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NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, Sample Location Report, SDG J240601

Bay Head Road Annex
NSWC Annapolis
Maryland

December 2020

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 320-24060-1

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

For:

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LINKS

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

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

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

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Definitions/Glossary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Qualifiers

LCMS

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

Glossary

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

Job ID: 320-24060-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: AECOM Technical Services Inc.

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

Report Number: 320-24060-1

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

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

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

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

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

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

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

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

RECEIPT

The samples were received on 12/07/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.9 C.

PFAS

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

The Isotope Dilution Analyte (IDA) recovery for 18O2 PFHxS in the following sample is below the method recommended limit: DPT-16-33-GW-19-23 (320-24060-5). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

The following samples were diluted to bring the concentration of target analytes within the calibration range: DPT-16-22-GW-31-35 (320-24060-1), DPT-16-22-GW-31-35-DUP (320-24060-2), DPT-16-22-GW-19-23 (320-24060-3), DPT-16-33-GW-31-35 (320-24060-4), DPT-16-33-GW-19-23 (320-24060-5), DPT-16-14-GW-31-35 (320-24060-7), DPT-16-14-GW-19-23 (320-24060-10), DPT-16-12-GW-31-35 (320-24060-11), DPT-16-12-GW-19-23 (320-24060-12), DPT-16-16-GW-31-35 (320-24060-13), DPT-16-16-GW-19-23 (320-24060-14),

Job ID: 320-24060-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

DPT-16-25-GW-19-23 (320-24060-16), DPT-16-24-GW-21-25 (320-24060-17), DPT-16-24-GW-31-35 (320-24060-18), DPT-16-28-GW-31-35 (320-24060-19) and DPT-16-28-GW-19-23 (320-24060-20). Elevated reporting limits (RLs) are provided.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-142688.

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

Detection Summary

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

TestAmerica Job ID: 320-24060-1

Client Sample ID: DPT-16-22-GW-31-35 — Lab Sample ID: 320-24060-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.18	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.44	E	0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.59	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.18	D	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.29	D	0.025	0.0091	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.61	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-22-GW-31-35-DUP — Lab Sample ID: 320-24060-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.16	M	0.0028	0.00082	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.44	E	0.0028	0.0010	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.55	E	0.0044	0.0014	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.17	D	0.028	0.0082	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.27	D	0.028	0.010	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.56	D	0.044	0.014	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-22-GW-19-23 — Lab Sample ID: 320-24060-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.17	M	0.0025	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.070		0.0025	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.76	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.18	D	0.025	0.0073	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.046	D	0.025	0.0090	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.82	D	0.039	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-33-GW-31-35 — Lab Sample ID: 320-24060-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.75	E M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.1	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.96	D	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.11	D	0.025	0.0091	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.3	D	0.039	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-33-GW-19-23 — Lab Sample ID: 320-24060-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.0	E M	0.0025	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.82	E	0.0025	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.4	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	2.8	D	0.25	0.073	ug/L	100		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 320-24060-1

Client Sample ID: DPT-16-33-GW-19-23 (Continued) — Lab Sample ID: 320-24060-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS) - DL	0.23	J D	0.25	0.090	ug/L	100		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	8.3	D	0.39	0.13	ug/L	100		537 (Modified)	Total/NA

Client Sample ID: SW-16-01-SW — Lab Sample ID: 320-24060-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.023	M	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.020		0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.27		0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-14-GW-31-35 — Lab Sample ID: 320-24060-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.57	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.20		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.7	E M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.67	D	0.050	0.015	ug/L	20		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.11	D	0.050	0.018	ug/L	20		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	5.4	D	0.080	0.026	ug/L	20		537 (Modified)	Total/NA

Client Sample ID: SW-16-02-SW — Lab Sample ID: 320-24060-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.042	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0084		0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: SW-16-02-SW-DUP — Lab Sample ID: 320-24060-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.041	M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0089		0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-14-GW-19-23 — Lab Sample ID: 320-24060-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.78	E M	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.35	E	0.0024	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	4.1	E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.0	D	0.12	0.036	ug/L	50		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.15	D	0.12	0.045	ug/L	50		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	6.4	D	0.20	0.062	ug/L	50		537 (Modified)	Total/NA

Client Sample ID: DPT-16-12-GW-31-35 — Lab Sample ID: 320-24060-11

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample ID: DPT-16-12-GW-31-35 (Continued) — Lab Sample ID: 320-24060-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.24	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.63	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.25	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.044	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.69	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-12-GW-19-23 — Lab Sample ID: 320-24060-12

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.1	E M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.41	E	0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.3	E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.7	D	0.048	0.014	ug/L	20		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.22	D	0.048	0.018	ug/L	20		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	4.6	D	0.077	0.025	ug/L	20		537 (Modified)	Total/NA

Client Sample ID: DPT-16-16-GW-31-35 — Lab Sample ID: 320-24060-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.5	E M	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.28		0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	2.3	D	0.026	0.0077	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.16	D	0.026	0.0094	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.9	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-16-GW-19-23 — Lab Sample ID: 320-24060-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.22	M	0.0024	0.00071	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.00087	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.76	E	0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.23	D	0.024	0.0071	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.043	D	0.024	0.0087	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.88	D	0.038	0.012	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-25-GW-31-35 — Lab Sample ID: 320-24060-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.17	M	0.0027	0.00080	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0027	0.00098	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.39		0.0043	0.0014	ug/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 320-24060-1

Client Sample ID: DPT-16-25-GW-19-23 — Lab Sample ID: 320-24060-16

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.50	E M	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.49	E	0.0024	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.0	E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.57	D	0.024	0.0073	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.31	D	0.024	0.0090	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.1	D	0.039	0.012	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-24-GW-21-25 — Lab Sample ID: 320-24060-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.044	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.029		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.39	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.046	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.023	J D M	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.41	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-24-GW-31-35 — Lab Sample ID: 320-24060-18

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.15	M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.043		0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.44	E	0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.15	D	0.024	0.0072	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.032	D	0.024	0.0088	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.47	D	0.038	0.012	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-28-GW-31-35 — Lab Sample ID: 320-24060-19

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.52	E M	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.42	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.61	D	0.026	0.0077	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.12	D	0.026	0.0094	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.43	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-28-GW-19-23 — Lab Sample ID: 320-24060-20

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.55	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.2	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.66	D	0.050	0.015	ug/L	20		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

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

TestAmerica Job ID: 320-24060-1

Client Sample ID: DPT-16-28-GW-19-23 (Continued)

Lab Sample ID: 320-24060-20

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS) - DL	0.089	D	0.050	0.018	ug/L	20		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	4.9	D	0.080	0.025	ug/L	20		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-22-GW-31-35 — Lab Sample ID: 320-24060-1

Date Collected: 12/05/16 09:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.18	M	0.0025	0.00074	ug/L		12/17/16 13:28	12/27/16 21:12	1
Perfluorobutanesulfonic acid (PFBS)	0.44	E	0.0025	0.00091	ug/L		12/17/16 13:28	12/27/16 21:12	1
Perfluorooctane Sulfonate (PFOS)	0.59	E	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 21:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*64*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:12*	*1*
18O2 PFHxS	*33*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:12*	*1*
13C4 PFOS	*86*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:12*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.18	D	0.025	0.0074	ug/L		12/17/16 13:28	12/29/16 14:19	10
Perfluorobutanesulfonic acid (PFBS)	0.29	D	0.025	0.0091	ug/L		12/17/16 13:28	12/29/16 14:19	10
Perfluorooctane Sulfonate (PFOS)	0.61	D	0.040	0.013	ug/L		12/17/16 13:28	12/29/16 14:19	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*88*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:19*	*10*
18O2 PFHxS	*85*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:19*	*10*
13C4 PFOS	*103*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:19*	*10*

Client Sample ID: DPT-16-22-GW-31-35-DUP — Lab Sample ID: 320-24060-2

Date Collected: 12/05/16 09:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.16	M	0.0028	0.00082	ug/L		12/17/16 13:28	12/27/16 21:20	1
Perfluorobutanesulfonic acid (PFBS)	0.44	E	0.0028	0.0010	ug/L		12/17/16 13:28	12/27/16 21:20	1
Perfluorooctane Sulfonate (PFOS)	0.55	E	0.0044	0.0014	ug/L		12/17/16 13:28	12/27/16 21:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*46*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:20*	*1*
18O2 PFHxS	*36*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:20*	*1*
13C4 PFOS	*94*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:20*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.17	D	0.028	0.0082	ug/L		12/17/16 13:28	12/29/16 14:27	10
Perfluorobutanesulfonic acid (PFBS)	0.27	D	0.028	0.010	ug/L		12/17/16 13:28	12/29/16 14:27	10
Perfluorooctane Sulfonate (PFOS)	0.56	D	0.044	0.014	ug/L		12/17/16 13:28	12/29/16 14:27	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*53*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:27*	*10*
18O2 PFHxS	*87*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:27*	*10*
13C4 PFOS	*105*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:27*	*10*

Client Sample ID: DPT-16-22-GW-19-23 — Lab Sample ID: 320-24060-3

Date Collected: 12/05/16 09:55 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.17	M	0.0025	0.00073	ug/L		12/17/16 13:28	12/27/16 21:27	1
Perfluorobutanesulfonic acid (PFBS)	0.070		0.0025	0.00090	ug/L		12/17/16 13:28	12/27/16 21:27	1
Perfluorooctane Sulfonate (PFOS)	0.76	E	0.0039	0.0013	ug/L		12/17/16 13:28	12/27/16 21:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*67*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:27*	*1*
18O2 PFHxS	*61*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:27*	*1*
13C4 PFOS	*92*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:27*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.18	D	0.025	0.0073	ug/L		12/17/16 13:28	12/29/16 14:34	10
Perfluorobutanesulfonic acid (PFBS)	0.046	D	0.025	0.0090	ug/L		12/17/16 13:28	12/29/16 14:34	10
Perfluorooctane Sulfonate (PFOS)	0.82	D	0.039	0.013	ug/L		12/17/16 13:28	12/29/16 14:34	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*81*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:34*	*10*
18O2 PFHxS	*102*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:34*	*10*
13C4 PFOS	*104*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:34*	*10*

Client Sample ID: DPT-16-33-GW-31-35 — Lab Sample ID: 320-24060-4

Date Collected: 12/05/16 10:55 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.75	E M	0.0025	0.00074	ug/L		12/17/16 13:28	12/27/16 21:35	1
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0025	0.00091	ug/L		12/17/16 13:28	12/27/16 21:35	1
Perfluorooctane Sulfonate (PFOS)	1.1	E	0.0039	0.0013	ug/L		12/17/16 13:28	12/27/16 21:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*61*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:35*	*1*
18O2 PFHxS	*54*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:35*	*1*
13C4 PFOS	*77*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:35*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.96	D	0.025	0.0074	ug/L		12/17/16 13:28	12/29/16 14:42	10
Perfluorobutanesulfonic acid (PFBS)	0.11	D	0.025	0.0091	ug/L		12/17/16 13:28	12/29/16 14:42	10
Perfluorooctane Sulfonate (PFOS)	1.3	D	0.039	0.013	ug/L		12/17/16 13:28	12/29/16 14:42	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*93*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:42*	*10*
18O2 PFHxS	*106*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:42*	*10*
13C4 PFOS	*105*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:42*	*10*

Client Sample ID: DPT-16-33-GW-19-23 — Lab Sample ID: 320-24060-5

Date Collected: 12/05/16 11:10 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.0	E M	0.0025	0.00073	ug/L		12/17/16 13:28	12/27/16 21:42	1
Perfluorobutanesulfonic acid (PFBS)	0.82	E	0.0025	0.00090	ug/L		12/17/16 13:28	12/27/16 21:42	1
Perfluorooctane Sulfonate (PFOS)	5.4	E	0.0039	0.0013	ug/L		12/17/16 13:28	12/27/16 21:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*41*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:42*	*1*
18O2 PFHxS	*19*	*Q*	*25 - 150*	*12/17/16 13:28*	*12/27/16 21:42*	*1*
13C4 PFOS	*35*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:42*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.8	D	0.25	0.073	ug/L		12/17/16 13:28	12/29/16 13:42	100
Perfluorobutanesulfonic acid (PFBS)	0.23	J D	0.25	0.090	ug/L		12/17/16 13:28	12/29/16 13:42	100
Perfluorooctane Sulfonate (PFOS)	8.3	D	0.39	0.13	ug/L		12/17/16 13:28	12/29/16 13:42	100

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*105*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:42*	*100*
18O2 PFHxS	*107*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:42*	*100*
13C4 PFOS	*98*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:42*	*100*

Client Sample ID: SW-16-01-SW — Lab Sample ID: 320-24060-6

Date Collected: 12/05/16 11:30 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.023	M	0.0024	0.00073	ug/L		12/17/16 13:28	12/27/16 22:12	1
Perfluorobutanesulfonic acid (PFBS)	0.020		0.0024	0.00089	ug/L		12/17/16 13:28	12/27/16 22:12	1
Perfluorooctane Sulfonate (PFOS)	0.27		0.0039	0.0012	ug/L		12/17/16 13:28	12/27/16 22:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*83*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:12*	*1*
18O2 PFHxS	*82*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:12*	*1*
13C4 PFOS	*93*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:12*	*1*

Client Sample ID: DPT-16-14-GW-31-35 — Lab Sample ID: 320-24060-7

Date Collected: 12/05/16 12:00 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.57	E M	0.0025	0.00075	ug/L		12/17/16 13:28	12/27/16 22:20	1
Perfluorobutanesulfonic acid (PFBS)	0.20		0.0025	0.00092	ug/L		12/17/16 13:28	12/27/16 22:20	1
Perfluorooctane Sulfonate (PFOS)	3.7	E M	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 22:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*59*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:20*	*1*
18O2 PFHxS	*49*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:20*	*1*
13C4 PFOS	*44*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:20*	*1*

Client Sample ID: DPT-16-14-GW-31-35 — Lab Sample ID: 320-24060-7

Date Collected: 12/05/16 12:00 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.67	D	0.050	0.015	ug/L		12/17/16 13:28	12/29/16 13:57	20
Perfluorobutanesulfonic acid (PFBS)	0.11	D	0.050	0.018	ug/L		12/17/16 13:28	12/29/16 13:57	20
Perfluorooctane Sulfonate (PFOS)	5.4	D	0.080	0.026	ug/L		12/17/16 13:28	12/29/16 13:57	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*96*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:57*	*20*
18O2 PFHxS	*106*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:57*	*20*
13C4 PFOS	*98*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:57*	*20*

Client Sample ID: SW-16-02-SW — Lab Sample ID: 320-24060-8

Date Collected: 12/05/16 12:15 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.042	M	0.0025	0.00074	ug/L		12/17/16 13:28	12/27/16 22:27	1
Perfluorobutanesulfonic acid (PFBS)	0.0084		0.0025	0.00091	ug/L		12/17/16 13:28	12/27/16 22:27	1
Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 22:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*77*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:27*	*1*
18O2 PFHxS	*84*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:27*	*1*
13C4 PFOS	*92*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:27*	*1*

Client Sample ID: SW-16-02-SW-DUP — Lab Sample ID: 320-24060-9

Date Collected: 12/05/16 12:15 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.041	M	0.0025	0.00076	ug/L		12/17/16 13:28	12/27/16 22:35	1
Perfluorobutanesulfonic acid (PFBS)	0.0089		0.0025	0.00093	ug/L		12/17/16 13:28	12/27/16 22:35	1
Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 22:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*82*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:35*	*1*
18O2 PFHxS	*88*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:35*	*1*
13C4 PFOS	*98*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:35*	*1*

Client Sample ID: DPT-16-14-GW-19-23 — Lab Sample ID: 320-24060-10

Date Collected: 12/05/16 12:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.78	E M	0.0024	0.00073	ug/L		12/17/16 13:28	12/27/16 22:42	1
Perfluorobutanesulfonic acid (PFBS)	0.35	E	0.0024	0.00090	ug/L		12/17/16 13:28	12/27/16 22:42	1
Perfluorooctane Sulfonate (PFOS)	4.1	E	0.0039	0.0012	ug/L		12/17/16 13:28	12/27/16 22:42	1

Client Sample ID: DPT-16-14-GW-19-23 — Lab Sample ID: 320-24060-10

Date Collected: 12/05/16 12:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	61		25 - 150	12/17/16 13:28	12/27/16 22:42	1
18O2 PFHxS	30		25 - 150	12/17/16 13:28	12/27/16 22:42	1
13C4 PFOS	34		25 - 150	12/17/16 13:28	12/27/16 22:42	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.0	D	0.12	0.036	ug/L		12/17/16 13:28	12/29/16 13:49	50
Perfluorobutanesulfonic acid (PFBS)	0.15	D	0.12	0.045	ug/L		12/17/16 13:28	12/29/16 13:49	50
Perfluorooctane Sulfonate (PFOS)	6.4	D	0.20	0.062	ug/L		12/17/16 13:28	12/29/16 13:49	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	103		25 - 150	12/17/16 13:28	12/29/16 13:49	50
18O2 PFHxS	106		25 - 150	12/17/16 13:28	12/29/16 13:49	50
13C4 PFOS	87		25 - 150	12/17/16 13:28	12/29/16 13:49	50

Client Sample ID: DPT-16-12-GW-31-35 — Lab Sample ID: 320-24060-11

Date Collected: 12/05/16 13:35 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.24	M	0.0025	0.00075	ug/L		12/17/16 13:28	12/27/16 22:50	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00092	ug/L		12/17/16 13:28	12/27/16 22:50	1
Perfluorooctane Sulfonate (PFOS)	0.63	E	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 22:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	64		25 - 150	12/17/16 13:28	12/27/16 22:50	1
18O2 PFHxS	69		25 - 150	12/17/16 13:28	12/27/16 22:50	1
13C4 PFOS	81		25 - 150	12/17/16 13:28	12/27/16 22:50	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.25	D	0.025	0.0075	ug/L		12/17/16 13:28	12/29/16 14:49	10
Perfluorobutanesulfonic acid (PFBS)	0.044	D	0.025	0.0092	ug/L		12/17/16 13:28	12/29/16 14:49	10
Perfluorooctane Sulfonate (PFOS)	0.69	D	0.040	0.013	ug/L		12/17/16 13:28	12/29/16 14:49	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	82		25 - 150	12/17/16 13:28	12/29/16 14:49	10
18O2 PFHxS	109		25 - 150	12/17/16 13:28	12/29/16 14:49	10
13C4 PFOS	100		25 - 150	12/17/16 13:28	12/29/16 14:49	10

Client Sample ID: DPT-16-12-GW-19-23 — Lab Sample ID: 320-24060-12

Date Collected: 12/05/16 13:50 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.1	E M	0.0024	0.00072	ug/L		12/17/16 13:28	12/27/16 22:57	1
Perfluorobutanesulfonic acid (PFBS)	0.41	E	0.0024	0.00089	ug/L		12/17/16 13:28	12/27/16 22:57	1
Perfluorooctane Sulfonate (PFOS)	3.3	E	0.0039	0.0012	ug/L		12/17/16 13:28	12/27/16 22:57	1

Client Sample ID: DPT-16-12-GW-19-23 — Lab Sample ID: 320-24060-12

Date Collected: 12/05/16 13:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	49		25 - 150	12/17/16 13:28	12/27/16 22:57	1
18O2 PFHxS	31		25 - 150	12/17/16 13:28	12/27/16 22:57	1
13C4 PFOS	48		25 - 150	12/17/16 13:28	12/27/16 22:57	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.7	D	0.048	0.014	ug/L		12/17/16 13:28	12/29/16 14:04	20
Perfluorobutanesulfonic acid (PFBS)	0.22	D	0.048	0.018	ug/L		12/17/16 13:28	12/29/16 14:04	20
Perfluorooctane Sulfonate (PFOS)	4.6	D	0.077	0.025	ug/L		12/17/16 13:28	12/29/16 14:04	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	91		25 - 150	12/17/16 13:28	12/29/16 14:04	20
18O2 PFHxS	92		25 - 150	12/17/16 13:28	12/29/16 14:04	20
13C4 PFOS	91		25 - 150	12/17/16 13:28	12/29/16 14:04	20

Client Sample ID: DPT-16-16-GW-31-35 — Lab Sample ID: 320-24060-13

Date Collected: 12/05/16 14:40 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.5	E M	0.0026	0.00077	ug/L		12/17/16 13:28	12/27/16 23:05	1
Perfluorobutanesulfonic acid (PFBS)	0.28		0.0026	0.00094	ug/L		12/17/16 13:28	12/27/16 23:05	1
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0041	0.0013	ug/L		12/17/16 13:28	12/27/16 23:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	48		25 - 150	12/17/16 13:28	12/27/16 23:05	1
18O2 PFHxS	39		25 - 150	12/17/16 13:28	12/27/16 23:05	1
13C4 PFOS	68		25 - 150	12/17/16 13:28	12/27/16 23:05	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.3	D	0.026	0.0077	ug/L		12/17/16 13:28	12/29/16 15:12	10
Perfluorobutanesulfonic acid (PFBS)	0.16	D	0.026	0.0094	ug/L		12/17/16 13:28	12/29/16 15:12	10
Perfluorooctane Sulfonate (PFOS)	1.9	D	0.041	0.013	ug/L		12/17/16 13:28	12/29/16 15:12	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	74		25 - 150	12/17/16 13:28	12/29/16 15:12	10
18O2 PFHxS	88		25 - 150	12/17/16 13:28	12/29/16 15:12	10
13C4 PFOS	93		25 - 150	12/17/16 13:28	12/29/16 15:12	10

