) |
| | | | 13C2-PFTeDA | 4.90 (50-150) | | |
| | | 4 | | 19.4 | | |
| | | | | 9.60 | | |
| | | 5 | | 31.2 | | |
| | | | | 20.1 | | |
| | | 8 | | 10.7 | | |
| | | | | 25.6 | | |
| | | ~~8~~ | | | | |
| | | 9 | | ~~36.6~~ | | |
| | | | | 26.3 | | |
| | | 11 (MS) | | 28.8 | | No Qual |
| | | | | 12.2 | | |

(* PFDoA, PFTrDA, PFTeDA)



Privileged and Confidential

LDC #: 39193A96

# VALIDATION FINDINGS WORKSHEET
## Internal Standards


Reviewer: 9
2nd Reviewer: 77

**METHOD:** LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all internal standard area counts within 50-150% limits?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

| # | Date | Sample ID | Internal Standard | Area (Limits) | RT (Limits) | Qualifications |
|---|---|---|---|---|---|---|
| | | 12 (MS) | 13C2-PFDoA | 20.8 (50-150) | | No qual |
| | | | 13C2-PFTeDA | 1>.2 ↓ | | |
| | | | | | | |
| | | | | | | |
| | | | |

LDC #: 39178A96

# VALIDATION FINDINGS WORKSHEET
## Compound Quantitation and Reported RLs

Page: 6 of 1
Reviewer: A
2nd Reviewer: F

**METHOD:** LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N (N/A) Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N (N/A) Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

| # | Date | Sample ID | Finding | | Qualifications |
|---|---|---|---|---|---|
| | | All | Lab rerported LOD/LOQ > LOD/LOQ in the QAPP | | Text |
| | | | | | |
| | | All | The DL for PFOS = 0.807 ng/L, DL in the QAPP = 0.305 ng/L | | Text |
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Comments: See sample calculation verification worksheet for recalculations

**LDC Report#** 39198B96

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** White Oak

**LDC Report Date:** August 4, 2017

**Parameters:** Perfluorinated Alkyl Acids

**Validation Level:** Stage 2B & 4

**Laboratory:** Vista Analytical Laboratory

**Sample Delivery Group (SDG):** 1700804

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| IRPSite7-GW-07GW41-20170629 | 1700804-01 | Water | 06/29/17 |
| IRPSite5-GW-05GW01-20170629 | 1700804-02 | Water | 06/29/17 |
| IRPSite5-GW-FD01-20170629 | 1700804-03 | Water | 06/29/17 |
| IRPSite33-GW-11MW204D-20170629 | 1700804-05 | Water | 06/29/17 |
| IRPSite33-GW-11MW204S 20170629 | 1700804-06 | Water | 06/29/17 |
| Bldg 110-GW-11MW205D-20170629 | 1700804-07 | Water | 06/29/17 |
| Bldg 110-GW-11MW205S 20170629 | 1700804-09 | Water | 06/29/17 |
| IRPSite7-GW-07GW102 20170629** | 1700804-10** | Water | 06/29/17 |
| IRPSite5-GW-04GW82-20170629 | 1700804-11 | Water | 06/29/17 |

**Indicates sample underwent Stage 4 validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling and Analysis Plan) for Initial Assessment of Perf-fluorinated Compounds (PFCS) or Per- and Polyfluoralkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Stage 4 data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. LC/MS Instrument Performance Check

Instrument performance check was performed prior to initial calibration.

## III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination ($r^2$) were greater than or equal to 0.990.

For each calibration point, the percent differences (%D) of its true value were less than or equal to 30.0% for all compounds with the following exceptions:

| Date | Standard | Compound | %D | Associated Samples | Flag | A or P |
|---|---|---|---|---|---|---|
| 07/10/17 | ICAL-CS02 | PFDoA | -56.9 | All samples in SDG 1700804 | UJ (all non-detects) | P |
| 07/10/17 | ICAL-CS2 | PFDoA | +36.9 | All samples in SDG 1700804 | NA | - |

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds with the following exceptions:

| Date | Standard | Compound | %D | Associated Samples | Flag | A or P |
|---|---|---|---|---|---|---|
| 07/13/17 | 170713M1_20 | PFDoA | +98.0 | All samples in SDG 1700804 | NA | - |

| Date | Standard | Compound | %D | Associated Samples | Flag | A or P |
|---|---|---|---|---|---|---|
| 07/13/17 | 170713M1_35 | PFDoA | +135 | IRPSite5-GW-04GW82-20170629 | NA | - |

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Samples IRPSite7-GW-FRB01-20170628, IRPSite5-GW-FRB01-20170628 (both from SDG 1700803), IRPSite33-GW-FRB01-20170629, and Bldg 110-GW-FRB01 20170629 were identified as field rinsate blanks. No contaminants were found.

Sample SB01 (from SDG 1700803) was identified as a source blank. No contaminants were found.

## VII. Surrogates

Surrogates were not performed for this SDG.