Client Sample ID: DPT-16-16-GW-19-23 — Lab Sample ID: 320-24060-14

Date Collected: 12/05/16 14:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.22	M	0.0024	0.00071	ug/L		12/17/16 13:28	12/27/16 23:12	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.00087	ug/L		12/17/16 13:28	12/27/16 23:12	1
Perfluorooctane Sulfonate (PFOS)	0.76	E	0.0038	0.0012	ug/L		12/17/16 13:28	12/27/16 23:12	1

Client Sample ID: DPT-16-16-GW-19-23 — Lab Sample ID: 320-24060-14

Date Collected: 12/05/16 14:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	61		25 - 150	12/17/16 13:28	12/27/16 23:12	1
18O2 PFHxS	68		25 - 150	12/17/16 13:28	12/27/16 23:12	1
13C4 PFOS	74		25 - 150	12/17/16 13:28	12/27/16 23:12	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.23	D	0.024	0.0071	ug/L		12/17/16 13:28	12/29/16 15:19	10
Perfluorobutanesulfonic acid (PFBS)	0.043	D	0.024	0.0087	ug/L		12/17/16 13:28	12/29/16 15:19	10
Perfluorooctane Sulfonate (PFOS)	0.88	D	0.038	0.012	ug/L		12/17/16 13:28	12/29/16 15:19	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	75		25 - 150	12/17/16 13:28	12/29/16 15:19	10
18O2 PFHxS	109		25 - 150	12/17/16 13:28	12/29/16 15:19	10
13C4 PFOS	97		25 - 150	12/17/16 13:28	12/29/16 15:19	10

Client Sample ID: DPT-16-25-GW-31-35 — Lab Sample ID: 320-24060-15

Date Collected: 12/06/16 09:35 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.17	M	0.0027	0.00080	ug/L		12/17/16 13:28	12/27/16 23:20	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0027	0.00098	ug/L		12/17/16 13:28	12/27/16 23:20	1
Perfluorooctane Sulfonate (PFOS)	0.39		0.0043	0.0014	ug/L		12/17/16 13:28	12/27/16 23:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	70		25 - 150	12/17/16 13:28	12/27/16 23:20	1
18O2 PFHxS	66		25 - 150	12/17/16 13:28	12/27/16 23:20	1
13C4 PFOS	97		25 - 150	12/17/16 13:28	12/27/16 23:20	1

Client Sample ID: DPT-16-25-GW-19-23 — Lab Sample ID: 320-24060-16

Date Collected: 12/06/16 09:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.50	E M	0.0024	0.00073	ug/L		12/17/16 13:28	12/27/16 23:50	1
Perfluorobutanesulfonic acid (PFBS)	0.49	E	0.0024	0.00090	ug/L		12/17/16 13:28	12/27/16 23:50	1
Perfluorooctane Sulfonate (PFOS)	1.0	E	0.0039	0.0012	ug/L		12/17/16 13:28	12/27/16 23:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	68		25 - 150	12/17/16 13:28	12/27/16 23:50	1
18O2 PFHxS	31		25 - 150	12/17/16 13:28	12/27/16 23:50	1
13C4 PFOS	78		25 - 150	12/17/16 13:28	12/27/16 23:50	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.57	D	0.024	0.0073	ug/L		12/17/16 13:28	12/29/16 15:27	10
Perfluorobutanesulfonic acid (PFBS)	0.31	D	0.024	0.0090	ug/L		12/17/16 13:28	12/29/16 15:27	10
Perfluorooctane Sulfonate (PFOS)	1.1	D	0.039	0.012	ug/L		12/17/16 13:28	12/29/16 15:27	10

Client Sample ID: DPT-16-25-GW-19-23 — Lab Sample ID: 320-24060-16

Date Collected: 12/06/16 09:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	98		25 - 150	12/17/16 13:28	12/29/16 15:27	10
18O2 PFHxS	85		25 - 150	12/17/16 13:28	12/29/16 15:27	10
13C4 PFOS	111		25 - 150	12/17/16 13:28	12/29/16 15:27	10

Client Sample ID: DPT-16-24-GW-21-25 — Lab Sample ID: 320-24060-17

Date Collected: 12/06/16 10:40 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.044	M	0.0025	0.00075	ug/L		12/17/16 13:28	12/27/16 23:57	1
Perfluorobutanesulfonic acid (PFBS)	0.029		0.0025	0.00092	ug/L		12/17/16 13:28	12/27/16 23:57	1
Perfluorooctane Sulfonate (PFOS)	0.39	E	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 23:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	61		25 - 150	12/17/16 13:28	12/27/16 23:57	1
18O2 PFHxS	86		25 - 150	12/17/16 13:28	12/27/16 23:57	1
13C4 PFOS	92		25 - 150	12/17/16 13:28	12/27/16 23:57	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.046	D	0.025	0.0075	ug/L		12/17/16 13:28	12/29/16 15:34	10
Perfluorobutanesulfonic acid (PFBS)	0.023	J D M	0.025	0.0092	ug/L		12/17/16 13:28	12/29/16 15:34	10
Perfluorooctane Sulfonate (PFOS)	0.41	D	0.040	0.013	ug/L		12/17/16 13:28	12/29/16 15:34	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	70		25 - 150	12/17/16 13:28	12/29/16 15:34	10
18O2 PFHxS	113		25 - 150	12/17/16 13:28	12/29/16 15:34	10
13C4 PFOS	103		25 - 150	12/17/16 13:28	12/29/16 15:34	10

Client Sample ID: DPT-16-24-GW-31-35 — Lab Sample ID: 320-24060-18

Date Collected: 12/06/16 10:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.15	M	0.0024	0.00072	ug/L		12/17/16 13:28	12/28/16 00:05	1
Perfluorobutanesulfonic acid (PFBS)	0.043		0.0024	0.00088	ug/L		12/17/16 13:28	12/28/16 00:05	1
Perfluorooctane Sulfonate (PFOS)	0.44	E	0.0038	0.0012	ug/L		12/17/16 13:28	12/28/16 00:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	61		25 - 150	12/17/16 13:28	12/28/16 00:05	1
18O2 PFHxS	78		25 - 150	12/17/16 13:28	12/28/16 00:05	1
13C4 PFOS	97		25 - 150	12/17/16 13:28	12/28/16 00:05	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.15	D	0.024	0.0072	ug/L		12/17/16 13:28	12/29/16 15:42	10
Perfluorobutanesulfonic acid (PFBS)	0.032	D	0.024	0.0088	ug/L		12/17/16 13:28	12/29/16 15:42	10
Perfluorooctane Sulfonate (PFOS)	0.47	D	0.038	0.012	ug/L		12/17/16 13:28	12/29/16 15:42	10

Client Sample ID: DPT-16-24-GW-31-35 — Lab Sample ID: 320-24060-18

Date Collected: 12/06/16 10:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	89		25 - 150	12/17/16 13:28	12/29/16 15:42	10
18O2 PFHxS	122		25 - 150	12/17/16 13:28	12/29/16 15:42	10
13C4 PFOS	112		25 - 150	12/17/16 13:28	12/29/16 15:42	10

Client Sample ID: DPT-16-28-GW-31-35 — Lab Sample ID: 320-24060-19

Date Collected: 12/06/16 11:35 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.52	E M	0.0026	0.00077	ug/L		12/17/16 13:28	12/28/16 00:12	1
Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.00094	ug/L		12/17/16 13:28	12/28/16 00:12	1
Perfluorooctane Sulfonate (PFOS)	0.42	E	0.0041	0.0013	ug/L		12/17/16 13:28	12/28/16 00:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	60		25 - 150	12/17/16 13:28	12/28/16 00:12	1
18O2 PFHxS	44		25 - 150	12/17/16 13:28	12/28/16 00:12	1
13C4 PFOS	98		25 - 150	12/17/16 13:28	12/28/16 00:12	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.61	D	0.026	0.0077	ug/L		12/17/16 13:28	12/29/16 15:49	10
Perfluorobutanesulfonic acid (PFBS)	0.12	D	0.026	0.0094	ug/L		12/17/16 13:28	12/29/16 15:49	10
Perfluorooctane Sulfonate (PFOS)	0.43	D	0.041	0.013	ug/L		12/17/16 13:28	12/29/16 15:49	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	77		25 - 150	12/17/16 13:28	12/29/16 15:49	10
18O2 PFHxS	97		25 - 150	12/17/16 13:28	12/29/16 15:49	10
13C4 PFOS	104		25 - 150	12/17/16 13:28	12/29/16 15:49	10

Client Sample ID: DPT-16-28-GW-19-23 — Lab Sample ID: 320-24060-20

Date Collected: 12/06/16 11:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.55	E M	0.0025	0.00075	ug/L		12/17/16 13:28	12/28/16 00:20	1
Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.00092	ug/L		12/17/16 13:28	12/28/16 00:20	1
Perfluorooctane Sulfonate (PFOS)	3.2	E	0.0040	0.0013	ug/L		12/17/16 13:28	12/28/16 00:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	78		25 - 150	12/17/16 13:28	12/28/16 00:20	1
18O2 PFHxS	51		25 - 150	12/17/16 13:28	12/28/16 00:20	1
13C4 PFOS	49		25 - 150	12/17/16 13:28	12/28/16 00:20	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.66	D	0.050	0.015	ug/L		12/17/16 13:28	12/29/16 14:12	20
Perfluorobutanesulfonic acid (PFBS)	0.089	D	0.050	0.018	ug/L		12/17/16 13:28	12/29/16 14:12	20
Perfluorooctane Sulfonate (PFOS)	4.9	D	0.080	0.025	ug/L		12/17/16 13:28	12/29/16 14:12	20

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

TestAmerica Job ID: 320-24060-1

Client Sample ID: DPT-16-28-GW-19-23
Date Collected: 12/06/16 11:45
Date Received: 12/07/16 10:30

Lab Sample ID: 320-24060-20
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	114		25 - 150	12/17/16 13:28	12/29/16 14:12	20
18O2 PFHxS	108		25 - 150	12/17/16 13:28	12/29/16 14:12	20
13C4 PFOS	98		25 - 150	12/17/16 13:28	12/29/16 14:12	20

Isotope Dilution Summary

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

TestAmerica Job ID: 320-24060-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	3C4 PFOA (25-150)	18O2 PFHxS (25-150)	13C4 PFOS (25-150)						
320-24060-1	DPT-16-22-GW-31-35	64	33	86						
320-24060-1 - DL	DPT-16-22-GW-31-35	88	85	103						
320-24060-2	DPT-16-22-GW-31-35-DUP	46	36	94						
320-24060-2 - DL	DPT-16-22-GW-31-35-DUP	53	87	105						
320-24060-3	DPT-16-22-GW-19-23	67	61	92						
320-24060-3 - DL	DPT-16-22-GW-19-23	81	102	104						
320-24060-4	DPT-16-33-GW-31-35	61	54	77						
320-24060-4 - DL	DPT-16-33-GW-31-35	93	106	105						
320-24060-5	DPT-16-33-GW-19-23	41	19 Q	35						
320-24060-5 - DL	DPT-16-33-GW-19-23	105	107	98						
320-24060-6	SW-16-01-SW	83	82	93						
320-24060-7	DPT-16-14-GW-31-35	59	49	44						
320-24060-7 - DL	DPT-16-14-GW-31-35	96	106	98						
320-24060-8	SW-16-02-SW	77	84	92						
320-24060-9	SW-16-02-SW-DUP	82	88	98						
320-24060-10	DPT-16-14-GW-19-23	61	30	34						
320-24060-10 - DL	DPT-16-14-GW-19-23	103	106	87						
320-24060-11	DPT-16-12-GW-31-35	64	69	81						
320-24060-11 - DL	DPT-16-12-GW-31-35	82	109	100						
320-24060-12	DPT-16-12-GW-19-23	49	31	48						
320-24060-12 - DL	DPT-16-12-GW-19-23	91	92	91						
320-24060-13	DPT-16-16-GW-31-35	48	39	68						
320-24060-13 - DL	DPT-16-16-GW-31-35	74	88	93						
320-24060-14	DPT-16-16-GW-19-23	61	68	74						
320-24060-14 - DL	DPT-16-16-GW-19-23	75	109	97						
320-24060-15	DPT-16-25-GW-31-35	70	66	97						
320-24060-16	DPT-16-25-GW-19-23	68	31	78						
320-24060-16 - DL	DPT-16-25-GW-19-23	98	85	111						
320-24060-17	DPT-16-24-GW-21-25	61	86	92						
320-24060-17 - DL	DPT-16-24-GW-21-25	70	113	103						
320-24060-18	DPT-16-24-GW-31-35	61	78	97						
320-24060-18 - DL	DPT-16-24-GW-31-35	89	122	112						
320-24060-19	DPT-16-28-GW-31-35	60	44	98						
320-24060-19 - DL	DPT-16-28-GW-31-35	77	97	104						
320-24060-20	DPT-16-28-GW-19-23	78	51	49						
320-24060-20 - DL	DPT-16-28-GW-19-23	114	108	98						
LCS 320-142688/2-A	Lab Control Sample	108	109	107						
LCSD 320-142688/3-A	Lab Control Sample Dup	105	105	106						
MB 320-142688/1-A	Method Blank	112	107	105						

Surrogate Legend

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

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-142688/1-A
Matrix: Water
Analysis Batch: 144104

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 142688

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		12/17/16 13:28	12/27/16 20:50	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/17/16 13:28	12/27/16 20:50	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 20:50	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*112*		*25 - 150*	*12/17/16 13:28*	*12/27/16 20:50*	*1*
18O2 PFHxS	*107*		*25 - 150*	*12/17/16 13:28*	*12/27/16 20:50*	*1*
13C4 PFOS	*105*		*25 - 150*	*12/17/16 13:28*	*12/27/16 20:50*	*1*

Lab Sample ID: LCS 320-142688/2-A
Matrix: Water
Analysis Batch: 144104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 142688

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0412		ug/L		103	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0432		ug/L		122	50 - 150
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0404		ug/L		109	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*108*		*25 - 150*
18O2 PFHxS	*109*		*25 - 150*
13C4 PFOS	*107*		*25 - 150*

Lab Sample ID: LCSD 320-142688/3-A
Matrix: Water
Analysis Batch: 144104

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 142688

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0400	0.0420		ug/L		105	60 - 140	2	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0447		ug/L		126	50 - 150	3	30
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0408		ug/L		110	60 - 140	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOA	*105*		*25 - 150*
18O2 PFHxS	*105*		*25 - 150*
13C4 PFOS	*106*		*25 - 150*

LCMS

Prep Batch: 142688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24060-1 - DL	DPT-16-22-GW-31-35	Total/NA	Water	3535	
320-24060-1	DPT-16-22-GW-31-35	Total/NA	Water	3535	
320-24060-2 - DL	DPT-16-22-GW-31-35-DUP	Total/NA	Water	3535	
320-24060-2	DPT-16-22-GW-31-35-DUP	Total/NA	Water	3535	
320-24060-3	DPT-16-22-GW-19-23	Total/NA	Water	3535	
320-24060-3 - DL	DPT-16-22-GW-19-23	Total/NA	Water	3535	
320-24060-4	DPT-16-33-GW-31-35	Total/NA	Water	3535	
320-24060-4 - DL	DPT-16-33-GW-31-35	Total/NA	Water	3535	
320-24060-5	DPT-16-33-GW-19-23	Total/NA	Water	3535	
320-24060-5 - DL	DPT-16-33-GW-19-23	Total/NA	Water	3535	
320-24060-6	SW-16-01-SW	Total/NA	Water	3535	
320-24060-7 - DL	DPT-16-14-GW-31-35	Total/NA	Water	3535	
320-24060-7	DPT-16-14-GW-31-35	Total/NA	Water	3535	
320-24060-8	SW-16-02-SW	Total/NA	Water	3535	
320-24060-9	SW-16-02-SW-DUP	Total/NA	Water	3535	
320-24060-10	DPT-16-14-GW-19-23	Total/NA	Water	3535	
320-24060-10 - DL	DPT-16-14-GW-19-23	Total/NA	Water	3535	
320-24060-11	DPT-16-12-GW-31-35	Total/NA	Water	3535	
320-24060-11 - DL	DPT-16-12-GW-31-35	Total/NA	Water	3535	
320-24060-12	DPT-16-12-GW-19-23	Total/NA	Water	3535	
320-24060-12 - DL	DPT-16-12-GW-19-23	Total/NA	Water	3535	
320-24060-13	DPT-16-16-GW-31-35	Total/NA	Water	3535	
320-24060-13 - DL	DPT-16-16-GW-31-35	Total/NA	Water	3535	
320-24060-14	DPT-16-16-GW-19-23	Total/NA	Water	3535	
320-24060-14 - DL	DPT-16-16-GW-19-23	Total/NA	Water	3535	
320-24060-15	DPT-16-25-GW-31-35	Total/NA	Water	3535	
320-24060-16	DPT-16-25-GW-19-23	Total/NA	Water	3535	
320-24060-16 - DL	DPT-16-25-GW-19-23	Total/NA	Water	3535	
320-24060-17	DPT-16-24-GW-21-25	Total/NA	Water	3535	
320-24060-17 - DL	DPT-16-24-GW-21-25	Total/NA	Water	3535	
320-24060-18 - DL	DPT-16-24-GW-31-35	Total/NA	Water	3535	
320-24060-18	DPT-16-24-GW-31-35	Total/NA	Water	3535	
320-24060-19	DPT-16-28-GW-31-35	Total/NA	Water	3535	
320-24060-19 - DL	DPT-16-28-GW-31-35	Total/NA	Water	3535	
320-24060-20	DPT-16-28-GW-19-23	Total/NA	Water	3535	
320-24060-20 - DL	DPT-16-28-GW-19-23	Total/NA	Water	3535	
MB 320-142688/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-142688/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-142688/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 144104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24060-1	DPT-16-22-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-2	DPT-16-22-GW-31-35-DUP	Total/NA	Water	537 (Modified)	142688
320-24060-3	DPT-16-22-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-4	DPT-16-33-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-5	DPT-16-33-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-6	SW-16-01-SW	Total/NA	Water	537 (Modified)	142688
320-24060-7	DPT-16-14-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-8	SW-16-02-SW	Total/NA	Water	537 (Modified)	142688
320-24060-9	SW-16-02-SW-DUP	Total/NA	Water	537 (Modified)	142688

LCMS (Continued)

Analysis Batch: 144104 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24060-10	DPT-16-14-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-11	DPT-16-12-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-12	DPT-16-12-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-13	DPT-16-16-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-14	DPT-16-16-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-15	DPT-16-25-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-16	DPT-16-25-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-17	DPT-16-24-GW-21-25	Total/NA	Water	537 (Modified)	142688
320-24060-18	DPT-16-24-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-19	DPT-16-28-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-20	DPT-16-28-GW-19-23	Total/NA	Water	537 (Modified)	142688
MB 320-142688/1-A	Method Blank	Total/NA	Water	537 (Modified)	142688
LCS 320-142688/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	142688
LCSD 320-142688/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	142688

Analysis Batch: 144419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24060-1 - DL	DPT-16-22-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-2 - DL	DPT-16-22-GW-31-35-DUP	Total/NA	Water	537 (Modified)	142688
320-24060-3 - DL	DPT-16-22-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-4 - DL	DPT-16-33-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-5 - DL	DPT-16-33-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-7 - DL	DPT-16-14-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-10 - DL	DPT-16-14-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-11 - DL	DPT-16-12-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-12 - DL	DPT-16-12-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-13 - DL	DPT-16-16-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-14 - DL	DPT-16-16-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-16 - DL	DPT-16-25-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-17 - DL	DPT-16-24-GW-21-25	Total/NA	Water	537 (Modified)	142688
320-24060-18 - DL	DPT-16-24-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-19 - DL	DPT-16-28-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-20 - DL	DPT-16-28-GW-19-23	Total/NA	Water	537 (Modified)	142688

Lab Chronicle

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

TestAmerica Job ID: 320-24060-1

Client Sample ID: DPT-16-22-GW-31-35

Lab Sample ID: 320-24060-1
Date Collected: 12/05/16 09:45
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			252.1 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 21:12	SBC	TAL SAC
Total/NA	Prep	3535	DL		252.1 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 14:19	CBW	TAL SAC

Client Sample ID: DPT-16-22-GW-31-35-DUP

Lab Sample ID: 320-24060-2
Date Collected: 12/05/16 09:45
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			227 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 21:20	SBC	TAL SAC
Total/NA	Prep	3535	DL		227 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 14:27	CBW	TAL SAC

Client Sample ID: DPT-16-22-GW-19-23

Lab Sample ID: 320-24060-3
Date Collected: 12/05/16 09:55
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.7 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 21:27	SBC	TAL SAC
Total/NA	Prep	3535	DL		254.7 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 14:34	CBW	TAL SAC

Client Sample ID: DPT-16-33-GW-31-35

Lab Sample ID: 320-24060-4
Date Collected: 12/05/16 10:55
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.5 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 21:35	SBC	TAL SAC
Total/NA	Prep	3535	DL		253.5 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 14:42	CBW	TAL SAC

Client Sample ID: DPT-16-33-GW-19-23

Lab Sample ID: 320-24060-5
Date Collected: 12/05/16 11:10
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.7 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 21:42	SBC	TAL SAC
Total/NA	Prep	3535	DL		254.7 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC

Client Sample ID: DPT-16-33-GW-19-23 — Lab Sample ID: 320-24060-5

Date Collected: 12/05/16 11:10 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	537 (Modified)	DL	100			144419	12/29/16 13:42	CBW	TAL SAC

Client Sample ID: SW-16-01-SW — Lab Sample ID: 320-24060-6

Date Collected: 12/05/16 11:30 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.4 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 22:12	SBC	TAL SAC

Client Sample ID: DPT-16-14-GW-31-35 — Lab Sample ID: 320-24060-7

Date Collected: 12/05/16 12:00 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			249 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 22:20	SBC	TAL SAC
Total/NA	Prep	3535	DL		249 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	20			144419	12/29/16 13:57	CBW	TAL SAC

Client Sample ID: SW-16-02-SW — Lab Sample ID: 320-24060-8

Date Collected: 12/05/16 12:15 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			252.4 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 22:27	SBC	TAL SAC

Client Sample ID: SW-16-02-SW-DUP — Lab Sample ID: 320-24060-9

Date Collected: 12/05/16 12:15 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			247.2 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 22:35	SBC	TAL SAC

Client Sample ID: DPT-16-14-GW-19-23 — Lab Sample ID: 320-24060-10

Date Collected: 12/05/16 12:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.3 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 22:42	SBC	TAL SAC

Lab Chronicle

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		256.3 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	50			144419	12/29/16 13:49	CBW	TAL SAC

Client Sample ID: DPT-16-12-GW-31-35
Lab Sample ID: 320-24060-11
Date Collected: 12/05/16 13:35 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250.4 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 22:50	SBC	TAL SAC
Total/NA	Prep	3535	DL		250.4 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 14:49	CBW	TAL SAC

Client Sample ID: DPT-16-12-GW-19-23
Lab Sample ID: 320-24060-12
Date Collected: 12/05/16 13:50 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.8 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 22:57	SBC	TAL SAC
Total/NA	Prep	3535	DL		258.8 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	20			144419	12/29/16 14:04	CBW	TAL SAC

Client Sample ID: DPT-16-16-GW-31-35
Lab Sample ID: 320-24060-13
Date Collected: 12/05/16 14:40 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			244.2 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 23:05	SBC	TAL SAC
Total/NA	Prep	3535	DL		244.2 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 15:12	CBW	TAL SAC

Client Sample ID: DPT-16-16-GW-19-23
Lab Sample ID: 320-24060-14
Date Collected: 12/05/16 14:50 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.8 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 23:12	SBC	TAL SAC
Total/NA	Prep	3535	DL		262.8 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 15:19	CBW	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-24060-1

Client Sample ID: DPT-16-25-GW-31-35

Lab Sample ID: 320-24060-15
Date Collected: 12/06/16 09:35
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			233.8 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 23:20	SBC	TAL SAC

Client Sample ID: DPT-16-25-GW-19-23

Lab Sample ID: 320-24060-16
Date Collected: 12/06/16 09:45
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.5 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 23:50	SBC	TAL SAC
Total/NA	Prep	3535	DL		255.5 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 15:27	CBW	TAL SAC

Client Sample ID: DPT-16-24-GW-21-25

Lab Sample ID: 320-24060-17
Date Collected: 12/06/16 10:40
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			248.9 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/27/16 23:57	SBC	TAL SAC
Total/NA	Prep	3535	DL		248.9 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 15:34	CBW	TAL SAC

Client Sample ID: DPT-16-24-GW-31-35

Lab Sample ID: 320-24060-18
Date Collected: 12/06/16 10:50
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.5 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/28/16 00:05	SBC	TAL SAC
Total/NA	Prep	3535	DL		260.5 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 15:42	CBW	TAL SAC

Client Sample ID: DPT-16-28-GW-31-35

Lab Sample ID: 320-24060-19
Date Collected: 12/06/16 11:35
Matrix: Water
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			244 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/28/16 00:12	SBC	TAL SAC
Total/NA	Prep	3535	DL		244 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			144419	12/29/16 15:49	CBW	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-24060-1

Client Sample ID: DPT-16-28-GW-19-23

Date Collected: 12/06/16 11:45
Date Received: 12/07/16 10:30

Lab Sample ID: 320-24060-20

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250.5 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			144104	12/28/16 00:20	SBC	TAL SAC
Total/NA	Prep	3535	DL		250.5 mL	0.5 mL	142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	20			144419	12/29/16 14:12	CBW	TAL SAC

Laboratory References:

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

Certification Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

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

Method Summary

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

TestAmerica Job ID: 320-24060-1

Method	Method Description	Protocol	Laboratory
537 (Modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

TestAmerica Job ID: 320-24060-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24060-1	DPT-16-22-GW-31-35	Water	12/05/16 09:45	12/07/16 10:30
320-24060-2	DPT-16-22-GW-31-35-DUP	Water	12/05/16 09:45	12/07/16 10:30
320-24060-3	DPT-16-22-GW-19-23	Water	12/05/16 09:55	12/07/16 10:30
320-24060-4	DPT-16-33-GW-31-35	Water	12/05/16 10:55	12/07/16 10:30
320-24060-5	DPT-16-33-GW-19-23	Water	12/05/16 11:10	12/07/16 10:30
320-24060-6	SW-16-01-SW	Water	12/05/16 11:30	12/07/16 10:30
320-24060-7	DPT-16-14-GW-31-35	Water	12/05/16 12:00	12/07/16 10:30
320-24060-8	SW-16-02-SW	Water	12/05/16 12:15	12/07/16 10:30
320-24060-9	SW-16-02-SW-DUP	Water	12/05/16 12:15	12/07/16 10:30
320-24060-10	DPT-16-14-GW-19-23	Water	12/05/16 12:45	12/07/16 10:30
320-24060-11	DPT-16-12-GW-31-35	Water	12/05/16 13:35	12/07/16 10:30
320-24060-12	DPT-16-12-GW-19-23	Water	12/05/16 13:50	12/07/16 10:30
320-24060-13	DPT-16-16-GW-31-35	Water	12/05/16 14:40	12/07/16 10:30
320-24060-14	DPT-16-16-GW-19-23	Water	12/05/16 14:50	12/07/16 10:30
320-24060-15	DPT-16-25-GW-31-35	Water	12/06/16 09:35	12/07/16 10:30
320-24060-16	DPT-16-25-GW-19-23	Water	12/06/16 09:45	12/07/16 10:30
320-24060-17	DPT-16-24-GW-21-25	Water	12/06/16 10:40	12/07/16 10:30
320-24060-18	DPT-16-24-GW-31-35	Water	12/06/16 10:50	12/07/16 10:30
320-24060-19	DPT-16-28-GW-31-35	Water	12/06/16 11:35	12/07/16 10:30
320-24060-20	DPT-16-28-GW-19-23	Water	12/06/16 11:45	12/07/16 10:30

Chain of Custody Record

Temperature on Receipt 3.9 °C

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM Technical Services Inc	Kurt VanGelder	12/6/16	295758
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 2
3101 Wilson Blvd	7034770931		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Arlington / VA / 22201	Anay Shah	Jill. K	
Project Name and Location (State)	**Carrier/Waybill Number**		
32007449 / 60444465	FEDEX		
Contract/Purchase Order/Quote No.			
Former Bayroad R2 Annex			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	PFOA	PFBS	PFAS
DPT-16-22-GW-31-35	12/5	0945		✓			2						✓	✓	✓
DPT-16-22-GW-31-35-DUP	12/5/16	0945		✓			2						✓	✓	✓
DPT-16-22-GW-19-23	12/5/16	0955		✓			2						✓	✓	✓
DPT-16-33-GW-31-35	12/5/16	1055		✓			2						✓	✓	✓
DPT-16-33-GW-19-23	12/5/16	1110		✓			2						✓	✓	✓
SW-16-01-SW	12/5/16	1130		✓			2						✓	✓	✓
DPT-16-14-GW-31-35	12/5/16	1200		✓			2						✓	✓	✓
SW-16-02-SW	12/5/16	1215		✓			2						✓	✓	✓
SW-16-02-SW-DUP	12/5/16	1215		✓			2						✓	✓	✓
DPT-16-14-GW-19-23	12/5/16	1245		✓			2						✓	✓	✓
DPT-16-12-GW-31-35	12/5/16	1335		✓			2						✓	/	/
DPT-16-12-GW-19-23	12/5/16	1350		✓			2						/	/	/

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

320-24060 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☑ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	12/6/15	1300	1. Received By Troy G. Turpen TAS 3.9°C	12/7/16	10:38
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

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

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☑

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TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM Technical Services	Kurt VanGelder	12/6/16	295759
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
3101 Wilson Blvd	703 477 0931		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Arlington / VA / 22201	Anay Shah	Jill K	
Project Name and Location (State)	**Carrier/Waybill Number**		
Former Bayer Rd Amex	FEDEX		
Contract/Purchase Order/Quote No.			
32007449 / 60444465			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis: PFCA	PFOS	PFBS	Special Instructions/ Conditions of Receipt
DPT-16-16-GW-31-35	12/5/16	1440		✓			2						✓	✓	✓	
DPT-16-16-GW-19-23	12/5/16	1450		✓			2						✓	✓	✓	
DPT-16-25-GW-31-35	12/6/16	0935		✓			2						✓	✓	✓	
DPT-16-25-GW-19-23	12/6/16	0945		✓			2						✓	✓	✓	
DPT-16-24-GW-21-25	12/6/16	1040		✓			2						✓	✓	✓	
DPT-16-24-GW-31-35	12/6/16	1050		✓			2						✓	✓	✓	
DPT-16-28-GW-31-35	12/6/16	1135		✓			2						✓	✓	✓	
DPT-16-28-GW-19-23	12/6/16	1145		✓			2						✓	✓	✓	

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☑ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	12/6/16	1300	1. Received By Tracy G. Turpen TAS 3.9°C	12/7/16	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

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

1/4/2017

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 320-24060-1

Login Number: 24060
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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

ANALYTICAL REPORT

Job Number: 320-24060-1

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

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

Attention: Devon Chicoine

Approved for release.
Jill Kellmann
Manager of Project Management
1/4/2017 10:22 AM

Jill Kellmann, Manager of Project Management
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4402
jill.kellmann@testamericainc.com
01/04/2017

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Qualifiers

LCMS

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

Glossary

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

CASE NARRATIVE

Client: AECOM Technical Services Inc.

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

Report Number: 320-24060-1

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

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

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

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

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

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

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

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

RECEIPT

The samples were received on 12/07/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.9 C.

PFAS

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

The Isotope Dilution Analyte (IDA) recovery for 18O2 PFHxS in the following sample is below the method recommended limit: DPT-16-33-GW-19-23 (320-24060-5). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

The following samples were diluted to bring the concentration of target analytes within the calibration range: DPT-16-22-GW-31-35 (320-24060-1), DPT-16-22-GW-31-35-DUP (320-24060-2), DPT-16-22-GW-19-23 (320-24060-3), DPT-16-33-GW-31-35 (320-24060-4), DPT-16-33-GW-19-23 (320-24060-5), DPT-16-14-GW-31-35 (320-24060-7), DPT-16-14-GW-19-23 (320-24060-10), DPT-16-12-GW-31-35 (320-24060-11), DPT-16-12-GW-19-23 (320-24060-12), DPT-16-16-GW-31-35 (320-24060-13), DPT-16-16-GW-19-23 (320-24060-14), DPT-16-25-GW-19-23 (320-24060-16), DPT-16-24-GW-21-25 (320-24060-17), DPT-16-24-GW-31-35 (320-24060-18), DPT-16-28-GW-31-35 (320-24060-19) and DPT-16-28-GW-19-23 (320-24060-20). Elevated reporting limits (RLs) are provided.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-142688.

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

Detection Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Client Sample ID: DPT-16-22-GW-31-35 Lab Sample ID: 320-24060-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.18	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.44	E	0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.59	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.18	D	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.29	D	0.025	0.0091	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.61	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-22-GW-31-35-DUP Lab Sample ID: 320-24060-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.16	M	0.0028	0.00082	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.44	E	0.0028	0.0010	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.55	E	0.0044	0.0014	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.17	D	0.028	0.0082	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.27	D	0.028	0.010	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.56	D	0.044	0.014	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-22-GW-19-23 Lab Sample ID: 320-24060-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.17	M	0.0025	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.070		0.0025	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.76	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.18	D	0.025	0.0073	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.046	D	0.025	0.0090	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.82	D	0.039	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-33-GW-31-35 Lab Sample ID: 320-24060-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.75	E M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.1	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.96	D	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.11	D	0.025	0.0091	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.3	D	0.039	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-33-GW-19-23 Lab Sample ID: 320-24060-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.0	E M	0.0025	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.82	E	0.0025	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.4	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	2.8	D	0.25	0.073	ug/L	100		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-33-GW-19-23 (Continued) — Lab Sample ID: 320-24060-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS) - DL	0.23	J D	0.25	0.090	ug/L	100		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	8.3	D	0.39	0.13	ug/L	100		537 (Modified)	Total/NA

Client Sample ID: SW-16-01-SW — Lab Sample ID: 320-24060-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.023	M	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.020		0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.27		0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-14-GW-31-35 — Lab Sample ID: 320-24060-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.57	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.20		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.7	E M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.67	D	0.050	0.015	ug/L	20		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.11	D	0.050	0.018	ug/L	20		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	5.4	D	0.080	0.026	ug/L	20		537 (Modified)	Total/NA

Client Sample ID: SW-16-02-SW — Lab Sample ID: 320-24060-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.042	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0084		0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: SW-16-02-SW-DUP — Lab Sample ID: 320-24060-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.041	M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0089		0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-14-GW-19-23 — Lab Sample ID: 320-24060-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.78	E M	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.35	E	0.0024	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	4.1	E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.0	D	0.12	0.036	ug/L	50		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.15	D	0.12	0.045	ug/L	50		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	6.4	D	0.20	0.062	ug/L	50		537 (Modified)	Total/NA

Client Sample ID: DPT-16-12-GW-31-35 — Lab Sample ID: 320-24060-11

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-12-GW-31-35 (Continued) — Lab Sample ID: 320-24060-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.24	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.63	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.25	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.044	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.69	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-12-GW-19-23 — Lab Sample ID: 320-24060-12

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.1	E M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.41	E	0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.3	E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.7	D	0.048	0.014	ug/L	20		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.22	D	0.048	0.018	ug/L	20		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	4.6	D	0.077	0.025	ug/L	20		537 (Modified)	Total/NA

Client Sample ID: DPT-16-16-GW-31-35 — Lab Sample ID: 320-24060-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.5	E M	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.28		0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	2.3	D	0.026	0.0077	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.16	D	0.026	0.0094	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.9	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-16-GW-19-23 — Lab Sample ID: 320-24060-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.22	M	0.0024	0.00071	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.00087	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.76	E	0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.23	D	0.024	0.0071	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.043	D	0.024	0.0087	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.88	D	0.038	0.012	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-25-GW-31-35 — Lab Sample ID: 320-24060-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.17	M	0.0027	0.00080	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0027	0.00098	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.39		0.0043	0.0014	ug/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Client Sample ID: DPT-16-25-GW-19-23 Lab Sample ID: 320-24060-16

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.50	E M	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.49	E	0.0024	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.0	E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.57	D	0.024	0.0073	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.31	D	0.024	0.0090	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.1	D	0.039	0.012	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-24-GW-21-25 Lab Sample ID: 320-24060-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.044	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.029		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.39	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.046	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.023	J D M	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.41	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-24-GW-31-35 Lab Sample ID: 320-24060-18

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.15	M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.043		0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.44	E	0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.15	D	0.024	0.0072	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.032	D	0.024	0.0088	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.47	D	0.038	0.012	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-28-GW-31-35 Lab Sample ID: 320-24060-19

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.52	E M	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.42	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.61	D	0.026	0.0077	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.12	D	0.026	0.0094	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.43	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-28-GW-19-23 Lab Sample ID: 320-24060-20

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.55	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.2	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.66	D	0.050	0.015	ug/L	20		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-28-GW-19-23 (Continued) Lab Sample ID: 320-24060-20

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS) - DL	0.089	D	0.050	0.018	ug/L	20		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	4.9	D	0.080	0.025	ug/L	20		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-22-GW-31-35 — Lab Sample ID: 320-24060-1

Date Collected: 12/05/16 09:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.18	M	0.0025	0.00074	ug/L		12/17/16 13:28	12/27/16 21:12	1
Perfluorobutanesulfonic acid (PFBS)	0.44	E	0.0025	0.00091	ug/L		12/17/16 13:28	12/27/16 21:12	1
Perfluorooctane Sulfonate (PFOS)	0.59	E	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 21:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*64*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:12*	*1*
18O2 PFHxS	*33*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:12*	*1*
13C4 PFOS	*86*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:12*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.18	D	0.025	0.0074	ug/L		12/17/16 13:28	12/29/16 14:19	10
Perfluorobutanesulfonic acid (PFBS)	0.29	D	0.025	0.0091	ug/L		12/17/16 13:28	12/29/16 14:19	10
Perfluorooctane Sulfonate (PFOS)	0.61	D	0.040	0.013	ug/L		12/17/16 13:28	12/29/16 14:19	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*88*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:19*	*10*
18O2 PFHxS	*85*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:19*	*10*
13C4 PFOS	*103*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:19*	*10*

Client Sample ID: DPT-16-22-GW-31-35-DUP — Lab Sample ID: 320-24060-2

Date Collected: 12/05/16 09:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.16	M	0.0028	0.00082	ug/L		12/17/16 13:28	12/27/16 21:20	1
Perfluorobutanesulfonic acid (PFBS)	0.44	E	0.0028	0.0010	ug/L		12/17/16 13:28	12/27/16 21:20	1
Perfluorooctane Sulfonate (PFOS)	0.55	E	0.0044	0.0014	ug/L		12/17/16 13:28	12/27/16 21:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*46*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:20*	*1*
18O2 PFHxS	*36*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:20*	*1*
13C4 PFOS	*94*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:20*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.17	D	0.028	0.0082	ug/L		12/17/16 13:28	12/29/16 14:27	10
Perfluorobutanesulfonic acid (PFBS)	0.27	D	0.028	0.010	ug/L		12/17/16 13:28	12/29/16 14:27	10
Perfluorooctane Sulfonate (PFOS)	0.56	D	0.044	0.014	ug/L		12/17/16 13:28	12/29/16 14:27	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*53*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:27*	*10*
18O2 PFHxS	*87*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:27*	*10*
13C4 PFOS	*105*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:27*	*10*

Client Sample ID: DPT-16-22-GW-19-23 — Lab Sample ID: 320-24060-3

Date Collected: 12/05/16 09:55 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.17	M	0.0025	0.00073	ug/L		12/17/16 13:28	12/27/16 21:27	1
Perfluorobutanesulfonic acid (PFBS)	0.070		0.0025	0.00090	ug/L		12/17/16 13:28	12/27/16 21:27	1
Perfluorooctane Sulfonate (PFOS)	0.76	E	0.0039	0.0013	ug/L		12/17/16 13:28	12/27/16 21:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*67*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:27*	*1*
18O2 PFHxS	*61*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:27*	*1*
13C4 PFOS	*92*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:27*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.18	D	0.025	0.0073	ug/L		12/17/16 13:28	12/29/16 14:34	10
Perfluorobutanesulfonic acid (PFBS)	0.046	D	0.025	0.0090	ug/L		12/17/16 13:28	12/29/16 14:34	10
Perfluorooctane Sulfonate (PFOS)	0.82	D	0.039	0.013	ug/L		12/17/16 13:28	12/29/16 14:34	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*81*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:34*	*10*
18O2 PFHxS	*102*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:34*	*10*
13C4 PFOS	*104*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:34*	*10*