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Ongoing Precision Recovery Samples

Ongoing precision recovery (OPR) samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## X. Field Duplicates

Samples IRPSite5-GW-05GW01-20170629 and IRPSite5-GW-FD01-20170629 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

| Compound | Concentration (ng/L) | | RPD (Limits) | Differences (Limits) | Flag | A or P |
|---|---|---|---|---|---|---|
| | IRPSite5-GW-05GW01-20170629 | IRPSite5-GW-FD01-20170629 | | | | |
| PFHxA | 6.98 | 6.86 | - | 0.12 (≤8.88) | - | - |
| PFHpA | 3.96 | 3.17 | - | 0.79 (≤8.88) | - | - |

| Compound | Concentration (ng/L) | | RPD (Limits) | Differences (Limits) | Flag | A or P |
|---|---|---|---|---|---|---|
| | IRPSite5-GW-05GW01-20170629 | IRPSite5-GW-FD01-20170629 | | | | |
| PFHxS | 61.1 | 64.9 | 6 (≤30) | - | - | - |
| PFOA | 48.8 | 51.3 | 5 (≤30) | - | - | - |
| PFOS | 205 | 199 | 3 (≤30) | - | - | - |
| PFNA | 3.24 | 2.82 | - | 0.42 (≤8.88) | - | - |
| PFBS | 5.43U | 2.30 | - | 3.13 (≤8.88) | - | - |

## XI. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

| Sample | Internal Standards | Area (Limits) | Affected Compound | Flag | A or P |
|---|---|---|---|---|---|
| IRPSite5-GW-05GW01-20170629 | $^{13}C_2$-PFDoA | 37.4 (50-150) | PFDoA<br>PFTriA | UJ (all non-detects)<br>UJ (all non-detects) | P |
| IRPSite33-GW-11MW204D-20170629 | $^{13}C_2$-PFDoA | 37.4 (50-150) | PFDoA<br>PFTriA | UJ (all non-detects)<br>UJ (all non-detects) | P |
| Bldg 110-GW-11MW205D-20170629 | $^{13}C_2$-PFDoA | 41.4 (50-150) | PFDoA<br>PFTriA | UJ (all non-detects)<br>UJ (all non-detects) | P |
| IRPSite5-GW-04GW82-20170629 | $^{13}C_2$-PFDoA | 37.0 (50-150) | PFDoA<br>PFTriA | UJ (all non-detects)<br>UJ (all non-detects) | P |

## XII. Compound Quantitation

The laboratory limit of quantitation (LOQ) and limit of detection (LOD) with no moisture or dilution are higher than the QAPP LOQ and LOD.

The laboratory detection limit (DL) with no moisture or dilution for PFOS is higher than the QAPP DL.

All compound quantitations met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

## XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

## XIV. System Performance

The system performance was acceptable for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

## XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration %D and internal standards area, data were qualified as estimated in nine samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

## White Oak
## Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1700804

| Sample | Compound | Flag | A or P | Reason |
|---|---|---|---|---|
| IRPSite7-GW-07GW41-20170629<br>IRPSite5-GW-05GW01-20170629<br>IRPSite5-GW-FD01-20170629<br>IRPSite33-GW-11MW204D-20170629<br>IRPSite33-GW-11MW204S 20170629<br>Bldg 110-GW-11MW205D-20170629<br>Bldg 110-GW-11MW205S 20170629<br>IRPSite7-GW-07GW102 20170629**<br>IRPSite5-GW-04GW82-20170629 | PFDoA | UJ (all non-detects) | P | Initial calibration (%D) |
| IRPSite5-GW-05GW01-20170629<br>IRPSite33-GW-11MW204D-20170629<br>Bldg 110-GW-11MW205D-20170629<br>IRPSite5-GW-04GW82-20170629 | PFDoA<br>PFTriA | UJ (all non-detects)<br>UJ (all non-detects) | P | Internal standards (area) |

## White Oak
## Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1700804

No Sample Data Qualified in this SDG

LDC #: 39198B96 **VALIDATION COMPLETENESS WORKSHEET** Date: 8/3/17
SDG #: 1700804 Stage 2B/4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: [illegible]
2nd Reviewer: [illegible]

**METHOD:** LCMS Perfluorinated Alkyl Acids (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A | |
| II. | LC/MS Instrument performance check | A | |
| III. | Initial calibration/ICV | SW, A | RSD≤20%, $r^2$, %D≤30%*, ICV≤30% |
| IV. | Continuing calibration | SW | CCV≤30% |
| V. | Laboratory Blanks | A | |
| VI. | Field blanks | ND | FRB=4,8,IRPSite7-GW-FRB01-20170628,IRPSite5-GW-FRB01-20170628 (1700803) |
| VII. | Surrogate spikes | N | SB=SB01 (1700803) |
| VIII. | Matrix spike/Matrix spike duplicates | N | CS |
| IX. | Laboratory control samples | A | OPR |
| X. | Field duplicates | SW | D=2+3 |
| XI. | Internal standards | SW | |
| XII. | Compound quantitation RL/LOQ/LODs | SW | Not reviewed for Stage 2B validation |
| XIII. | Target compound identification | A | Not reviewed for Stage 2B validation |
| XIV. | System performance | A | Not reviewed for Stage 2B validation |
| XV. | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | IRPSite7-GW-07GW41-20170629 | 1700804-01 | Water | 06/29/17 |
| 2 | IRPSite5-GW-05GW01-20170629 | 1700804-02 | Water | 06/29/17 |
| 3 | IRPSite5-GW-FD01-20170629 | 1700804-03 | Water | 06/29/17 |
| ~~4~~ | ~~IRPSite33-GW-FRB01-20170629~~ | ~~1700804-04~~ | ~~Water~~ | ~~06/29/17~~ |
| 5 | IRPSite33-GW-11MW204D-20170629 | 1700804-05 | Water | 06/29/17 |
| 6 | IRPSite33-GW-11MW204S-20170629 | 1700804-06 | Water | 06/29/17 |
| 7 | Bldg 110-GW-11MW205D-20170629 | 1700804-07 | Water | 06/29/17 |
| ~~8~~ | ~~Bldg 110-GW-FRB01-20170629~~ | ~~1700804-08~~ | ~~Water~~ | ~~06/29/17~~ |
| 9 | Bldg 110-GW-11MW205S-20170629 | 1700804-09 | Water | 06/29/17 |
| 10 | IRPSite7-GW-07GW102-20170629** | 1700804-10** | Water | 06/29/17 |
| 11 | IRPSite5-GW-04GW82-20170629 ~~20170629~~ | 1700804-11 | Water | 06/29/17 |
| 12 | | | | |
| 13 | | | | |