Client Sample ID: DPT-16-33-GW-31-35 — Lab Sample ID: 320-24060-4

Date Collected: 12/05/16 10:55 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.75	E M	0.0025	0.00074	ug/L		12/17/16 13:28	12/27/16 21:35	1
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0025	0.00091	ug/L		12/17/16 13:28	12/27/16 21:35	1
Perfluorooctane Sulfonate (PFOS)	1.1	E	0.0039	0.0013	ug/L		12/17/16 13:28	12/27/16 21:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*61*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:35*	*1*
18O2 PFHxS	*54*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:35*	*1*
13C4 PFOS	*77*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:35*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.96	D	0.025	0.0074	ug/L		12/17/16 13:28	12/29/16 14:42	10
Perfluorobutanesulfonic acid (PFBS)	0.11	D	0.025	0.0091	ug/L		12/17/16 13:28	12/29/16 14:42	10
Perfluorooctane Sulfonate (PFOS)	1.3	D	0.039	0.013	ug/L		12/17/16 13:28	12/29/16 14:42	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*93*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:42*	*10*
18O2 PFHxS	*106*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:42*	*10*
13C4 PFOS	*105*		*25 - 150*	*12/17/16 13:28*	*12/29/16 14:42*	*10*

Client Sample ID: DPT-16-33-GW-19-23 — Lab Sample ID: 320-24060-5

Date Collected: 12/05/16 11:10 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.0	E M	0.0025	0.00073	ug/L		12/17/16 13:28	12/27/16 21:42	1
Perfluorobutanesulfonic acid (PFBS)	0.82	E	0.0025	0.00090	ug/L		12/17/16 13:28	12/27/16 21:42	1
Perfluorooctane Sulfonate (PFOS)	5.4	E	0.0039	0.0013	ug/L		12/17/16 13:28	12/27/16 21:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*41*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:42*	*1*
18O2 PFHxS	*19*	*Q*	*25 - 150*	*12/17/16 13:28*	*12/27/16 21:42*	*1*
13C4 PFOS	*35*		*25 - 150*	*12/17/16 13:28*	*12/27/16 21:42*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.8	D	0.25	0.073	ug/L		12/17/16 13:28	12/29/16 13:42	100
Perfluorobutanesulfonic acid (PFBS)	0.23	J D	0.25	0.090	ug/L		12/17/16 13:28	12/29/16 13:42	100
Perfluorooctane Sulfonate (PFOS)	8.3	D	0.39	0.13	ug/L		12/17/16 13:28	12/29/16 13:42	100

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*105*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:42*	*100*
18O2 PFHxS	*107*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:42*	*100*
13C4 PFOS	*98*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:42*	*100*

Client Sample ID: SW-16-01-SW — Lab Sample ID: 320-24060-6

Date Collected: 12/05/16 11:30 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.023	M	0.0024	0.00073	ug/L		12/17/16 13:28	12/27/16 22:12	1
Perfluorobutanesulfonic acid (PFBS)	0.020		0.0024	0.00089	ug/L		12/17/16 13:28	12/27/16 22:12	1
Perfluorooctane Sulfonate (PFOS)	0.27		0.0039	0.0012	ug/L		12/17/16 13:28	12/27/16 22:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*83*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:12*	*1*
18O2 PFHxS	*82*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:12*	*1*
13C4 PFOS	*93*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:12*	*1*

Client Sample ID: DPT-16-14-GW-31-35 — Lab Sample ID: 320-24060-7

Date Collected: 12/05/16 12:00 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.57	E M	0.0025	0.00075	ug/L		12/17/16 13:28	12/27/16 22:20	1
Perfluorobutanesulfonic acid (PFBS)	0.20		0.0025	0.00092	ug/L		12/17/16 13:28	12/27/16 22:20	1
Perfluorooctane Sulfonate (PFOS)	3.7	E M	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 22:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*59*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:20*	*1*
18O2 PFHxS	*49*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:20*	*1*
13C4 PFOS	*44*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:20*	*1*

Client Sample ID: DPT-16-14-GW-31-35 — Lab Sample ID: 320-24060-7

Date Collected: 12/05/16 12:00 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.67	D	0.050	0.015	ug/L		12/17/16 13:28	12/29/16 13:57	20
Perfluorobutanesulfonic acid (PFBS)	0.11	D	0.050	0.018	ug/L		12/17/16 13:28	12/29/16 13:57	20
Perfluorooctane Sulfonate (PFOS)	5.4	D	0.080	0.026	ug/L		12/17/16 13:28	12/29/16 13:57	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*96*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:57*	*20*
18O2 PFHxS	*106*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:57*	*20*
13C4 PFOS	*98*		*25 - 150*	*12/17/16 13:28*	*12/29/16 13:57*	*20*

Client Sample ID: SW-16-02-SW — Lab Sample ID: 320-24060-8

Date Collected: 12/05/16 12:15 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.042	M	0.0025	0.00074	ug/L		12/17/16 13:28	12/27/16 22:27	1
Perfluorobutanesulfonic acid (PFBS)	0.0084		0.0025	0.00091	ug/L		12/17/16 13:28	12/27/16 22:27	1
Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 22:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*77*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:27*	*1*
18O2 PFHxS	*84*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:27*	*1*
13C4 PFOS	*92*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:27*	*1*

Client Sample ID: SW-16-02-SW-DUP — Lab Sample ID: 320-24060-9

Date Collected: 12/05/16 12:15 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.041	M	0.0025	0.00076	ug/L		12/17/16 13:28	12/27/16 22:35	1
Perfluorobutanesulfonic acid (PFBS)	0.0089		0.0025	0.00093	ug/L		12/17/16 13:28	12/27/16 22:35	1
Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 22:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*82*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:35*	*1*
18O2 PFHxS	*88*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:35*	*1*
13C4 PFOS	*98*		*25 - 150*	*12/17/16 13:28*	*12/27/16 22:35*	*1*

Client Sample ID: DPT-16-14-GW-19-23 — Lab Sample ID: 320-24060-10

Date Collected: 12/05/16 12:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.78	E M	0.0024	0.00073	ug/L		12/17/16 13:28	12/27/16 22:42	1
Perfluorobutanesulfonic acid (PFBS)	0.35	E	0.0024	0.00090	ug/L		12/17/16 13:28	12/27/16 22:42	1
Perfluorooctane Sulfonate (PFOS)	4.1	E	0.0039	0.0012	ug/L		12/17/16 13:28	12/27/16 22:42	1

Client Sample ID: DPT-16-14-GW-19-23 — Lab Sample ID: 320-24060-10

Date Collected: 12/05/16 12:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	61		25 - 150	12/17/16 13:28	12/27/16 22:42	1
18O2 PFHxS	30		25 - 150	12/17/16 13:28	12/27/16 22:42	1
13C4 PFOS	34		25 - 150	12/17/16 13:28	12/27/16 22:42	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.0	D	0.12	0.036	ug/L		12/17/16 13:28	12/29/16 13:49	50
Perfluorobutanesulfonic acid (PFBS)	0.15	D	0.12	0.045	ug/L		12/17/16 13:28	12/29/16 13:49	50
Perfluorooctane Sulfonate (PFOS)	6.4	D	0.20	0.062	ug/L		12/17/16 13:28	12/29/16 13:49	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	103		25 - 150	12/17/16 13:28	12/29/16 13:49	50
18O2 PFHxS	106		25 - 150	12/17/16 13:28	12/29/16 13:49	50
13C4 PFOS	87		25 - 150	12/17/16 13:28	12/29/16 13:49	50

Client Sample ID: DPT-16-12-GW-31-35 — Lab Sample ID: 320-24060-11

Date Collected: 12/05/16 13:35 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.24	M	0.0025	0.00075	ug/L		12/17/16 13:28	12/27/16 22:50	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00092	ug/L		12/17/16 13:28	12/27/16 22:50	1
Perfluorooctane Sulfonate (PFOS)	0.63	E	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 22:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	64		25 - 150	12/17/16 13:28	12/27/16 22:50	1
18O2 PFHxS	69		25 - 150	12/17/16 13:28	12/27/16 22:50	1
13C4 PFOS	81		25 - 150	12/17/16 13:28	12/27/16 22:50	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.25	D	0.025	0.0075	ug/L		12/17/16 13:28	12/29/16 14:49	10
Perfluorobutanesulfonic acid (PFBS)	0.044	D	0.025	0.0092	ug/L		12/17/16 13:28	12/29/16 14:49	10
Perfluorooctane Sulfonate (PFOS)	0.69	D	0.040	0.013	ug/L		12/17/16 13:28	12/29/16 14:49	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	82		25 - 150	12/17/16 13:28	12/29/16 14:49	10
18O2 PFHxS	109		25 - 150	12/17/16 13:28	12/29/16 14:49	10
13C4 PFOS	100		25 - 150	12/17/16 13:28	12/29/16 14:49	10

Client Sample ID: DPT-16-12-GW-19-23 — Lab Sample ID: 320-24060-12

Date Collected: 12/05/16 13:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.1	E M	0.0024	0.00072	ug/L		12/17/16 13:28	12/27/16 22:57	1
Perfluorobutanesulfonic acid (PFBS)	0.41	E	0.0024	0.00089	ug/L		12/17/16 13:28	12/27/16 22:57	1
Perfluorooctane Sulfonate (PFOS)	3.3	E	0.0039	0.0012	ug/L		12/17/16 13:28	12/27/16 22:57	1

Client Sample ID: DPT-16-12-GW-19-23 — Lab Sample ID: 320-24060-12

Date Collected: 12/05/16 13:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	49		25 - 150	12/17/16 13:28	12/27/16 22:57	1
18O2 PFHxS	31		25 - 150	12/17/16 13:28	12/27/16 22:57	1
13C4 PFOS	48		25 - 150	12/17/16 13:28	12/27/16 22:57	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.7	D	0.048	0.014	ug/L		12/17/16 13:28	12/29/16 14:04	20
Perfluorobutanesulfonic acid (PFBS)	0.22	D	0.048	0.018	ug/L		12/17/16 13:28	12/29/16 14:04	20
Perfluorooctane Sulfonate (PFOS)	4.6	D	0.077	0.025	ug/L		12/17/16 13:28	12/29/16 14:04	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	91		25 - 150	12/17/16 13:28	12/29/16 14:04	20
18O2 PFHxS	92		25 - 150	12/17/16 13:28	12/29/16 14:04	20
13C4 PFOS	91		25 - 150	12/17/16 13:28	12/29/16 14:04	20

Client Sample ID: DPT-16-16-GW-31-35 — Lab Sample ID: 320-24060-13

Date Collected: 12/05/16 14:40 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.5	E M	0.0026	0.00077	ug/L		12/17/16 13:28	12/27/16 23:05	1
Perfluorobutanesulfonic acid (PFBS)	0.28		0.0026	0.00094	ug/L		12/17/16 13:28	12/27/16 23:05	1
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0041	0.0013	ug/L		12/17/16 13:28	12/27/16 23:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	48		25 - 150	12/17/16 13:28	12/27/16 23:05	1
18O2 PFHxS	39		25 - 150	12/17/16 13:28	12/27/16 23:05	1
13C4 PFOS	68		25 - 150	12/17/16 13:28	12/27/16 23:05	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.3	D	0.026	0.0077	ug/L		12/17/16 13:28	12/29/16 15:12	10
Perfluorobutanesulfonic acid (PFBS)	0.16	D	0.026	0.0094	ug/L		12/17/16 13:28	12/29/16 15:12	10
Perfluorooctane Sulfonate (PFOS)	1.9	D	0.041	0.013	ug/L		12/17/16 13:28	12/29/16 15:12	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	74		25 - 150	12/17/16 13:28	12/29/16 15:12	10
18O2 PFHxS	88		25 - 150	12/17/16 13:28	12/29/16 15:12	10
13C4 PFOS	93		25 - 150	12/17/16 13:28	12/29/16 15:12	10

Client Sample ID: DPT-16-16-GW-19-23 — Lab Sample ID: 320-24060-14

Date Collected: 12/05/16 14:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.22	M	0.0024	0.00071	ug/L		12/17/16 13:28	12/27/16 23:12	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.00087	ug/L		12/17/16 13:28	12/27/16 23:12	1
Perfluorooctane Sulfonate (PFOS)	0.76	E	0.0038	0.0012	ug/L		12/17/16 13:28	12/27/16 23:12	1

Client Sample ID: DPT-16-16-GW-19-23 — Lab Sample ID: 320-24060-14

Date Collected: 12/05/16 14:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	61		25 - 150	12/17/16 13:28	12/27/16 23:12	1
18O2 PFHxS	68		25 - 150	12/17/16 13:28	12/27/16 23:12	1
13C4 PFOS	74		25 - 150	12/17/16 13:28	12/27/16 23:12	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.23	D	0.024	0.0071	ug/L		12/17/16 13:28	12/29/16 15:19	10
Perfluorobutanesulfonic acid (PFBS)	0.043	D	0.024	0.0087	ug/L		12/17/16 13:28	12/29/16 15:19	10
Perfluorooctane Sulfonate (PFOS)	0.88	D	0.038	0.012	ug/L		12/17/16 13:28	12/29/16 15:19	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	75		25 - 150	12/17/16 13:28	12/29/16 15:19	10
18O2 PFHxS	109		25 - 150	12/17/16 13:28	12/29/16 15:19	10
13C4 PFOS	97		25 - 150	12/17/16 13:28	12/29/16 15:19	10

Client Sample ID: DPT-16-25-GW-31-35 — Lab Sample ID: 320-24060-15

Date Collected: 12/06/16 09:35 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.17	M	0.0027	0.00080	ug/L		12/17/16 13:28	12/27/16 23:20	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0027	0.00098	ug/L		12/17/16 13:28	12/27/16 23:20	1
Perfluorooctane Sulfonate (PFOS)	0.39		0.0043	0.0014	ug/L		12/17/16 13:28	12/27/16 23:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	70		25 - 150	12/17/16 13:28	12/27/16 23:20	1
18O2 PFHxS	66		25 - 150	12/17/16 13:28	12/27/16 23:20	1
13C4 PFOS	97		25 - 150	12/17/16 13:28	12/27/16 23:20	1

Client Sample ID: DPT-16-25-GW-19-23 — Lab Sample ID: 320-24060-16

Date Collected: 12/06/16 09:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.50	E M	0.0024	0.00073	ug/L		12/17/16 13:28	12/27/16 23:50	1
Perfluorobutanesulfonic acid (PFBS)	0.49	E	0.0024	0.00090	ug/L		12/17/16 13:28	12/27/16 23:50	1
Perfluorooctane Sulfonate (PFOS)	1.0	E	0.0039	0.0012	ug/L		12/17/16 13:28	12/27/16 23:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	68		25 - 150	12/17/16 13:28	12/27/16 23:50	1
18O2 PFHxS	31		25 - 150	12/17/16 13:28	12/27/16 23:50	1
13C4 PFOS	78		25 - 150	12/17/16 13:28	12/27/16 23:50	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.57	D	0.024	0.0073	ug/L		12/17/16 13:28	12/29/16 15:27	10
Perfluorobutanesulfonic acid (PFBS)	0.31	D	0.024	0.0090	ug/L		12/17/16 13:28	12/29/16 15:27	10
Perfluorooctane Sulfonate (PFOS)	1.1	D	0.039	0.012	ug/L		12/17/16 13:28	12/29/16 15:27	10

Client Sample ID: DPT-16-25-GW-19-23 — Lab Sample ID: 320-24060-16

Date Collected: 12/06/16 09:45 — **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	98		25 - 150	12/17/16 13:28	12/29/16 15:27	10
18O2 PFHxS	85		25 - 150	12/17/16 13:28	12/29/16 15:27	10
13C4 PFOS	111		25 - 150	12/17/16 13:28	12/29/16 15:27	10

Client Sample ID: DPT-16-24-GW-21-25 — Lab Sample ID: 320-24060-17

Date Collected: 12/06/16 10:40 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.044	M	0.0025	0.00075	ug/L		12/17/16 13:28	12/27/16 23:57	1
Perfluorobutanesulfonic acid (PFBS)	0.029		0.0025	0.00092	ug/L		12/17/16 13:28	12/27/16 23:57	1
Perfluorooctane Sulfonate (PFOS)	0.39	E	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 23:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	61		25 - 150	12/17/16 13:28	12/27/16 23:57	1
18O2 PFHxS	86		25 - 150	12/17/16 13:28	12/27/16 23:57	1
13C4 PFOS	92		25 - 150	12/17/16 13:28	12/27/16 23:57	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.046	D	0.025	0.0075	ug/L		12/17/16 13:28	12/29/16 15:34	10
Perfluorobutanesulfonic acid (PFBS)	0.023	J D M	0.025	0.0092	ug/L		12/17/16 13:28	12/29/16 15:34	10
Perfluorooctane Sulfonate (PFOS)	0.41	D	0.040	0.013	ug/L		12/17/16 13:28	12/29/16 15:34	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	70		25 - 150	12/17/16 13:28	12/29/16 15:34	10
18O2 PFHxS	113		25 - 150	12/17/16 13:28	12/29/16 15:34	10
13C4 PFOS	103		25 - 150	12/17/16 13:28	12/29/16 15:34	10

Client Sample ID: DPT-16-24-GW-31-35 — Lab Sample ID: 320-24060-18

Date Collected: 12/06/16 10:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.15	M	0.0024	0.00072	ug/L		12/17/16 13:28	12/28/16 00:05	1
Perfluorobutanesulfonic acid (PFBS)	0.043		0.0024	0.00088	ug/L		12/17/16 13:28	12/28/16 00:05	1
Perfluorooctane Sulfonate (PFOS)	0.44	E	0.0038	0.0012	ug/L		12/17/16 13:28	12/28/16 00:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	61		25 - 150	12/17/16 13:28	12/28/16 00:05	1
18O2 PFHxS	78		25 - 150	12/17/16 13:28	12/28/16 00:05	1
13C4 PFOS	97		25 - 150	12/17/16 13:28	12/28/16 00:05	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.15	D	0.024	0.0072	ug/L		12/17/16 13:28	12/29/16 15:42	10
Perfluorobutanesulfonic acid (PFBS)	0.032	D	0.024	0.0088	ug/L		12/17/16 13:28	12/29/16 15:42	10
Perfluorooctane Sulfonate (PFOS)	0.47	D	0.038	0.012	ug/L		12/17/16 13:28	12/29/16 15:42	10

Client Sample ID: DPT-16-24-GW-31-35 — Lab Sample ID: 320-24060-18

Date Collected: 12/06/16 10:50 **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	89		25 - 150	12/17/16 13:28	12/29/16 15:42	10
18O2 PFHxS	122		25 - 150	12/17/16 13:28	12/29/16 15:42	10
13C4 PFOS	112		25 - 150	12/17/16 13:28	12/29/16 15:42	10

Client Sample ID: DPT-16-28-GW-31-35 — Lab Sample ID: 320-24060-19

Date Collected: 12/06/16 11:35 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.52	E M	0.0026	0.00077	ug/L		12/17/16 13:28	12/28/16 00:12	1
Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.00094	ug/L		12/17/16 13:28	12/28/16 00:12	1
Perfluorooctane Sulfonate (PFOS)	0.42	E	0.0041	0.0013	ug/L		12/17/16 13:28	12/28/16 00:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	60		25 - 150	12/17/16 13:28	12/28/16 00:12	1
18O2 PFHxS	44		25 - 150	12/17/16 13:28	12/28/16 00:12	1
13C4 PFOS	98		25 - 150	12/17/16 13:28	12/28/16 00:12	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.61	D	0.026	0.0077	ug/L		12/17/16 13:28	12/29/16 15:49	10
Perfluorobutanesulfonic acid (PFBS)	0.12	D	0.026	0.0094	ug/L		12/17/16 13:28	12/29/16 15:49	10
Perfluorooctane Sulfonate (PFOS)	0.43	D	0.041	0.013	ug/L		12/17/16 13:28	12/29/16 15:49	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	77		25 - 150	12/17/16 13:28	12/29/16 15:49	10
18O2 PFHxS	97		25 - 150	12/17/16 13:28	12/29/16 15:49	10
13C4 PFOS	104		25 - 150	12/17/16 13:28	12/29/16 15:49	10

Client Sample ID: DPT-16-28-GW-19-23 — Lab Sample ID: 320-24060-20

Date Collected: 12/06/16 11:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.55	E M	0.0025	0.00075	ug/L		12/17/16 13:28	12/28/16 00:20	1
Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.00092	ug/L		12/17/16 13:28	12/28/16 00:20	1
Perfluorooctane Sulfonate (PFOS)	3.2	E	0.0040	0.0013	ug/L		12/17/16 13:28	12/28/16 00:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	78		25 - 150	12/17/16 13:28	12/28/16 00:20	1
18O2 PFHxS	51		25 - 150	12/17/16 13:28	12/28/16 00:20	1
13C4 PFOS	49		25 - 150	12/17/16 13:28	12/28/16 00:20	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.66	D	0.050	0.015	ug/L		12/17/16 13:28	12/29/16 14:12	20
Perfluorobutanesulfonic acid (PFBS)	0.089	D	0.050	0.018	ug/L		12/17/16 13:28	12/29/16 14:12	20
Perfluorooctane Sulfonate (PFOS)	4.9	D	0.080	0.025	ug/L		12/17/16 13:28	12/29/16 14:12	20