* see next page in ICAL section

LDC #: 39198B96

# VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: 9

**Method:** LCMS (EPA Method 537 )

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| I. Technical holding times | | | | |
| Were all technical holding times met? | ✓ | | | |
| Was cooler temperature criteria met? | ✓ | | | |
| II. LC/MS Instrument performance check | | | | |
| Were the instrument performance reviewed and found to be within the specified criteria? | | | ✓ | |
| Were all samples analyzed within the 12 hour clock criteria? | ✓ | | | |
| IIIa. Initial calibration | | | | |
| Did the laboratory perform a 5 point calibration prior to sample analysis? | ✓ | | | |
| Were all percent relative standard deviations (%RSD) ≤ 20%? | ✓ | | | |
| Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990? | ✓ | | | |
| Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard | | ✓ | | |
| IIIb. Initial Calibration Verification | | | | |
| Was an initial calibration verification standard analyzed after each initial calibration for each instrument? | ✓ | | | |
| Were all percent differences (%D) ≤ 30%? | ✓ | | | |
| IV. Continuing calibration | | | | |
| Was a continuing calibration analyzed daily? | ✓ | | | |
| Were all percent differences (%D) of the continuing calibration ≤ 30%? | ✓ | | | |
| V. Laboratory Blanks | | | | |
| Was a laboratory blank associated with every sample in this SDG? | ✓ | | | |
| Was a laboratory blank analyzed for each matrix and concentration? | ✓ | | | |
| Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet. | | ✓ | | |
| VI. Field blanks | | | | |
| Were field blanks identified in this SDG? | ✓ | | | |
| Were target compounds detected in the field blanks? | | ✓ | | |
| VIII. Matrix spike/Matrix spike duplicates | | | | |
| Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water. | | ✓ | | |
| Was a MS/MSD analyzed every 20 samples of each matrix? | | | ✓ | |
| Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? | | | ✓ | |
| IX. Laboratory control samples | | | | |
| Was an LCS analyzed for this SDG? | ✓ | | | |

LDC #: 39198B96

# VALIDATION FINDINGS CHECKLIST


Reviewer: 9
2nd Reviewer: M

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| Was an LCS analyzed per extraction batch? | ✓ | | | |
| Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits? | ✓ | | | |
| X. Field duplicates | | | | |
| Were field duplicate pairs identified in this SDG? | ✓ | | | |
| Were target compounds detected in the field duplicates?. | ✓ | | | |
| XI. Internal standards | | | | |
| Were internal standard area counts within ± 50% of the associated calibration standard? | | ✓ | | |
| XII. Compound quantitation | | | | |
| Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound? | ✓ | | | |
| Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation? | ✓ | | | |
| XIII. Target compound identification | | | | |
| Were relative retention times (RRT's) within ± 0.06 RRT units of the standard? | ✓ | | | |
| Did compound spectra meet specified EPA "Functional Guidelines" criteria? | ✓ | | | |
| Were chromatogram peaks verified and accounted for? | ✓ | | | |
| XIV. System performance | | | | |
| System performance was found to be acceptable. | ✓ | | | |
| XIII. Overall assessment of data | | | | |
| Overall assessment of data was found to be acceptable. | ✓ | | | |

# TARGET COMPOUND WORKSHEET

**METHOD: PFOS/PFOAs**

| | | | | |
|---|---|---|---|---|
| A. Perfluorohexanoic acid (PFHxA) | | | | |
| B. Perfluoroheptanoic acid (PFHpA) | | | | |
| C. Perfluorooctanoic acid (PFOA) | | | | |
| D. Perfluorononanoic acid (PFNA) | | | | |
| E. Perfluorodecanoic acid (PFDA) | | | | |
| F. Perfluoroundecanoic acid (PFUnA) | | | | |
| G. Perfluorododecanoic acid (PFDoA) | | | | |
| H. Perfluorotridecanoic acid (PFTriA) | | | | |
| I. Perfluorotetradecanoic acid (PFTeA) | | | | |
| J. Perfluorobutanesulfonic acid (PFBS) | | | | |
| K. Perfluorohexanesulfonic acid (PFHxS) | | | | |
| L. Perfluoroheptanesulfonic acid (PFHpS) | | | | |
| M. Perfluorooctanesulfonic acid (PFOS) | | | | |
| N. Perfluorodecanesulfonic acid (PFDS) | | | | |
| O. Perfluorooctane Sulfonamide (FOSA) | | | | |
| P. Perfluorobutanoic acid (PFBA) | | | | |
| Q. Perfluoropentanoic acis (PFPeA) | | | | |
| R. 6:2FTS | | | | |
| S. 8:2FTS | | | | |
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LDC #: 39198B96

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

**METHOD:** LCMS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
Y N N/A Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?
Y N N/A Were all percent relative standard deviations (%RSD) ≤ 20%?
Y N N/A Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?

| # | Date | Standard ID | Compound | Finding %RSD/$r^2$ | Finding %D | Associated Samples | Qualifications |
|---|---|---|---|---|---|---|---|
| | 7/10/17 | ICAL-CS02 | PFDoA | | -56.9 | All (ND) | J/UJ/P |
| | | ↓ CS2 | ↓ | | +36.9 | | [illegible]/P |
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LDC #: 39198B96

# VALIDATION FINDINGS WORKSHEET
## Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

**METHOD:** LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed after every 10 injections for each instrument?

Y N N/A Were all continuing calibration percent differences (%D) ≤30 %?