Client Sample ID: DPT-16-28-GW-19-23 Lab Sample ID: 320-24060-20

Date Collected: 12/06/16 11:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	114		25 - 150	12/17/16 13:28	12/29/16 14:12	20
18O2 PFHxS	108		25 - 150	12/17/16 13:28	12/29/16 14:12	20
13C4 PFOS	98		25 - 150	12/17/16 13:28	12/29/16 14:12	20

Default Detection Limits

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.0025	0.00092	ug/L	537 (Modified)
Perfluorooctane Sulfonate (PFOS)	0.0040	0.0013	ug/L	537 (Modified)
Perfluorooctanoic acid (PFOA)	0.0025	0.00075	ug/L	537 (Modified)

Isotope Dilution Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	3C4 PFOA (25-150)	3O2 PFHx (25-150)	3C4 PFOS (25-150)
320-24060-1	DPT-16-22-GW-31-35	64	33	86
320-24060-1 - DL	DPT-16-22-GW-31-35	88	85	103
320-24060-2	DPT-16-22-GW-31-35-DUP	46	36	94
320-24060-2 - DL	DPT-16-22-GW-31-35-DUP	53	87	105
320-24060-3	DPT-16-22-GW-19-23	67	61	92
320-24060-3 - DL	DPT-16-22-GW-19-23	81	102	104
320-24060-4	DPT-16-33-GW-31-35	61	54	77
320-24060-4 - DL	DPT-16-33-GW-31-35	93	106	105
320-24060-5	DPT-16-33-GW-19-23	41	19 Q	35
320-24060-5 - DL	DPT-16-33-GW-19-23	105	107	98
320-24060-6	SW-16-01-SW	83	82	93
320-24060-7	DPT-16-14-GW-31-35	59	49	44
320-24060-7 - DL	DPT-16-14-GW-31-35	96	106	98
320-24060-8	SW-16-02-SW	77	84	92
320-24060-9	SW-16-02-SW-DUP	82	88	98
320-24060-10	DPT-16-14-GW-19-23	61	30	34
320-24060-10 - DL	DPT-16-14-GW-19-23	103	106	87
320-24060-11	DPT-16-12-GW-31-35	64	69	81
320-24060-11 - DL	DPT-16-12-GW-31-35	82	109	100
320-24060-12	DPT-16-12-GW-19-23	49	31	48
320-24060-12 - DL	DPT-16-12-GW-19-23	91	92	91
320-24060-13	DPT-16-16-GW-31-35	48	39	68
320-24060-13 - DL	DPT-16-16-GW-31-35	74	88	93
320-24060-14	DPT-16-16-GW-19-23	61	68	74
320-24060-14 - DL	DPT-16-16-GW-19-23	75	109	97
320-24060-15	DPT-16-25-GW-31-35	70	66	97
320-24060-16	DPT-16-25-GW-19-23	68	31	78
320-24060-16 - DL	DPT-16-25-GW-19-23	98	85	111
320-24060-17	DPT-16-24-GW-21-25	61	86	92
320-24060-17 - DL	DPT-16-24-GW-21-25	70	113	103
320-24060-18	DPT-16-24-GW-31-35	61	78	97
320-24060-18 - DL	DPT-16-24-GW-31-35	89	122	112
320-24060-19	DPT-16-28-GW-31-35	60	44	98
320-24060-19 - DL	DPT-16-28-GW-31-35	77	97	104
320-24060-20	DPT-16-28-GW-19-23	78	51	49
320-24060-20 - DL	DPT-16-28-GW-19-23	114	108	98
LCS 320-142688/2-A	Lab Control Sample	108	109	107
LCSD 320-142688/3-A	Lab Control Sample Dup	105	105	106
MB 320-142688/1-A	Method Blank	112	107	105

Surrogate Legend

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

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-142688/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 144104 **Prep Batch: 142688**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		12/17/16 13:28	12/27/16 20:50	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/17/16 13:28	12/27/16 20:50	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/17/16 13:28	12/27/16 20:50	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*112*		*25 - 150*	*12/17/16 13:28*	*12/27/16 20:50*	*1*
18O2 PFHxS	*107*		*25 - 150*	*12/17/16 13:28*	*12/27/16 20:50*	*1*
13C4 PFOS	*105*		*25 - 150*	*12/17/16 13:28*	*12/27/16 20:50*	*1*

Lab Sample ID: LCS 320-142688/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 144104 **Prep Batch: 142688**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0412		ug/L		103	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0432		ug/L		122	50 - 150
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0404		ug/L		109	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*108*		*25 - 150*
18O2 PFHxS	*109*		*25 - 150*
13C4 PFOS	*107*		*25 - 150*

Lab Sample ID: LCSD 320-142688/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 144104 **Prep Batch: 142688**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0400	0.0420		ug/L		105	60 - 140	2	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0447		ug/L		126	50 - 150	3	30
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0408		ug/L		110	60 - 140	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOA	*105*		*25 - 150*
18O2 PFHxS	*105*		*25 - 150*
13C4 PFOS	*106*		*25 - 150*

LCMS

Prep Batch: 142688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24060-1 - DL	DPT-16-22-GW-31-35	Total/NA	Water	3535	
320-24060-1	DPT-16-22-GW-31-35	Total/NA	Water	3535	
320-24060-2	DPT-16-22-GW-31-35-DUP	Total/NA	Water	3535	
320-24060-2 - DL	DPT-16-22-GW-31-35-DUP	Total/NA	Water	3535	
320-24060-3 - DL	DPT-16-22-GW-19-23	Total/NA	Water	3535	
320-24060-3	DPT-16-22-GW-19-23	Total/NA	Water	3535	
320-24060-4	DPT-16-33-GW-31-35	Total/NA	Water	3535	
320-24060-4 - DL	DPT-16-33-GW-31-35	Total/NA	Water	3535	
320-24060-5 - DL	DPT-16-33-GW-19-23	Total/NA	Water	3535	
320-24060-5	DPT-16-33-GW-19-23	Total/NA	Water	3535	
320-24060-6	SW-16-01-SW	Total/NA	Water	3535	
320-24060-7 - DL	DPT-16-14-GW-31-35	Total/NA	Water	3535	
320-24060-7	DPT-16-14-GW-31-35	Total/NA	Water	3535	
320-24060-8	SW-16-02-SW	Total/NA	Water	3535	
320-24060-9	SW-16-02-SW-DUP	Total/NA	Water	3535	
320-24060-10	DPT-16-14-GW-19-23	Total/NA	Water	3535	
320-24060-10 - DL	DPT-16-14-GW-19-23	Total/NA	Water	3535	
320-24060-11	DPT-16-12-GW-31-35	Total/NA	Water	3535	
320-24060-11 - DL	DPT-16-12-GW-31-35	Total/NA	Water	3535	
320-24060-12	DPT-16-12-GW-19-23	Total/NA	Water	3535	
320-24060-12 - DL	DPT-16-12-GW-19-23	Total/NA	Water	3535	
320-24060-13	DPT-16-16-GW-31-35	Total/NA	Water	3535	
320-24060-13 - DL	DPT-16-16-GW-31-35	Total/NA	Water	3535	
320-24060-14	DPT-16-16-GW-19-23	Total/NA	Water	3535	
320-24060-14 - DL	DPT-16-16-GW-19-23	Total/NA	Water	3535	
320-24060-15	DPT-16-25-GW-31-35	Total/NA	Water	3535	
320-24060-16 - DL	DPT-16-25-GW-19-23	Total/NA	Water	3535	
320-24060-16	DPT-16-25-GW-19-23	Total/NA	Water	3535	
320-24060-17 - DL	DPT-16-24-GW-21-25	Total/NA	Water	3535	
320-24060-17	DPT-16-24-GW-21-25	Total/NA	Water	3535	
320-24060-18 - DL	DPT-16-24-GW-31-35	Total/NA	Water	3535	
320-24060-18	DPT-16-24-GW-31-35	Total/NA	Water	3535	
320-24060-19	DPT-16-28-GW-31-35	Total/NA	Water	3535	
320-24060-19 - DL	DPT-16-28-GW-31-35	Total/NA	Water	3535	
320-24060-20	DPT-16-28-GW-19-23	Total/NA	Water	3535	
320-24060-20 - DL	DPT-16-28-GW-19-23	Total/NA	Water	3535	
MB 320-142688/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-142688/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-142688/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 144104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24060-1	DPT-16-22-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-2	DPT-16-22-GW-31-35-DUP	Total/NA	Water	537 (Modified)	142688
320-24060-3	DPT-16-22-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-4	DPT-16-33-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-5	DPT-16-33-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-6	SW-16-01-SW	Total/NA	Water	537 (Modified)	142688
320-24060-7	DPT-16-14-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-8	SW-16-02-SW	Total/NA	Water	537 (Modified)	142688
320-24060-9	SW-16-02-SW-DUP	Total/NA	Water	537 (Modified)	142688

LCMS (Continued)

Analysis Batch: 144104 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24060-10	DPT-16-14-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-11	DPT-16-12-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-12	DPT-16-12-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-13	DPT-16-16-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-14	DPT-16-16-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-15	DPT-16-25-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-16	DPT-16-25-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-17	DPT-16-24-GW-21-25	Total/NA	Water	537 (Modified)	142688
320-24060-18	DPT-16-24-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-19	DPT-16-28-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-20	DPT-16-28-GW-19-23	Total/NA	Water	537 (Modified)	142688
MB 320-142688/1-A	Method Blank	Total/NA	Water	537 (Modified)	142688
LCS 320-142688/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	142688
LCSD 320-142688/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	142688

Analysis Batch: 144419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24060-1 - DL	DPT-16-22-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-2 - DL	DPT-16-22-GW-31-35-DUP	Total/NA	Water	537 (Modified)	142688
320-24060-3 - DL	DPT-16-22-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-4 - DL	DPT-16-33-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-5 - DL	DPT-16-33-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-7 - DL	DPT-16-14-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-10 - DL	DPT-16-14-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-11 - DL	DPT-16-12-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-12 - DL	DPT-16-12-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-13 - DL	DPT-16-16-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-14 - DL	DPT-16-16-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-16 - DL	DPT-16-25-GW-19-23	Total/NA	Water	537 (Modified)	142688
320-24060-17 - DL	DPT-16-24-GW-21-25	Total/NA	Water	537 (Modified)	142688
320-24060-18 - DL	DPT-16-24-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-19 - DL	DPT-16-28-GW-31-35	Total/NA	Water	537 (Modified)	142688
320-24060-20 - DL	DPT-16-28-GW-19-23	Total/NA	Water	537 (Modified)	142688

Client Sample ID: DPT-16-22-GW-31-35 Lab Sample ID: 320-24060-1

Date Collected: 12/05/16 09:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 21:12	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 14:19	CBW	TAL SAC

Client Sample ID: DPT-16-22-GW-31-35-DUP Lab Sample ID: 320-24060-2

Date Collected: 12/05/16 09:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 21:20	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 14:27	CBW	TAL SAC

Client Sample ID: DPT-16-22-GW-19-23 Lab Sample ID: 320-24060-3

Date Collected: 12/05/16 09:55 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 21:27	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 14:34	CBW	TAL SAC

Client Sample ID: DPT-16-33-GW-31-35 Lab Sample ID: 320-24060-4

Date Collected: 12/05/16 10:55 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 21:35	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 14:42	CBW	TAL SAC

Client Sample ID: DPT-16-33-GW-19-23 Lab Sample ID: 320-24060-5

Date Collected: 12/05/16 11:10 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 21:42	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC

Client Sample ID: DPT-16-33-GW-19-23 — Lab Sample ID: 320-24060-5

Date Collected: 12/05/16 11:10 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	537 (Modified)	DL	100	144419	12/29/16 13:42	CBW	TAL SAC

Client Sample ID: SW-16-01-SW — Lab Sample ID: 320-24060-6

Date Collected: 12/05/16 11:30 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 22:12	SBC	TAL SAC

Client Sample ID: DPT-16-14-GW-31-35 — Lab Sample ID: 320-24060-7

Date Collected: 12/05/16 12:00 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 22:20	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	20	144419	12/29/16 13:57	CBW	TAL SAC

Client Sample ID: SW-16-02-SW — Lab Sample ID: 320-24060-8

Date Collected: 12/05/16 12:15 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 22:27	SBC	TAL SAC

Client Sample ID: SW-16-02-SW-DUP — Lab Sample ID: 320-24060-9

Date Collected: 12/05/16 12:15 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 22:35	SBC	TAL SAC

Client Sample ID: DPT-16-14-GW-19-23 — Lab Sample ID: 320-24060-10

Date Collected: 12/05/16 12:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 22:42	SBC	TAL SAC

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	50	144419	12/29/16 13:49	CBW	TAL SAC

Client Sample ID: DPT-16-12-GW-31-35 — Lab Sample ID: 320-24060-11

Date Collected: 12/05/16 13:35 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 22:50	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 14:49	CBW	TAL SAC

Client Sample ID: DPT-16-12-GW-19-23 — Lab Sample ID: 320-24060-12

Date Collected: 12/05/16 13:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 22:57	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	20	144419	12/29/16 14:04	CBW	TAL SAC

Client Sample ID: DPT-16-16-GW-31-35 — Lab Sample ID: 320-24060-13

Date Collected: 12/05/16 14:40 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 23:05	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 15:12	CBW	TAL SAC

Client Sample ID: DPT-16-16-GW-19-23 — Lab Sample ID: 320-24060-14

Date Collected: 12/05/16 14:50 — **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 23:12	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 15:19	CBW	TAL SAC

Client Sample ID: DPT-16-25-GW-31-35 — Lab Sample ID: 320-24060-15

Date Collected: 12/06/16 09:35 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 23:20	SBC	TAL SAC

Client Sample ID: DPT-16-25-GW-19-23 — Lab Sample ID: 320-24060-16

Date Collected: 12/06/16 09:45 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 23:50	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 15:27	CBW	TAL SAC

Client Sample ID: DPT-16-24-GW-21-25 — Lab Sample ID: 320-24060-17

Date Collected: 12/06/16 10:40 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/27/16 23:57	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 15:34	CBW	TAL SAC

Client Sample ID: DPT-16-24-GW-31-35 — Lab Sample ID: 320-24060-18

Date Collected: 12/06/16 10:50 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/28/16 00:05	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 15:42	CBW	TAL SAC

Client Sample ID: DPT-16-28-GW-31-35 — Lab Sample ID: 320-24060-19

Date Collected: 12/06/16 11:35 **Matrix: Water**
Date Received: 12/07/16 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/28/16 00:12	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144419	12/29/16 15:49	CBW	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-24060-1

Client Sample ID: DPT-16-28-GW-19-23

Date Collected: 12/06/16 11:45
Date Received: 12/07/16 10:30

Lab Sample ID: 320-24060-20

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144104	12/28/16 00:20	SBC	TAL SAC
Total/NA	Prep	3535	DL		142688	12/17/16 13:28	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	20	144419	12/29/16 14:12	CBW	TAL SAC

Laboratory References:

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

Certification Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

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

Method Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Method	Method Description	Protocol	Laboratory
537 (Modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-24060-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24060-1	DPT-16-22-GW-31-35	Water	12/05/16 09:45	12/07/16 10:30
320-24060-2	DPT-16-22-GW-31-35-DUP	Water	12/05/16 09:45	12/07/16 10:30
320-24060-3	DPT-16-22-GW-19-23	Water	12/05/16 09:55	12/07/16 10:30
320-24060-4	DPT-16-33-GW-31-35	Water	12/05/16 10:55	12/07/16 10:30
320-24060-5	DPT-16-33-GW-19-23	Water	12/05/16 11:10	12/07/16 10:30
320-24060-6	SW-16-01-SW	Water	12/05/16 11:30	12/07/16 10:30
320-24060-7	DPT-16-14-GW-31-35	Water	12/05/16 12:00	12/07/16 10:30
320-24060-8	SW-16-02-SW	Water	12/05/16 12:15	12/07/16 10:30
320-24060-9	SW-16-02-SW-DUP	Water	12/05/16 12:15	12/07/16 10:30
320-24060-10	DPT-16-14-GW-19-23	Water	12/05/16 12:45	12/07/16 10:30
320-24060-11	DPT-16-12-GW-31-35	Water	12/05/16 13:35	12/07/16 10:30
320-24060-12	DPT-16-12-GW-19-23	Water	12/05/16 13:50	12/07/16 10:30
320-24060-13	DPT-16-16-GW-31-35	Water	12/05/16 14:40	12/07/16 10:30
320-24060-14	DPT-16-16-GW-19-23	Water	12/05/16 14:50	12/07/16 10:30
320-24060-15	DPT-16-25-GW-31-35	Water	12/06/16 09:35	12/07/16 10:30
320-24060-16	DPT-16-25-GW-19-23	Water	12/06/16 09:45	12/07/16 10:30
320-24060-17	DPT-16-24-GW-21-25	Water	12/06/16 10:40	12/07/16 10:30
320-24060-18	DPT-16-24-GW-31-35	Water	12/06/16 10:50	12/07/16 10:30
320-24060-19	DPT-16-28-GW-31-35	Water	12/06/16 11:35	12/07/16 10:30
320-24060-20	DPT-16-28-GW-19-23	Water	12/06/16 11:45	12/07/16 10:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142379

Lab Sample ID: IC 320-142379/4 Client Sample ID:

Date Analyzed: 12/15/16 12:29 Lab File ID: 15DEC2016B_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	2.43	Assign Peak	chandrasenas	12/15/16 13:48
Perfluorohexanesulfonic acid (PFHxS)	2.44	Assign Peak	chandrasenas	12/15/16 13:48
Perfluorooctane Sulfonate (PFOS)	3.15	Assign Peak	chandrasenas	12/15/16 13:48
Perfluorododecanoic acid (PFDoA)	4.14	Incomplete Integration	chandrasenas	12/15/16 13:48

Lab Sample ID: IC 320-142379/5 Client Sample ID:

Date Analyzed: 12/15/16 12:36 Lab File ID: 15DEC2016B_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.15	Assign Peak	chandrasenas	12/15/16 13:50

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 144104

Lab Sample ID: CCV 320-144104/3 CCVL Client Sample ID:

Date Analyzed: 12/27/16 17:05 Lab File ID: 27DEC2016A_003.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.26	Assign Peak	westendorfc	12/28/16 11:14

Lab Sample ID: 320-24060-1 Client Sample ID: DPT-16-22-GW-31-35

Date Analyzed: 12/27/16 21:12 Lab File ID: 27DEC2016A_036.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/29/16 09:40

Lab Sample ID: 320-24060-2 Client Sample ID: DPT-16-22-GW-31-35-DUP

Date Analyzed: 12/27/16 21:20 Lab File ID: 27DEC2016A_037.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/29/16 09:40

Lab Sample ID: 320-24060-3 Client Sample ID: DPT-16-22-GW-19-23

Date Analyzed: 12/27/16 21:27 Lab File ID: 27DEC2016A_038.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/29/16 09:41

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 144104

Lab Sample ID: 320-24060-4 Client Sample ID: DPT-16-33-GW-31-35

Date Analyzed: 12/27/16 21:35 Lab File ID: 27DEC2016A_039.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/29/16 09:42

Lab Sample ID: 320-24060-5 Client Sample ID: DPT-16-33-GW-19-23

Date Analyzed: 12/27/16 21:42 Lab File ID: 27DEC2016A_040.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/29/16 09:42

Lab Sample ID: 320-24060-6 Client Sample ID: SW-16-01-SW

Date Analyzed: 12/27/16 22:12 Lab File ID: 27DEC2016A_044.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/29/16 09:43

Lab Sample ID: 320-24060-7 Client Sample ID: DPT-16-14-GW-31-35

Date Analyzed: 12/27/16 22:20 Lab File ID: 27DEC2016A_045.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 09:45
Perfluorooctane Sulfonate (PFOS)	3.19	Incomplete Integration	chandrasenas	12/29/16 09:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 144104

Lab Sample ID: 320-24060-8 Client Sample ID: SW-16-02-SW

Date Analyzed: 12/27/16 22:27 Lab File ID: 27DEC2016A_046.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 09:46

Lab Sample ID: 320-24060-9 Client Sample ID: SW-16-02-SW-DUP

Date Analyzed: 12/27/16 22:35 Lab File ID: 27DEC2016A_047.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.78	Isomers	chandrasenas	12/29/16 09:46

Lab Sample ID: 320-24060-10 Client Sample ID: DPT-16-14-GW-19-23

Date Analyzed: 12/27/16 22:42 Lab File ID: 27DEC2016A_048.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 09:48

Lab Sample ID: 320-24060-11 Client Sample ID: DPT-16-12-GW-31-35

Date Analyzed: 12/27/16 22:50 Lab File ID: 27DEC2016A_049.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/29/16 09:49

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 144104

Lab Sample ID: 320-24060-12 Client Sample ID: DPT-16-12-GW-19-23

Date Analyzed: 12/27/16 22:57 Lab File ID: 27DEC2016A_050.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 09:50

Lab Sample ID: 320-24060-13 Client Sample ID: DPT-16-16-GW-31-35

Date Analyzed: 12/27/16 23:05 Lab File ID: 27DEC2016A_051.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 09:51

Lab Sample ID: 320-24060-14 Client Sample ID: DPT-16-16-GW-19-23

Date Analyzed: 12/27/16 23:12 Lab File ID: 27DEC2016A_052.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.78	Isomers	chandrasenas	12/29/16 09:51

Lab Sample ID: 320-24060-15 Client Sample ID: DPT-16-25-GW-31-35

Date Analyzed: 12/27/16 23:20 Lab File ID: 27DEC2016A_053.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 09:52

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 144104

Lab Sample ID: 320-24060-16 Client Sample ID: DPT-16-25-GW-19-23

Date Analyzed: 12/27/16 23:50 Lab File ID: 27DEC2016A_057.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 09:53

Lab Sample ID: 320-24060-17 Client Sample ID: DPT-16-24-GW-21-25

Date Analyzed: 12/27/16 23:57 Lab File ID: 27DEC2016A_058.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 09:59

Lab Sample ID: 320-24060-18 Client Sample ID: DPT-16-24-GW-31-35

Date Analyzed: 12/28/16 00:05 Lab File ID: 27DEC2016A_059.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.78	Isomers	chandrasenas	12/29/16 10:00

Lab Sample ID: 320-24060-19 Client Sample ID: DPT-16-28-GW-31-35

Date Analyzed: 12/28/16 00:12 Lab File ID: 27DEC2016A_060.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 10:01

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 144104

Lab Sample ID: 320-24060-20 Client Sample ID: DPT-16-28-GW-19-23

Date Analyzed: 12/28/16 00:20 Lab File ID: 27DEC2016A_061.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Isomers	chandrasenas	12/29/16 10:02

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 144278

Lab Sample ID: CCV 320-144278/5 CCVL Client Sample ID:

Date Analyzed: 12/29/16 08:17 Lab File ID: 29DEC2016A_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.17	Baseline	phomsopha t	12/29/16 10:43

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 144419

Lab Sample ID: 320-24060-17 DL Client Sample ID: DPT-16-24-GW-21-25 DL

Date Analyzed: 12/29/16 15:34 Lab File ID: 29DEC2016C_018.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.85	Baseline	westendorfc	01/03/17 08:07

537 (Modified)

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00046	03/01/17	11/03/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
.LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-L1_00022	05/15/17	12/15/16	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00071	25 uL	Perfluorobutyric acid	0.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/mL
							Perfluorodecanoic acid	0.5 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	0.5 ng/mL
							Perfluorodecane Sulfonic acid	0.482 ng/mL
							Perfluoroheptanoic acid	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid	0.455 ng/mL
							Perfluorononanoic acid	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctadecanoic acid	0.5 ng/mL
							Perfluorooctane Sulfonate (PFOS)	0.464 ng/mL
							Perfluorooctane Sulfonamide	0.5 ng/mL
							Perfluoropentanoic acid	0.5 ng/mL
							Perfluorotetradecanoic acid	0.5 ng/mL
							Perfluorotridecanoic acid	0.5 ng/mL
							Perfluoroundecanoic acid	0.5 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00071	05/15/17	11/10/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00070	2000 uL	Perfluorobutyric acid	0.1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctane Sulfonate (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00070	05/15/17	11/15/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutyric acid	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecane Sulfonic acid	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA_00004	100 uL	Perfluorohexanoic acid	0.5 ug/mL
					LCPFHxDA_00006	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00002	100 uL	Perfluorohexanesulfonic acid	0.455 ug/mL
					LCPFNA_00005	100 uL	Perfluorononanoic acid	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA_00005	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00002	100 uL	Perfluorooctane Sulfonate (PFOS)	0.464 ug/mL
					LCPFOSA_00006	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA_00004	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUdA_00005	100 uL	Perfluoroundecanoic acid	0.5 ug/mL
...LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L2_00023	05/15/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00071	50 uL	Perfluorobutyric acid	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluorodecane Sulfonic acid	0.964 ng/mL
							Perfluoroheptanoic acid	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid	0.91 ng/mL
							Perfluorononanoic acid	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctadecanoic acid	1 ng/mL
							Perfluorooctane Sulfonate (PFOS)	0.928 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00071	05/15/17	11/10/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00070	2000 uL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctane Sulfonate (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00070	05/15/17	11/15/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutyric acid	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecane Sulfonic acid	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA_00004	100 uL	Perfluorohexanoic acid	0.5 ug/mL
					LCPFHxDA_00006	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00002	100 uL	Perfluorohexanesulfonic acid	0.455 ug/mL
					LCPFNA_00005	100 uL	Perfluorononanoic acid	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA_00005	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00002	100 uL	Perfluorooctane Sulfonate (PFOS)	0.464 ug/mL
					LCPFOSA_00006	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA_00004	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUdA_00005	100 uL	Perfluoroundecanoic acid	0.5 ug/mL
...LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L3_00020	05/15/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00071	250 uL	Perfluorobutyric acid	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							Perfluorodecane Sulfonic acid	4.82 ng/mL
							Perfluoroheptanoic acid	5 ng/mL
							Perfluoroheptanesulfonic Acid	4.76 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid	4.55 ng/mL
							Perfluorononanoic acid	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctadecanoic acid	5 ng/mL
							Perfluorooctane Sulfonate (PFOS)	4.64 ng/mL
							Perfluorooctane Sulfonamide	5 ng/mL
							Perfluoropentanoic acid	5 ng/mL
							Perfluorotetradecanoic acid	5 ng/mL
							Perfluorotridecanoic acid	5 ng/mL
							Perfluoroundecanoic acid	5 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00071	05/15/17	11/10/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00070	2000 uL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctane Sulfonate (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00070	05/15/17	11/15/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutyric acid	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecane Sulfonic acid	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA_00004	100 uL	Perfluorohexanoic acid	0.5 ug/mL
					LCPFHxDA_00006	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00002	100 uL	Perfluorohexanesulfonic acid	0.455 ug/mL
					LCPFNA_00005	100 uL	Perfluorononanoic acid	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA_00005	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS-br_00002	100 uL	Perfluorooctane Sulfonate (PFOS)	0.464 ug/mL
					LCPFOSA_00006	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA_00004	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUdA_00005	100 uL	Perfluoroundecanoic acid	0.5 ug/mL
...LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L4_00024	06/14/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00074	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid	18.2 ng/mL
							Perfluorononanoic acid	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctadecanoic acid	20 ng/mL
							Perfluorooctane Sulfonate (PFOS)	18.56 ng/mL
							Perfluorooctane Sulfonamide	20 ng/mL
							Perfluoropentanoic acid	20 ng/mL
							Perfluorotetradecanoic acid	20 ng/mL
							Perfluorotridecanoic acid	20 ng/mL
							Perfluoroundecanoic acid	20 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00074	06/14/17	12/14/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00005	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00006	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00009	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00006	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00002	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00006	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00006	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00002	200 uL	Perfluorooctane Sulfonate (PFOS)	0.928 ug/mL
					LCPFOSA_00008	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00005	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00006	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL
..LCPFOSA_00008	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L5_00022	06/14/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00074	250 uL	Perfluorobutyric acid	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid	45.5 ng/mL
							Perfluorononanoic acid	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctadecanoic acid	50 ng/mL
							Perfluorooctane Sulfonate (PFOS)	46.4 ng/mL
							Perfluorooctane Sulfonamide	50 ng/mL
							Perfluoropentanoic acid	50 ng/mL
							Perfluorotetradecanoic acid	50 ng/mL
							Perfluorotridecanoic acid	50 ng/mL
							Perfluoroundecanoic acid	50 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00074	06/14/17	12/14/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00005	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00006	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00009	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00006	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00002	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00006	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00006	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00002	200 uL	Perfluorooctane Sulfonate (PFOS)	0.928 ug/mL
					LCPFOSA_00008	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00005	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00006	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL
..LCPFOSA_00008	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCPFC-L6_00020	12/28/16	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00074	1000 uL	Perfluorobutyric acid	200 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	176.8 ng/mL
							Perfluorodecanoic acid	200 ng/mL
							Perfluorododecanoic acid	200 ng/mL
							Perfluorodecane Sulfonic acid	192.8 ng/mL
							Perfluoroheptanoic acid	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid	182 ng/mL
							Perfluorononanoic acid	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctadecanoic acid	200 ng/mL
							Perfluorooctane Sulfonate (PFOS)	185.6 ng/mL
							Perfluorooctane Sulfonamide	200 ng/mL
							Perfluoropentanoic acid	200 ng/mL
							Perfluorotetradecanoic acid	200 ng/mL
							Perfluorotridecanoic acid	200 ng/mL
							Perfluoroundecanoic acid	200 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00074	06/14/17	12/14/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00005	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00006	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00009	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00006	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00002	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00006	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00006	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00002	200 uL	Perfluorooctane Sulfonate (PFOS)	0.928 ug/mL
					LCPFOSA_00008	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00005	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFNA_00006	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL
..LCPFOSA_00008	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC2-L1_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	25 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	0.5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
							MeFOSA	0.5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfonamide	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NEtFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NEtFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L2_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	50 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	1 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
							MeFOSA	1 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	1 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfonamide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L3_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	4.74 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	4.79 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							MeFOSA	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfonamide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L4_00003	02/26/17	09/22/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00008	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00017	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	18.96 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	19.16 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	20 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
							MeFOSA	20 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
.LCMPFC2SU_00008	02/26/17	08/26/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00002	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00002	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00002	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00002	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00002	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00002	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00002	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd-NMeFOSA-M_00002	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00002	01/20/21		WELLINGTON, Lot d3NMeFOSAA0116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00002	12/07/20		WELLINGTON, Lot d5NEtFOSAA1115		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00002	01/08/21		WELLINGTON, Lot M262FTS0116		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00002	01/08/21		WELLINGTON, Lot M282FTS0116		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00017	03/02/17	09/02/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00002	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ug/mL
					LC8:2FTS_00002	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ug/mL
					LCN-EtFOSA-M_00003	100 uL	N-ethylperfluoro-1-octanesulfonamide	0.5 ug/mL
					LCN-EtFOSAA_00002	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCN-MeFOSA-M_00002	100 uL	MeFOSA	0.5 ug/mL
					LCN-MeFOSAA_00003	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
..LC6:2FTS_00002	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00002	10/23/20		WELLINGTON, Lot 82FTS1015		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00003	05/24/21		WELLINGTON, Lot NEtFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NEtFOSAA0116		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00002	05/24/21		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00003	01/20/21		WELLINGTON, Lot NMeFOSAA0116		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L5_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00013	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	50 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
							MeFOSA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-methyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L6_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00013	1000 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	189.6 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	191.6 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	200 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
							MeFOSA	200 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFCIC_00020	03/01/17	12/01/16	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00046	250 uL	13C2-PFHxDA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFACMXB_00007	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluorooctane Sulfonate (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
.LCMPFCSU_00046	03/01/17	11/03/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFACMXB_00007	11/06/20	Wellington Laboratories, Lot PFACMXB1115			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluorooctane Sulfonate (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_00073	05/28/17	11/28/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutyric acid	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutane Sulfonate	0.442 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecane Sulfonate	0.482 ug/mL
							Perfluorodecane Sulfonic acid	0.482 ug/mL
					LCPFHpA_00006	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptane Sulfonate	0.476 ug/mL
							Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA_00005	100 uL	Perfluorohexanoic acid	0.5 ug/mL
					LCPFHxDA_00006	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00002	100 uL	Perfluorohexane Sulfonate	0.455 ug/mL
							Perfluorohexanesulfonic acid	0.455 ug/mL
					LCPFNA_00006	100 uL	Perfluorononanoic acid	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA_00006	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00002	100 uL	Perfluorooctane Sulfonate (PFOS)	0.464 ug/mL
					LCPFOSA_00008	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFTeDA_00005	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA_00005	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUdA_00005	100 uL	Perfluoroundecanoic acid	0.5 ug/mL
.LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
							Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpA_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
.LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
							Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid	45.5 ug/mL
.LCPFNA_00006	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
.LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL
.LCPFOSA_00008	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
.LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Reagent

LC6:2FTS_00001

r: 7/6/15 SV
S: 7/20/15 SV

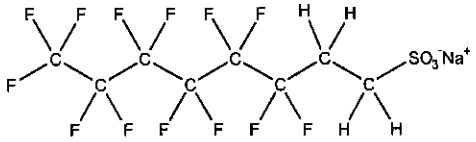
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS1014

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

STRUCTURE: **CAS #:** Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/27/2015 (mm/dd/yyyy)
B.G. Chittim

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

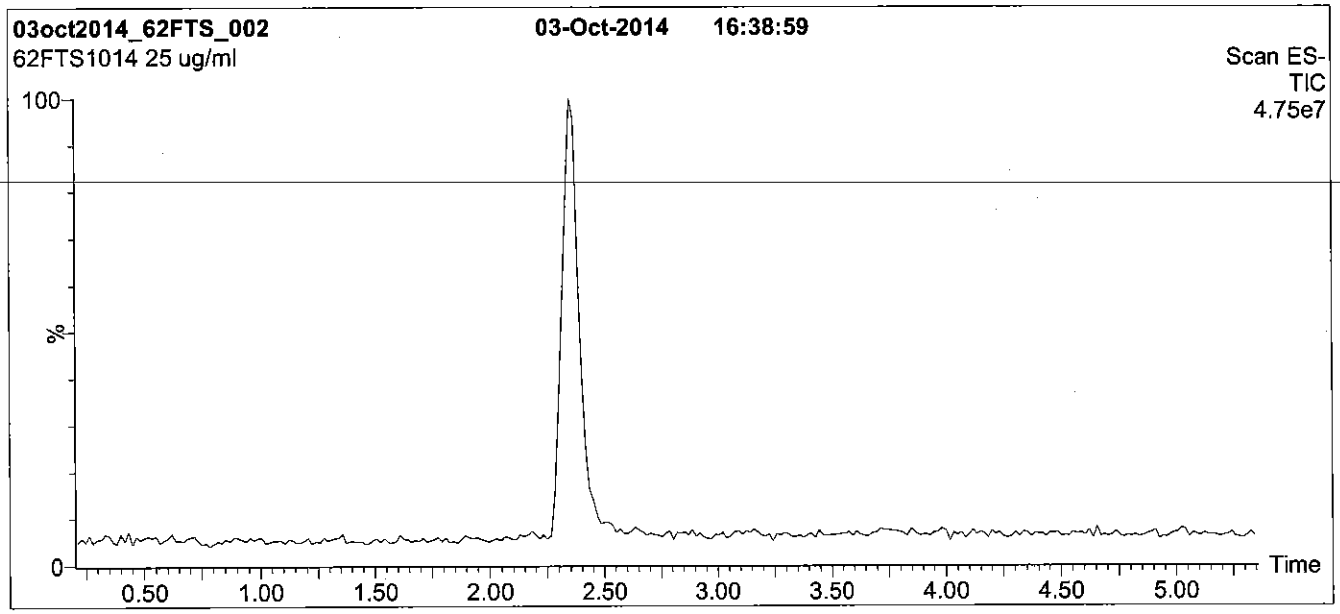
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

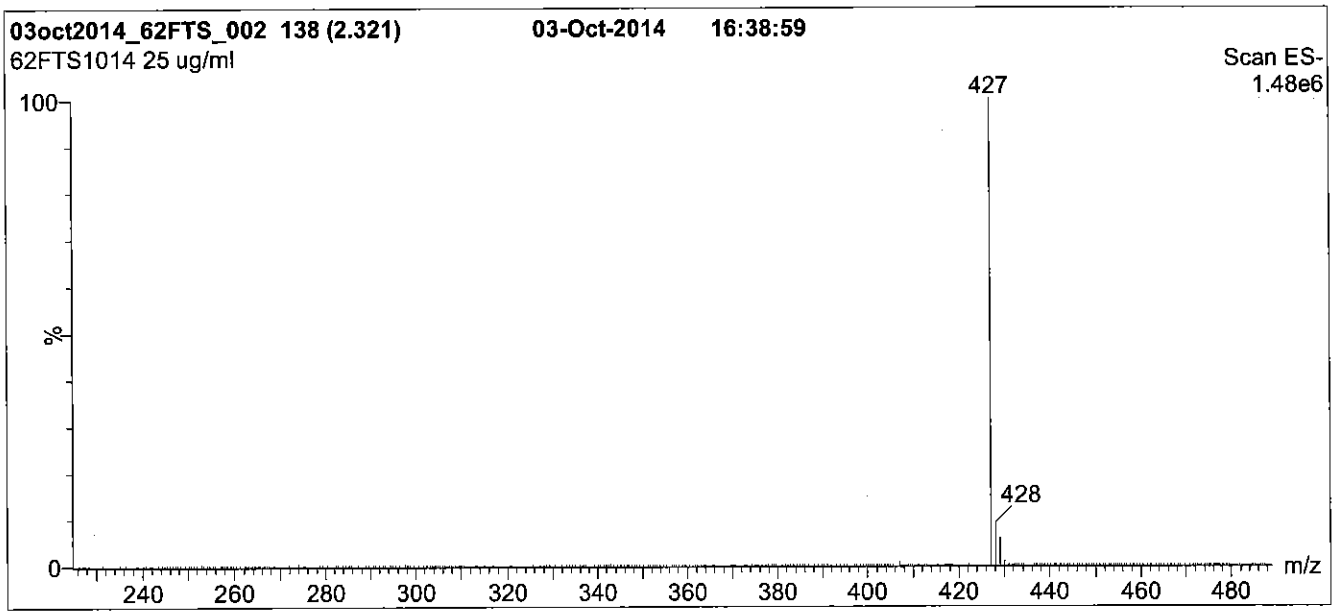
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO Guide 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

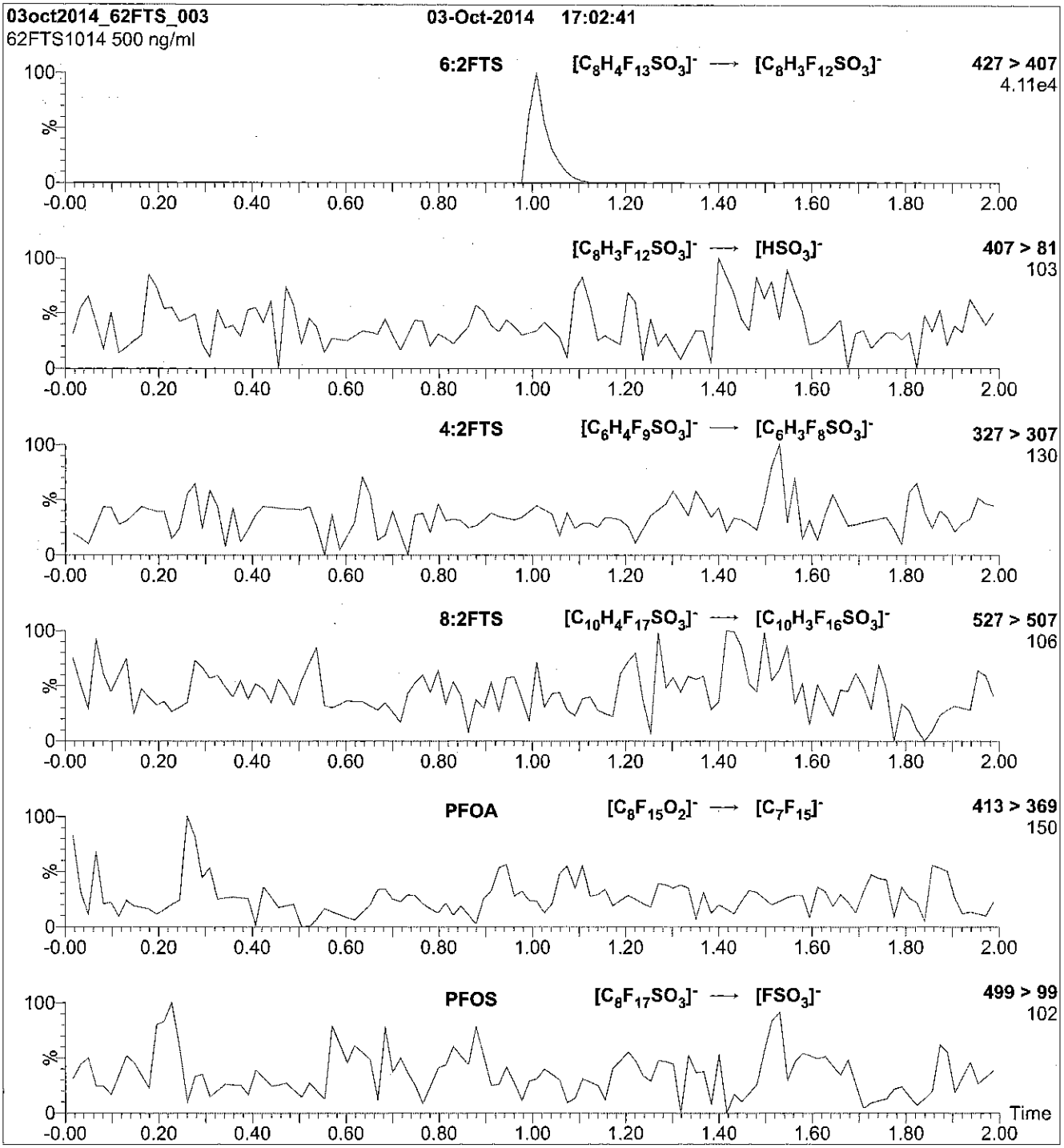
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 6:2FTS)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LC6:2FTS_00002