| # | Date | Standard ID | Compound | Finding %D (Limit: ≤30.0%) | Finding RRF (Limit: ) | Associated Samples | Qualifications |
|---|---|---|---|---|---|---|---|
| | 7/13/17 | 170713M1_20 | PFDoA | +98.0 | | All (ND) | J dets/A * |
| | | | | | | | |
| | 7/13/17 | 170713M1_35 | PFDoA | +135 | | 11 (ND) | * |
| | | | | | | | * ~~qual PFDoA~~ ~~PFTxD~~ |

CONCAL-LCMS.wpd

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LDC#: 39198B96

**VALIDATION FINDINGS WORKSHEET**
**Field Duplicates**

Page: 1 of 1
Reviewer: Q
2nd Reviewer: [illegible]

**METHOD**: PFCs (Method 537 mod)

| Compound | Concentration (ng/L) | | (≤30) RPD | Difference | Limits | Qual |
|---|---|---|---|---|---|---|
| | 2 | 3 | | | | |
| A | 6.98 | 6.86 | | 0.12 | ≤8.88 | |
| B | 3.96 | 3.17 | | 0.79 | ≤8.88 | |
| K | 61.1 | 64.9 | 6 | | | |
| C | 48.8 | 51.3 | 5 | | | |
| M | 205 | 199 | 3 | | | |
| D | 3.24 | 2.82 | | 0.42 | ≤8.88 | |
| J | 5.43U | 2.30 | | 3.13 | ≤8.88 | |

LDC #: 39198B96

# VALIDATION FINDINGS WORKSHEET
## Internal Standards


Reviewer: 9
2nd Reviewer: FM

**METHOD:** LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

| # | Date | Sample ID | Internal Standard | Area (Limits) | RT (Limits) | Qualifications |
|---|---|---|---|---|---|---|
| | | 2 (ND) | 13C2-PFDoA | 37.4 (50-150) | | J/UJ/P (4, H) |
| | | 5 (ND) | | 37.4 | | |
| | | 7 (ND) | | 41.4 | | |
| | | 11 (ND) | | 37.0 | | |



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LDC #: 39178B96

# VALIDATION FINDINGS WORKSHEET
## Compound Quantitation and Reported RLs

Page: 1 of 1
Reviewer: A
2nd Reviewer: FJ

**METHOD:** LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N (N/A) Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N (N/A) Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

| # | Date | Sample ID | Finding | | Qualifications |
|---|---|---|---|---|---|
| | | All | Lab rerported LOD/LOQ > LOD/LOQ in the QAPP | | Text |
| | | | | | |
| | | All | The DL for PFOS = 0.807 ng/L, DL in the QAPP = 0.305 ng/L | | Text |
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Comments: See sample calculation verification worksheet for recalculations

LDC#: 39198B96

**VALIDATION FINDINGS WORKSHEET**
**Initial Calibration Calculation Verification**


Reviewer: 9
2nd Reviewer: 5

Method: LC/MS/MS PFCs

| Calibration Date | System | Compound | Standard | (Y) Response | (X) Concentration |
|---|---|---|---|---|---|
| 7/10/2017 | Q4 | PFBS | 0 | 0.4380675 | 0.25 |
| | | | s1 | 1.1565725 | 0.50 |
| | | | s2 | 1.8657437 | 1.00 |
| | | | s3 | 4.9570275 | 2.00 |
| | | | s4 | 9.7347175 | 5.00 |
| | | | s5 | 22.092078 | 10.00 |
| | | | s6 | 112.84108 | 50.00 |
| | | | s7 | 230.883470 | 100.00 |

**Regression Output**

| | | ***Reported*** * |
|---|---|---|
| Constant | *-0.636769* | *-0.143808* |
| Std Err of Y Est | | |
| R Squared | *0.999849* | *0.998952* |
| Degrees of Freedom | | |
| | | |
| X Coefficient(s) | *2.305558* | *2.282190* |
| Std Err of Coef. | | |
| | | |
| Correlation Coefficient | *0.999925* | |
| Coefficient of Determination (r^2) | *0.999849* | *0.998952* |

* 1/x Wt

LDC #: 39198B96

# VALIDATION FINDINGS WORKSHEET
## Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: FT

METHOD: GC ____ V HPLC / MS

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

| # | Standard ID | Calibration Date | Compound | Average CF(Ical)/ CCV Conc. | Reported CF/Conc. CCV | Recalculated CF/Conc. CCV | Reported %D | Recalculated %D |
|---|---|---|---|---|---|---|---|---|
| 1 | IT073ML2 | 7/13/17 | PFBS | 0.50 | 0.610 | 0.611 | 22.0 | 22.1 |
| | | | | | | | | |
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| 2 | | | | | | | | |
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| 4 | | | | | | | | |
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Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 39193B96

# VALIDATION FINDINGS WORKSHEET
## Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification


Reviewer: 9
2nd Reviewer: 17

**METHOD:** __ GC _✓_ HPLC / MS

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples:_____

| Compound | Spike Added (NS/L) | | Spiked Sample Concentration (NS/L) | | LCS Percent Recovery | | LCSD Percent Recovery | | LCS/LCSD RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LCS | LCSD | LCS | LCSD | Reported | Recalc. | Reported | Recalc. | Reported | Recalc. |
| Gasoline (8015) | | | | | | | | | | |
| Diesel (8015) | | | | | | | | | | |
| Benzene (8021B) | | | | | | | | | | |
| Methane (RSK-175) | | | | | | | | | | |
| 2,4-D (8151) | | | | | | | | | | |
| Dinoseb (8151) | | | | | | | | | | |
| Naphthalene (8310) | | | | | | | | | | |
| Anthracene (8310) | | | | | | | | | | |
| HMX (8330) | | | | | | | | | | |
| 2,4,6-Trinitrotoluene (8330) | | | | | | | | | | |
| ~~4FBS~~ | 80.0 | NA | 65.5 | NA | 81.9 | 81.9 | | | | |
| | | | | | | | | | | |

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 39198B96

# VALIDATION FINDINGS WORKSHEET
## Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 7

**METHOD:** __ GC ✓ HPLC /MS

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 10 Compound Name PFBS

Concentration = $\frac{\left(\frac{870 \times 10^5}{4620} \times 0.143808\right)(1)}{(2.2819)(0.121)}$

$= 9.05$ ng/L

| # | Sample ID | Compound | Reported Concentrations ( ng/L ) | Recalculated Results Concentrations ( ) | Qualifications |
|---|---|---|---|---|---|
| | 10 | PFBS | 9.06 | | |
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omments: _____

SAMPCALew.wpd

LDC #: 39198B96

# VALIDATION FINDINGS WORKSHEET
## Compound Quantitation and Reported RLs

Page: 1 of 1
Reviewer: 9
2nd Reviewer: FT

**METHOD:** LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

| # | Date | Sample ID | Finding | | Qualifications |
|---|---|---|---|---|---|
| | | All | Lab rerported LOD/LOQ > LOD/LOQ in the QAPP | | Text |
| | | | | | |
| | | All | The DL for PFOS = 0.807 ng/L, DL in the QAPP = 0.305 ng/L | | Text |
| | | | | | |
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Comments: See sample calculation verification worksheet for recalculations

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** White Oak

**LDC Report Date:** August 4, 2017

**Parameters:** Perfluorinated Alkyl Acids

**Validation Level:** Stage 2B & 4

**Laboratory:** Vista Analytical Laboratory

**Sample Delivery Group (SDG):** 1700887

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| IRPSite 6-GW-06GW01-20170712 | 1700887-01 | Water | 07/12/17 |
| IRPSite 6-GW-06GW02-20170712 | 1700887-02 | Water | 07/12/17 |
| Site 33-GW-33GW01-20170712 | 1700887-04 | Water | 07/12/17 |
| Building110-GW-110GW01-20170712** | 1700887-05** | Water | 07/12/17 |
| IRPSite 6-GW-06FD01-20170712 | 1700887-06 | Water | 07/12/17 |

**Indicates sample underwent Stage 4 validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling and Analysis Plan) for Initial Assessment of Perf-fluorinated Compounds (PFCS) or Per- and Polyfluoralkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Stage 4 data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. LC/MS Instrument Performance Check

Instrument performance check was performed prior to initial calibration.

## III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination ($r^2$) were greater than or equal to 0.990.

For each calibration point, the percent differences (%D) of its true value were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Samples IRPSite33-GW-FRB01-20170629, Bldg 110-GW-FRB01 20170629 (both from SDG 1700804), and IRPSite 6-GW-FRB01-20170712 were identified as field rinsate blanks. No contaminants were found.

Sample SB01 (from SDG 1700803) was identified as a source blank. No contaminants were found.

## VII. Surrogates

Surrogates were not performed for this SDG.

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Ongoing Precision Recovery Samples

Ongoing precision recovery (OPR) samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## X. Field Duplicates

Samples IRPSite 6-GW-06GW02-20170712 and IRPSite 6-GW-06FD01-20170712 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

| Compound | Concentration (ng/L) | | RPD (Limits) | Differences (Limits) | Flag | A or P |
|---|---|---|---|---|---|---|
| | IRPSite 6-GW-06GW02-20170712 | IRPSite 6-GW-06FD01-20170712 | | | | |
| PFBS | 21.8 | 21.7 | 0 (≤30) | - | - | - |
| PFHxA | 20.0 | 17.6 | 13 (≤30) | - | - | - |
| PFHpA | 10.3 | 9.00 | - | 1.3 (≤10.1) | - | - |
| PFHxS | 6.18 | 5.70 | - | 0.48 (≤10.1) | - | - |
| PFOA | 20.1 | 20.6 | 2 (≤30) | - | - | - |
| PFOS | 16.5 | 13.5 | 20 (≤30) | - | - | - |
| PFNA | 3.81 | 2.80 | - | 1.01 (≤10.1) | - | - |

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

The laboratory limit of quantitation (LOQ) and limit of detection (LOD) with no moisture or dilution are higher than the QAPP LOQ and LOD.

The laboratory detection limit (DL) with no moisture or dilution for PFOS is higher than the QAPP DL.

All compound quantitations met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

**XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

**XIV. System Performance**

The system performance was acceptable for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

**XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**White Oak**
**Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1700887**

No Sample Data Qualified in this SDG

**White Oak**
**Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1700887**

No Sample Data Qualified in this SDG

LDC #: 39198C96 **VALIDATION COMPLETENESS WORKSHEET** Date: 8/3/17
SDG #: 1700887 Stage 2B/4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: 2nd Reviewer: D

**METHOD:** LCMS Perfluorinated Alkyl Acids (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A | |
| II. | LC/MS Instrument performance check | A | |
| III. | Initial calibration/ICV | A/A | RSD≤20%. $r^2$≥.20≤30%*. ICV≤30% |
| IV. | Continuing calibration | A | CCV≤30% |
| V. | Laboratory Blanks | A | |
| VI. | Field blanks | ND | FRB=3,IRPSite33-GW-FRB01-20170629,Bldg 110-GW-FRB01 20170629 (1700804) |
| VII. | Surrogate spikes | N | SB=SB01(1700803) |
| VIII. | Matrix spike/Matrix spike duplicates | N | CS |
| IX. | Laboratory control samples | A | OPR |
| X. | Field duplicates | SW | D=2+6 |
| XI. | Internal standards | SW | |
| XII. | Compound quantitation RL/LOQ/LODs | SW | Not reviewed for Stage 2B validation |
| XIII. | Target compound identification | A | Not reviewed for Stage 2B validation |
| XIV. | System performance | A | Not reviewed for Stage 2B validation |
| XV. | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | IRPSite 6-GW-06GW01-20170712 | 1700887-01 | Water | 07/12/17 |
| 2 | IRPSite 6-GW-06GW02-20170712 | 1700887-02 | Water | 07/12/17 |
| ~~3~~ | ~~IRPSite 6-GW-FRB01-20170712~~ | ~~1700887-03~~ | ~~Water~~ | ~~07/12/17~~ |
| 4 | Site 33-GW-33GW01-20170712 | 1700887-04 | Water | 07/12/17 |
| 5 | Building110-GW-110GW01-20170712** | 1700887-05** | Water | 07/12/17 |
| 6 | IRPSite 6-GW-06FD01-20170712 | 1700887-06 | Water | 07/12/17 |
| 7 | | | | |
| 8 | | | | |