R: 8/23/16 SBC

715544
ID: LC6:2FTS_00002
Exp: 06/25/21 Prpd: SBC
6:2FTS

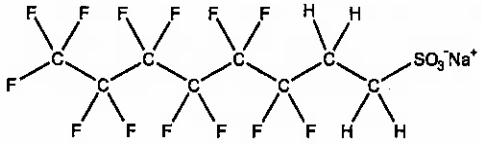
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0616

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_8H_4F_{13}SO_3Na$		**MOLECULAR WEIGHT:**	450.15
CONCENTRATION:	50.0 ± 2.5 µg/ml	(Na salt)	**SOLVENT(S):**	Methanol
	47.4 ± 2.4 µg/ml	(6:2FTS anion)		
CHEMICAL PURITY:	>98%			
LAST TESTED: (mm/dd/yyyy)	06/25/2016			
EXPIRY DATE: (mm/dd/yyyy)	06/25/2021			
RECOMMENDED STORAGE:	Refrigerate ampoule			

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/29/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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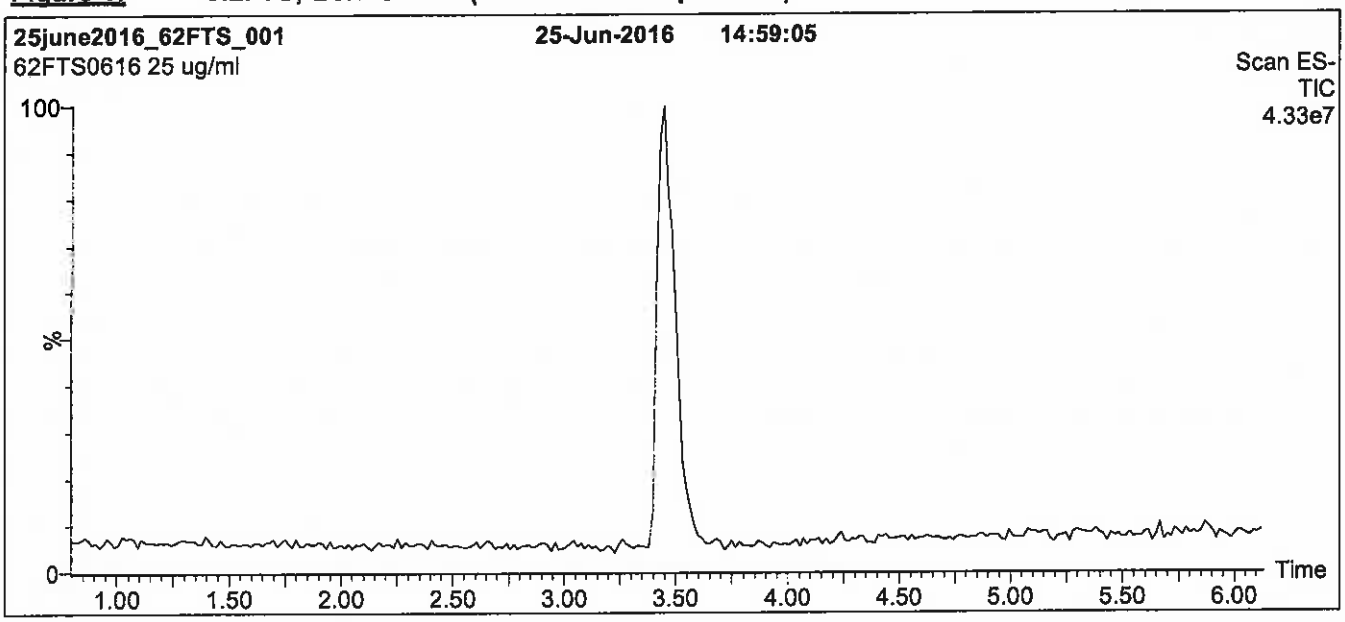
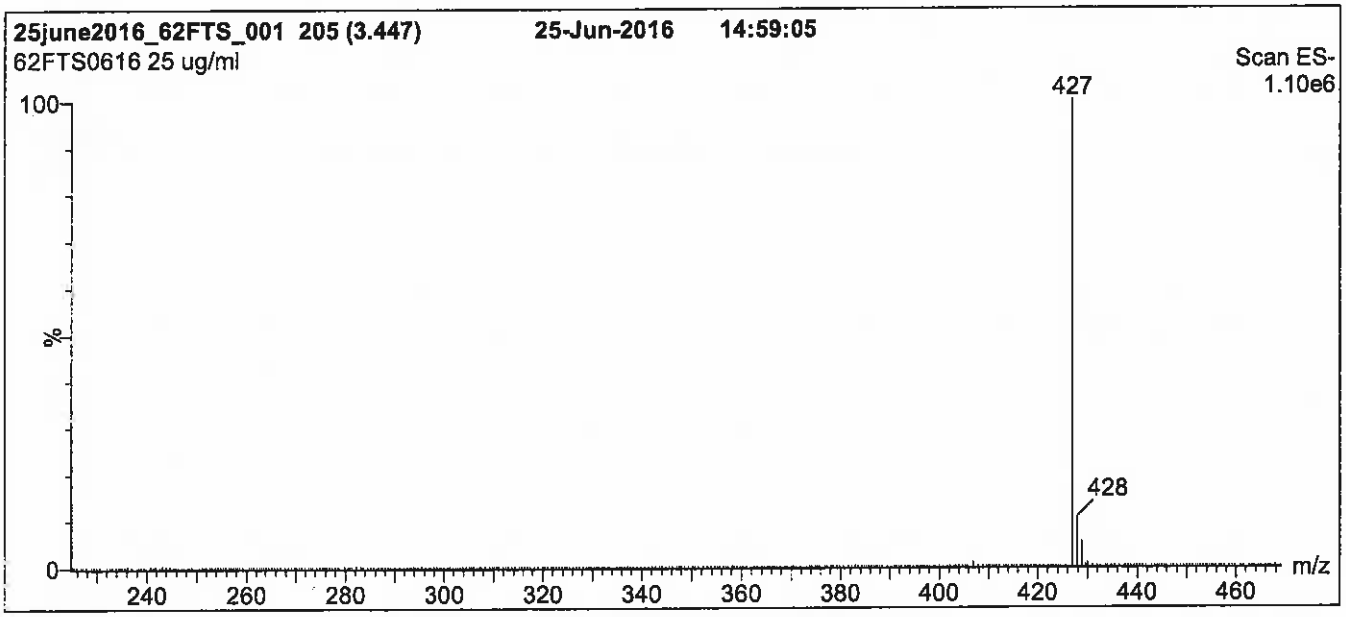




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

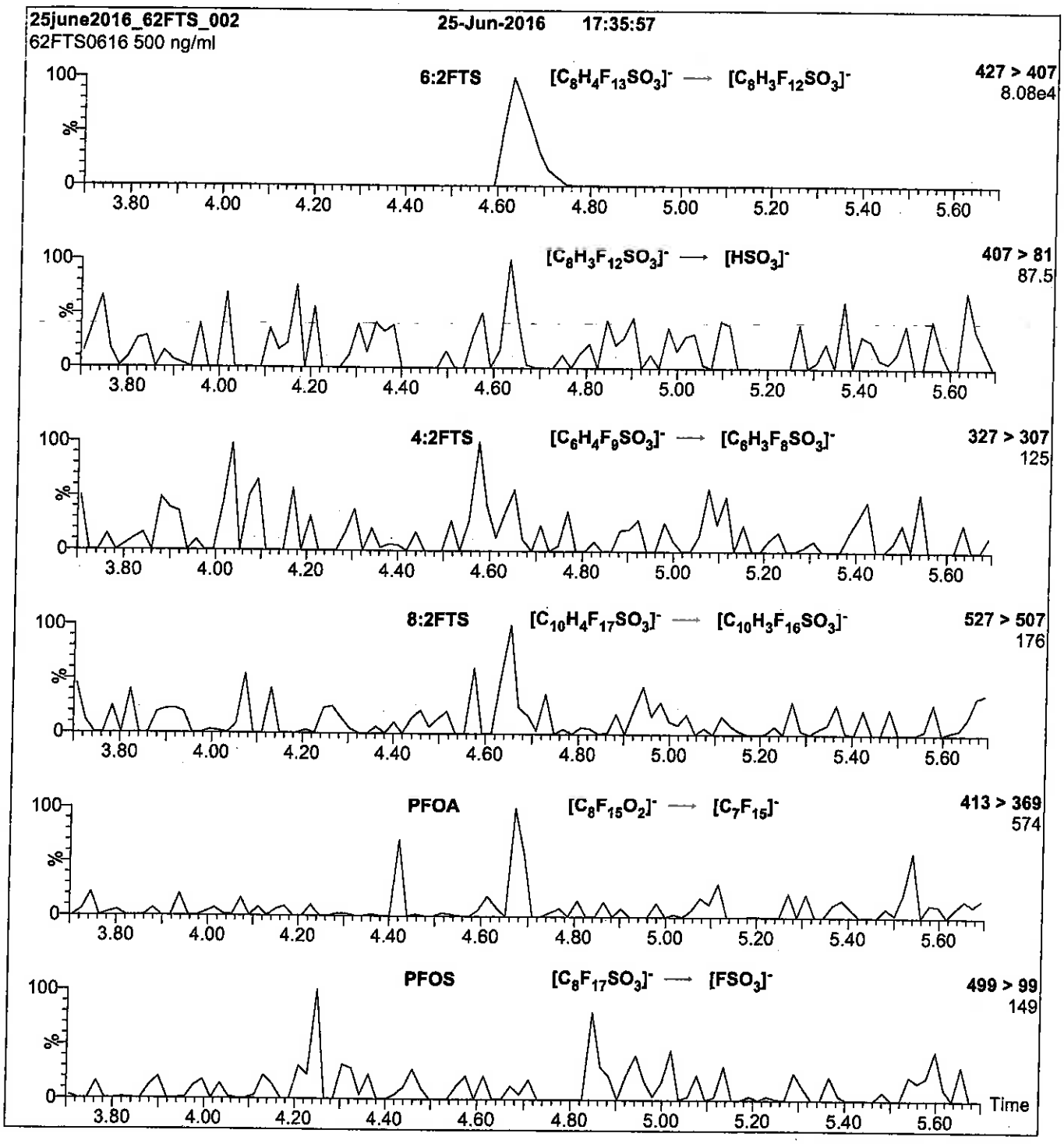
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 6:2FTS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 25

Reagent

LC8:2FTS_00001

r: 7/16/15 SV
S: 7/24/15 SV

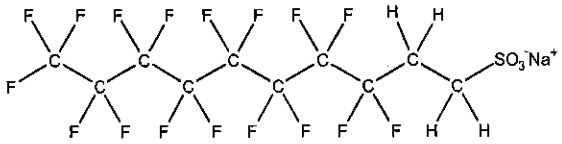
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1014

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{10}H_4F_{17}SO_3Na$		**MOLECULAR WEIGHT:**	550.16
CONCENTRATION:	50.0 ± 2.5 µg/ml	(Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml	(8:2FTS anion)		
CHEMICAL PURITY:	>98%			
LAST TESTED: (mm/dd/yyyy)	10/03/2014			
EXPIRY DATE: (mm/dd/yyyy)	10/03/2017			
RECOMMENDED STORAGE:	Refrigerate ampoule			

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/27/2015 (mm/dd/yyyy)
B.G. Chittim

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

INTENDED USE:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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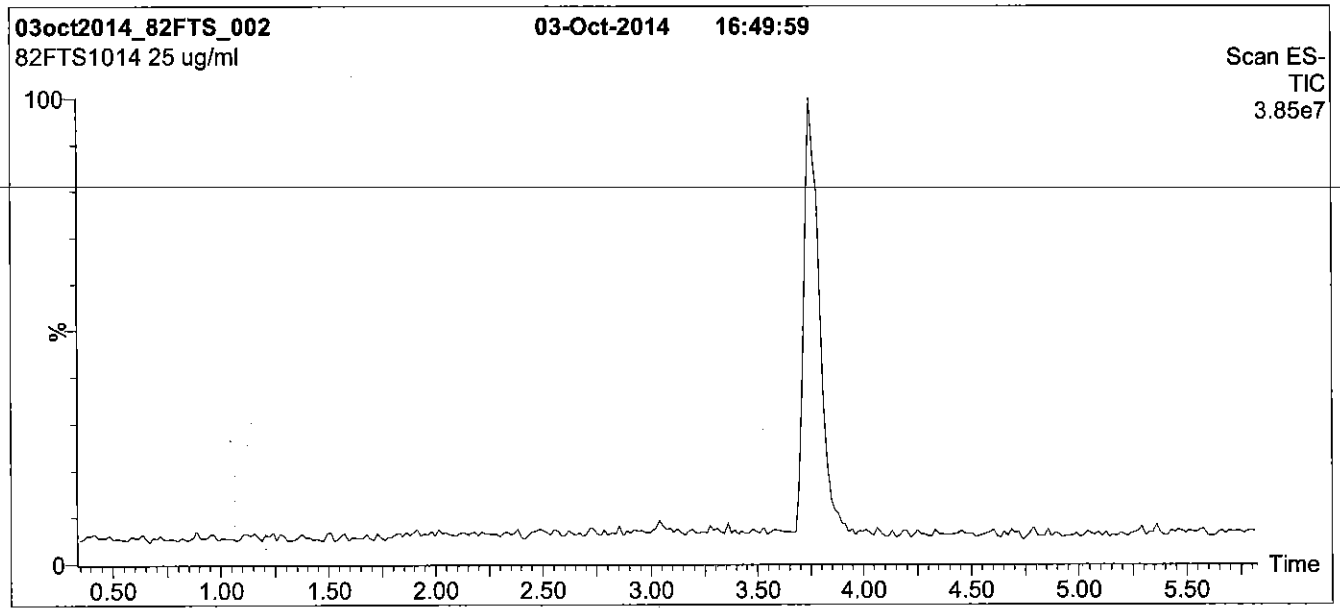
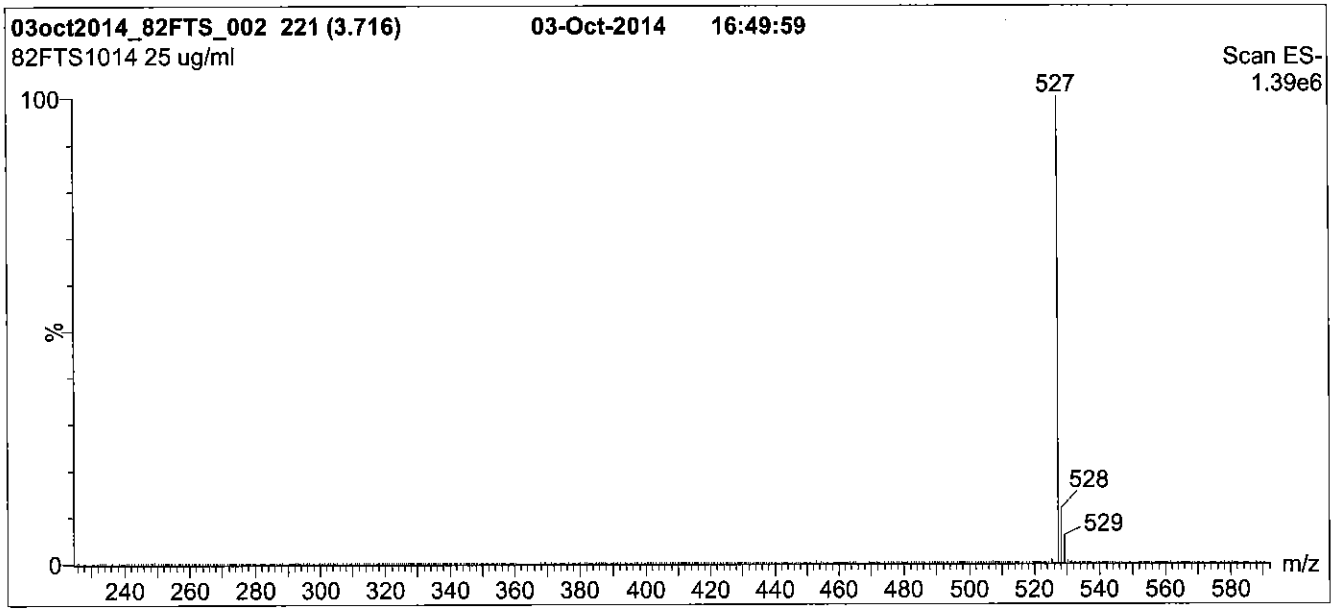
Figure 1: **8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min.
Return to initial conditions in 0.5 min.
Time: 10 min

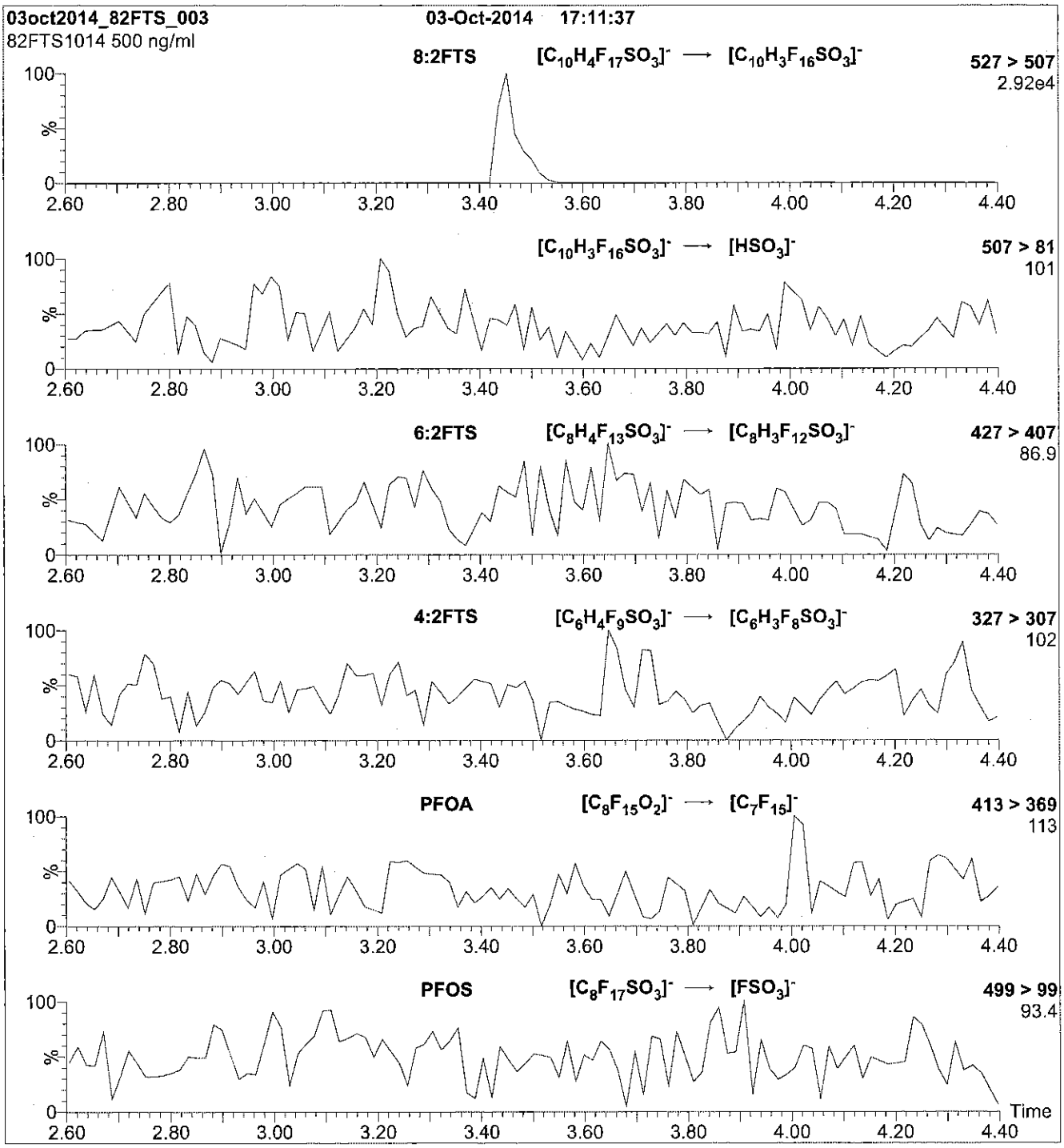
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 8:2FTS)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LC8:2FTS_00002