Notes:

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|---|---|---|---|---|---|---|---|
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* see next page in late section

LDC #: 39198C96

**VALIDATION FINDINGS CHECKLIST**


Reviewer: 9
2nd Reviewer: FT

**Method:** LCMS (EPA Method 537 )

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| I. Technical holding times | | | | |
| Were all technical holding times met? | ✓ | | | |
| Was cooler temperature criteria met? | ✓ | | | |
| II. LC/MS Instrument performance check | | | | |
| Were the instrument performance reviewed and found to be within the specified criteria? | | | ✓ | |
| Were all samples analyzed within the 12 hour clock criteria? | ✓ | | | |
| IIIa. Initial calibration | | | | |
| Did the laboratory perform a 5 point calibration prior to sample analysis? | ✓ | | | |
| Were all percent relative standard deviations (%RSD) ≤ 20%? | ✓ | | | |
| Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990? | ✓ | | | |
| Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard | ✓ | | | |
| IIIb. Initial Calibration Verification | | | | |
| Was an initial calibration verification standard analyzed after each initial calibration for each instrument? | ✓ | | | |
| Were all percent differences (%D) ≤ 30%? | ✓ | | | |
| IV. Continuing calibration | | | | |
| Was a continuing calibration analyzed daily? | ✓ | | | |
| Were all percent differences (%D) of the continuing calibration ≤ 30%? | ✓ | | | |
| V. Laboratory Blanks | | | | |
| Was a laboratory blank associated with every sample in this SDG? | ✓ | | | |
| Was a laboratory blank analyzed for each matrix and concentration? | ✓ | | | |
| Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet. | | ✓ | | |
| VI. Field blanks | | | | |
| Were field blanks identified in this SDG? | ✓ | | | |
| Were target compounds detected in the field blanks? | | ✓ | | |
| VIII. Matrix spike/Matrix spike duplicates | | | | |
| Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water. | | ✓ | | |
| Was a MS/MSD analyzed every 20 samples of each matrix? | | | ✓ | |
| Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? | | | ✓ | |
| IX. Laboratory control samples | | | | |
| Was an LCS analyzed for this SDG? | ✓ | | | |

LDC #: 39198C96

## VALIDATION FINDINGS CHECKLIST


Reviewer: CF
2nd Reviewer: M

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| Was an LCS analyzed per extraction batch? | ✓ | | | |
| Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits? | ✓ | | | |
| X. Field duplicates | | | | |
| Were field duplicate pairs identified in this SDG? | ✓ | | | |
| Were target compounds detected in the field duplicates?. | ✓ | | | |
| XI. Internal standards | | | | |
| Were internal standard area counts within ± 50% of the associated calibration standard? | | ✓ | | |
| XII. Compound quantitation | | | | |
| Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound? | ✓ | | | |
| Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation? | ✓ | | | |
| XIII. Target compound identification | | | | |
| Were relative retention times (RRT's) within ± 0.06 RRT units of the standard? | ✓ | | | |
| Did compound spectra meet specified EPA "Functional Guidelines" criteria? | ✓ | | | |
| Were chromatogram peaks verified and accounted for? | ✓ | | | |
| XIV. System performance | | | | |
| System performance was found to be acceptable. | ✓ | | | |
| XIII. Overall assessment of data | | | | |
| Overall assessment of data was found to be acceptable. | ✓ | | | |

# TARGET COMPOUND WORKSHEET

**METHOD: PFOS/PFOAs**

| | | | | |
|---|---|---|---|---|
| A. Perfluorohexanoic acid (PFHxA) | | | | |
| B. Perfluoroheptanoic acid (PFHpA) | | | | |
| C. Perfluorooctanoic acid (PFOA) | | | | |
| D. Perfluorononanoic acid (PFNA) | | | | |
| E. Perfluorodecanoic acid (PFDA) | | | | |
| F. Perfluoroundecanoic acid (PFUnA) | | | | |
| G. Perfluorododecanoic acid (PFDoA) | | | | |
| H. Perfluorotridecanoic acid (PFTriA) | | | | |
| I. Perfluorotetradecanoic acid (PFTeA) | | | | |
| J. Perfluorobutanesulfonic acid (PFBS) | | | | |
| K. Perfluorohexanesulfonic acid (PFHxS) | | | | |
| L. Perfluoroheptanesulfonic acid (PFHpS) | | | | |
| M. Perfluorooctanesulfonic acid (PFOS) | | | | |
| N.Perfluorodecanesulfonic acid (PFDS) | | | | |
| O. Perfluorooctane Sulfonamide (FOSA) | | | | |
| P. Perfluorobutanoic acid (PFBA) | | | | |
| Q. Perfluoropentanoic acid (PFPeA) | | | | |
| R. 6:2FTS | | | | |
| S. 8:2FTS | | | | |
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LDC#: 39198C96

# VALIDATION FINDINGS WORKSHEET
## Field Duplicates


Reviewer: 9
2nd Reviewer: PT

**METHOD**: PFCs (Method 537 mod)

| Compound | Concentration (ng/L) | | (≤30) RPD | Difference | Limits | Qual |
|---|---|---|---|---|---|---|
| | 2 | 6 | | | | |
| J | 21.8 | 21.7 | 0 | | | |
| A | 20.0 | 17.6 | 13 | | | |
| B | 10.3 | 9.00 | | 1.3 | ≤10.1 | |
| K | 6.18 | 5.70 | | 0.48 | ≤10.1 | |
| C | 20.1 | 20.6 | 2 | | | |
| M | 16.5 | 13.5 | 20 | | | |
| D | 3.81 | 2.80 | | 1.01 | ≤10.1 | |

LDC #: 39198C96

# VALIDATION FINDINGS WORKSHEET
## Internal Standards


Reviewer: 9
2nd Reviewer: FM

**METHOD:** LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

| # | Date | Sample ID | Internal Standard | Area (Limits) | RT (Limits) | Qualifications |
|---|---|---|---|---|---|---|
| | | BTG0079-BH | 13C-PFTeDA | 45.1 (50-150) | | J/UJ/A (PFTeDA) |
| | | | | | | |
| | | | | | | |
| | | | | | |

LDC #: 39198C76

# VALIDATION FINDINGS WORKSHEET
## Compound Quantitation and Reported RLs

Page: 1 of 1
Reviewer: 9
2nd Reviewer: FT

**METHOD:** LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

| # | Date | Sample ID | Finding | | Qualifications |
|---|---|---|---|---|---|
| | | All | Lab rerported LOD/LOQ > LOD/LOQ in the QAPP | | Text |
| | | | | | |
| | | All | The DL for PFOS = 0.807 ng/L, DL in the QAPP = 0.305 ng/L | | Text |
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Comments: See sample calculation verification worksheet for recalculations

LDC#: 39198C96

**VALIDATION FINDINGS WORKSHEET**
**Initial Calibration Calculation Verification**


Reviewer: 9
2nd Reviewer: 9

Method: LC/MS/MS PFCs

| Calibration Date | System | Compound | Standard | (Y) Response | (X) Concentration |
|---|---|---|---|---|---|
| 7/27/2017 | Q2 | PFBS | s1 | 1.4453125 | 0.50 |
| | | | s2 | 2.0194375 | 1.00 |
| | | | s3 | 3.541275 | 2.00 |
| | | | s4 | 9.4866062 | 5.00 |
| | | | s5 | 16.99074 | 10.00 |
| | | | s6 | 83.904108 | 50.00 |
| | | | s7 | 157.926820 | 100.00 |

| Regression Output | | *Reported* |
|---|---|---|
| Constant | *1.183817* | *0.593256* |
| Std Err of Y Est | | |
| R Squared | *0.999221* | *0.998731* |
| Degrees of Freedom | | |
| | | |
| X Coefficient(s) | *1.584733* | *1.607660* |
| Std Err of Coef. | | |
| | | |
| Correlation Coefficient | *0.999611* | |
| Coefficient of Determination (r^2) | *0.999221* | *0.998731* |

Method: LC/MS/MS PFCs

| Calibration Date | System | Compound | Standard | (Y) Response | (X) Concentration |
|---|---|---|---|---|---|
| 7/28/2017 | Q2 | PFDoA | 0 | 0.0331250 | 0.25 |
| | | | s1 | 0.0527637 | 0.50 |
| | | | s2 | 0.1130487 | 1.00 |
| | | | s3 | 0.266025 | 2.00 |
| | | | s4 | 0.6203462 | 5.00 |
| | | | s5 | 1.2761775 | 10.00 |
| | | | s6 | 6.096625 | 50.00 |
| | | | s7 | 12.084870 | 100.00 |

| Regression Output | | *Reported* |
|---|---|---|
| Constant | *0.017917* | *0.000590* |
| Std Err of Y Est | | |
| R Squared | *0.999957* | *0.999601* |
| Degrees of Freedom | | |
| | | |
| X Coefficient(s) | *0.120887* | *0.121673* |
| Std Err of Coef. | | |
| | | |
| Correlation Coefficient | *0.999979* | |
| Coefficient of Determination (r^2) | *0.999957* | *0.999601* |

LDC #: 39198C96

# VALIDATION FINDINGS WORKSHEET
## Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: FI

**METHOD:** GC ✓ HPLC/MS

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

| # | Standard ID | Calibration Date | Compound | Average CF(Ical)/ CCV Conc. | Reported CF/Conc. CCV | Recalculated CF/Conc. CCV | Reported %D | Recalculated %D |
|---|---|---|---|---|---|---|---|---|
| 1 | 170BK42.4 | ~~7/31~~ 7/31/17 | PFBS | 1.000 | 0.876 | 0.879 | 12.4 | 12.1 |
| | | | | | | | | |
| | | | | | | | | |
| 2 | 170BK41.2 | 7/31/17 | PFDoA | 0.500 | 0.375 | 0.375 | 24.9 | 25.0 |
| | | | | | | | | |
| | | | | | | | | |
| 3 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 4 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 39185C96

# VALIDATION FINDINGS WORKSHEET
## Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 5

**METHOD:** __ GC √ HPLC MS

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: BTG0079-BS1

| Compound | Spike Added (MS/A) | | Spiked Sample Concentration (MS/L) | | LCS Percent Recovery | | LCSD Percent Recovery | | LCS/LCSD RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LCS | LCSD | LCS | LCSD | Reported | Recalc. | Reported | Recalc. | Reported | Recalc. |
| Gasoline (8015) | | | | | | | | | | |
| Diesel (8015) | | | | | | | | | | |
| Benzene (8021B) | | | | | | | | | | |
| Methane (RSK-175) | | | | | | | | | | |
| 2,4-D (8151) | | | | | | | | | | |
| Dinoseb (8151) | | | | | | | | | | |
| Naphthalene (8310) | | | | | | | | | | |
| Anthracene (8310) | | | | | | | | | | |
| HMX (8330) | | | | | | | | | | |
| 2,4,6-Trinitrotoluene (8330) | | | | | | | | | | |
| PFBS | 80.0 | NA | 74.1 | NA | 92.6 | 92.6 | | | | |
| | | | | | | | | | | |

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 39190C96

# VALIDATION FINDINGS WORKSHEET
## Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: M

**METHOD:** __ GC V HPLC / MS

(Y) N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 5 Compound Name 4FBS

Concentration = $\frac{\left(\frac{2.40103 \times 12.5}{3.748e3} - 0.59356\right)}{(1.60766)(0.118)}$

$= 39.1$ ng/L

| # | Sample ID | Compound | Reported Concentrations (ng/L) | Recalculated Results Concentrations ( ) | Qualifications |
|---|---|---|---|---|---|
| | 5 | 4FBS | 39.2 | | |
| | | | | | |
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| | | | | | |

Comments: _____

SAMPCALew.wpd

LDC #: 39198

# EDD POPULATION COMPLETENESS WORKSHEET

Date: 8/7/17
Page: 1 of 1
2nd Reviewer: OG

The LDC job number listed above was entered by SE.

| | EDD Process | | Comments/Action |
|---|---|---|---|
| I. | EDD Completeness | - | |
| Ia. | - All methods present? | Y | |
| Ib. | - All samples present/match report? | Y | |
| Ic. | - All reported analytes present? | Y | |
| Id. | - 10% or 100% verification of EDD? | Y | |
| | | | |
| II. | EDD Preparation/Entry | - | |
| IIa. | - Carryover U/J? | — | |
| IIb. | - Reason Codes used? If so, note which codes. | Y | client |
| IIc. | - Additional Information (QC Level, Validator, Validated Y/N, etc.) | Y | |
| | | | |
| III. | Reasonableness Checks | - | |
| IIIa. | - Do all qualified ND results have ND qualifier (e.g. UJ)? | Y | |
| IIIb. | - Do all qualified detect results have detect qualifier (e.g. J)? | Y | |
| IIIc. | - If reason codes are used, do all qualified results have reason code field populated, and vice versa? | Y | |
| IIId. | -Does the detect flag require changing for blank qualifier? If so, are all U results marked ND? | + | |
| IIIe. | - Do blank concentrations in report match EDD where data was qualified due to blank contamination? | — | |
| IIIf. | - Were multiple results reported due to dilutions/reanalysis? If so, were results qualified appropriately? | + | |
| IIIg. | -Are there any discrepancies between the data packet and the EDD? | N | |

Notes: *see discrepancy sheet

| INSTALLATION_ID | SITE_NAME | LOCATION_NAME | LOCATION_TYPE | LOCATION_TYPE_DESC | COORD_X | COORD_Y | SAMPLE_NAME | SAMPLE_MATRIX | SAMPLE_MATRIX_DESC | COLLECT_DATE | ANALYTICAL_METHOD_GRP_DESC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WHITE_OAK_NSWC | SITE 00011 | 11MW205D | WLM | Monitoring Well | 1317686.2 | 499662.39 | BLDG 110-GW-11MW205D-20170629 | WG | Ground water | 29-Jun-17 | Perfluoroalkyl Compounds |
| WHITE_OAK_NSWC | SITE 00011 | 11MW205S | WLM | Monitoring Well | 1317630.294 | 499680.8687 | BLDG 110-GW-11MW205S-20170629 | WG | Ground water | 29-Jun-17 | Perfluoroalkyl Compounds |
| WHITE_OAK_NSWC | SITE 00011 | 11MW204D | WLM | Monitoring Well | 1317375.45 | 499504.94 | IRPSITE33-GW-11MW204D-20170629 | WG | Ground water | 29-Jun-17 | Perfluoroalkyl Compounds |
| WHITE_OAK_NSWC | SITE 00011 | 11MW204S | WLM | Monitoring Well | 1317368.01 | 499499.96 | IRPSITE33-GW-11MW204S-20170629 | WG | Ground water | 29-Jun-17 | Perfluoroalkyl Compounds |
| WHITE_OAK_NSWC | SITE 00004 | 04GW82 | WLM | Monitoring Well | 1324187.24 | 500487.47 | IRPSITE5-GW-04GW82-20170629 | WG | Ground water | 29-Jun-17 | Perfluoroalkyl Compounds |
| WHITE_OAK_NSWC | SITE 00005 | 05GW01 | WLM | Monitoring Well | 1323788.14 | 500642.426 | IRPSITE5-GW-05GW01-20170629 | WG | Ground water | 29-Jun-17 | Perfluoroalkyl Compounds |
| WHITE_OAK_NSWC | SITE 00005 | 05GW01 | WLM | Monitoring Well | 1323788.14 | 500642.426 | IRPSITE5-GW-FD01-20170629 | WG | Ground water | 29-Jun-17 | Perfluoroalkyl Compounds |
| WHITE_OAK_NSWC | SITE 00007 | 07GW102 | WLM | Monitoring Well | 1324942.56 | 500236.28 | IRPSITE7-GW-07GW102-20170629 | WG | Ground water | 29-Jun-17 | Perfluoroalkyl Compounds |
| WHITE_OAK_NSWC | SITE 00007 | 07GW41 | WLM | Monitoring Well | 1325048.56 | 500121.34 | IRPSITE7-GW-07GW41-20170629 | WG | Ground water | 29-Jun-17 | Perfluoroalkyl Compounds |

| SDG |
| --- |
| 1700804 |
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