R: 8/23/16 SBC

715545
ID: LC8:2FTS_00002
Exp: 10/23/20 Prpd: SBC
8:2FTS

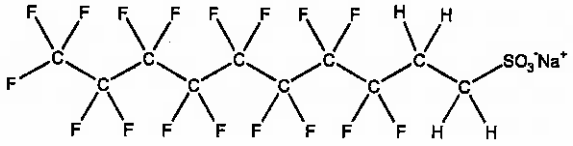
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1015

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{10}H_4F_{17}SO_3Na$		**MOLECULAR WEIGHT:**	550.16
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CHEMICAL PURITY:	>98%			
LAST TESTED: (mm/dd/yyyy)	10/23/2015			
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020			
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DOCUMENTATION/ DATA ATTACHED:

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Certified By: B.G. Chittim **Date:** 10/27/2015 (mm/dd/yyyy)

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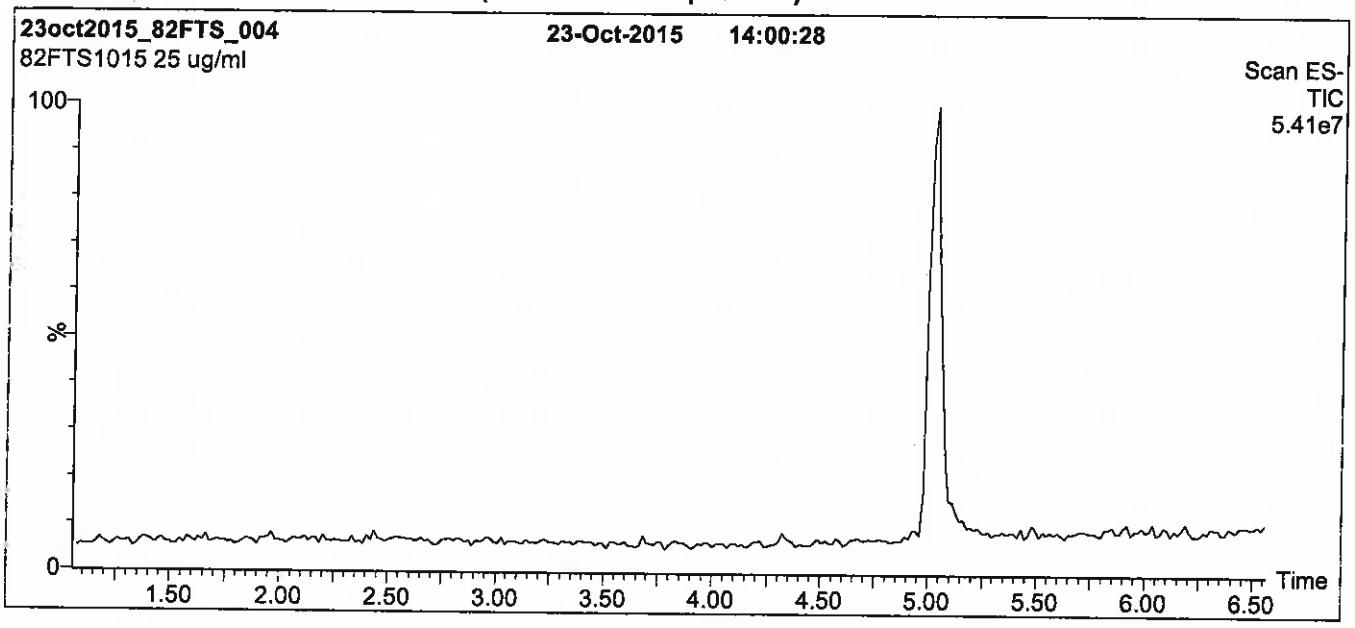
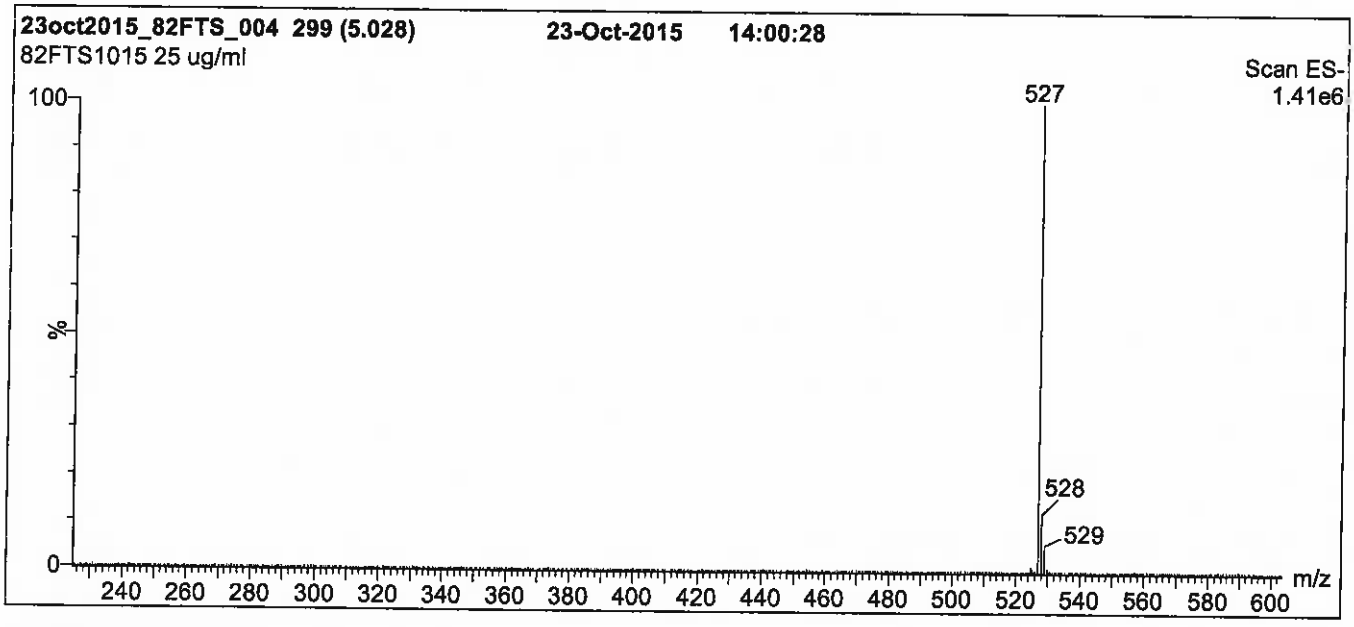
Figure 1: **8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min.
Return to Initial conditions in 0.5 min.
Time: 10 min

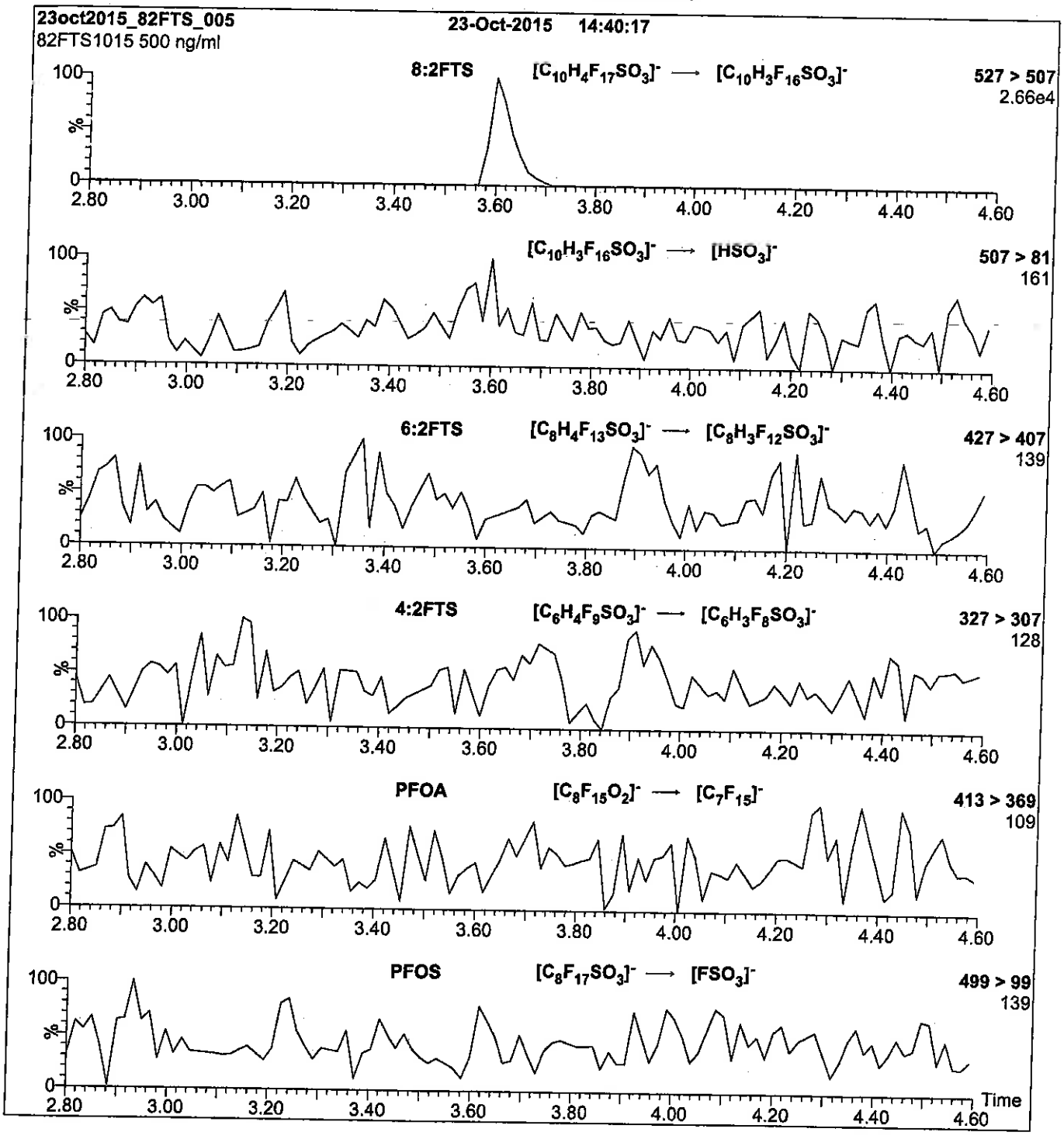
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml 8:2FTS)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCd-NEtFOSA-M_00001

R: 7/16/15 SV

WELLINGTON LABORATORIES

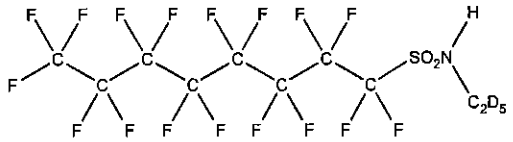
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
COMPOUND: N-ethyl-d_5-perfluoro-1-octanesulfonamide

LOT NUMBER: dNEtFOSA0314M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$C_{10}D_5HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	532.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	03/10/2014		
EXPIRY DATE: (mm/dd/yyyy)	03/10/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: _____ **Date:** 04/01/2015
B.G. Chittim (mm/dd/yyyy)

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

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

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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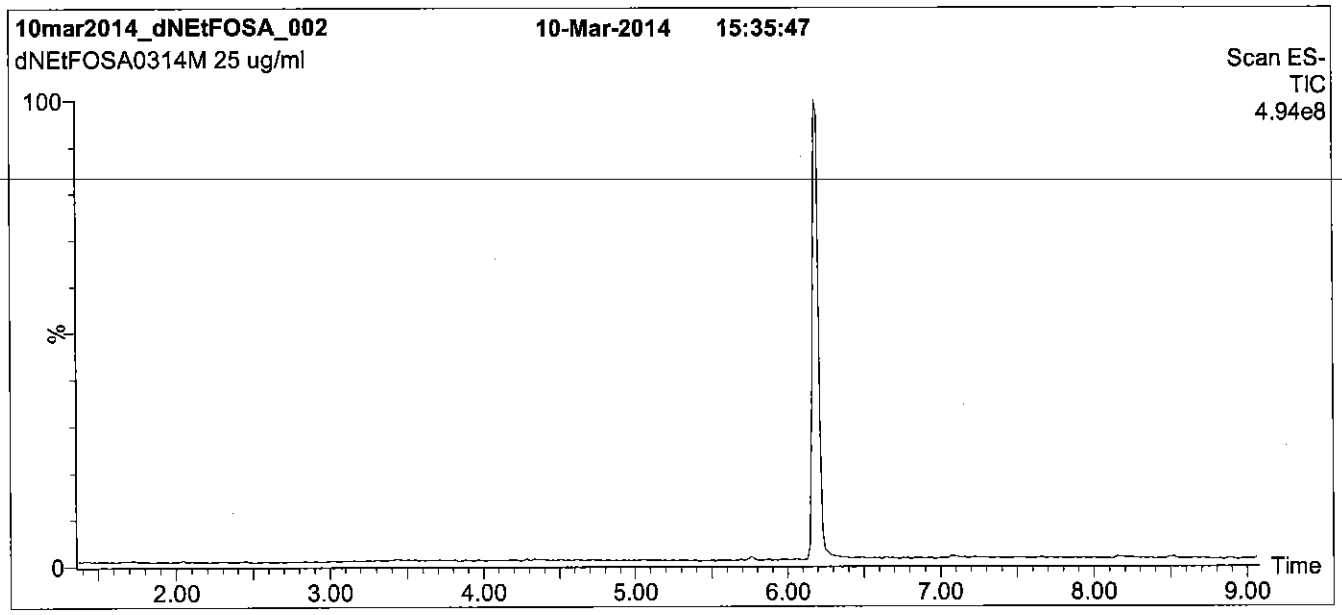

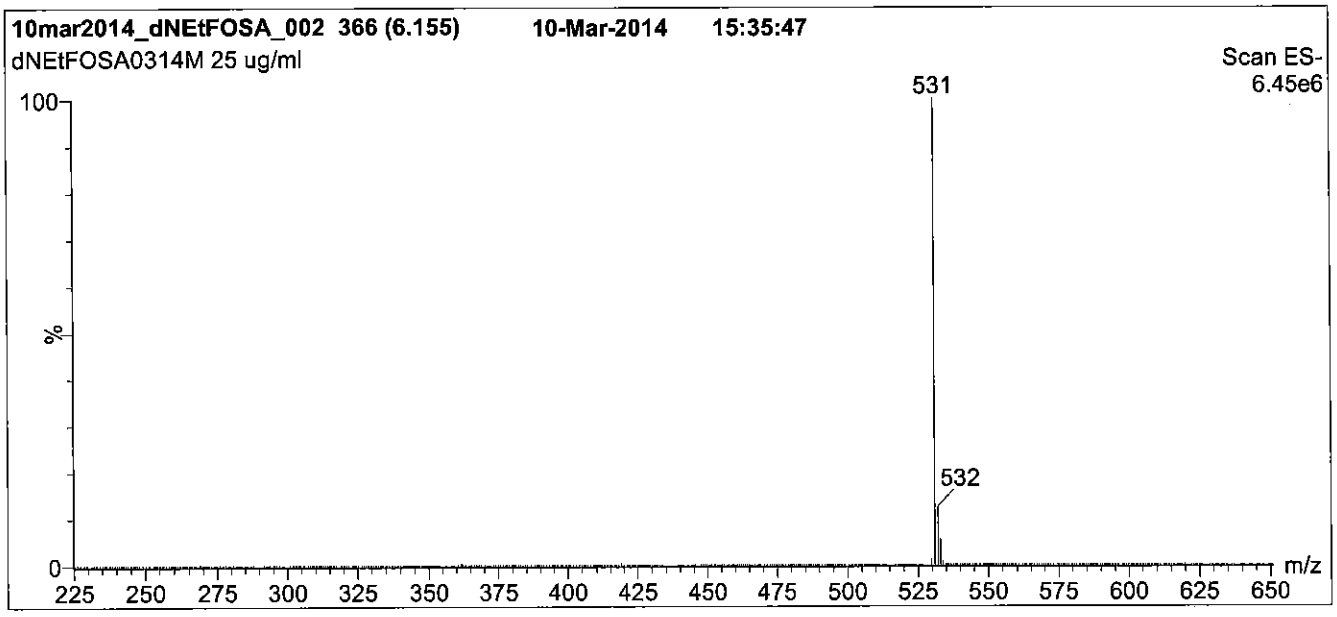

Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gracient
Start: 40% H_2O / 60% (80:20 MeOH:ACN)
(both with 10mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
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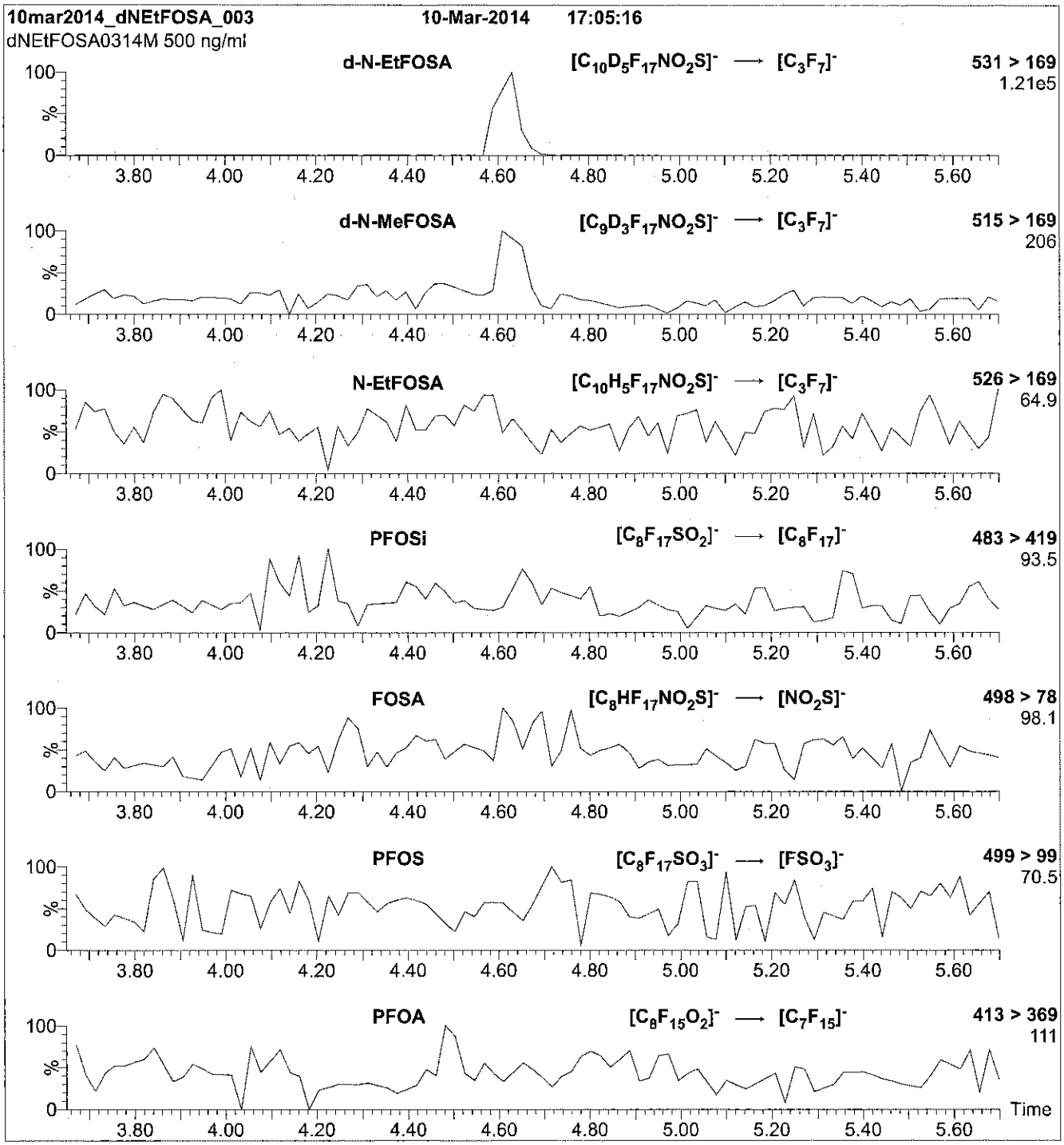


Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d-N-EtFOSA-M)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NEtFOSA-M_00002

R - 7/6/16 CBW

671571
ID: LCd-NEtFOSA-M_00002
Exp: 03/10/19 Prpd: CBW
d-N-EtFOSA-M

WELLINGTON LABORATORIES

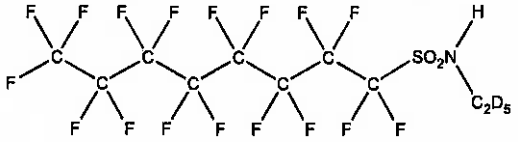
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
COMPOUND: N-ethyl-d_5-perfluoro-1-octanesulfonamide

LOT NUMBER: dNEtFOSA0314M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$C_{10}D_5HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	532.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	03/10/2014		
EXPIRY DATE: (mm/dd/yyyy)	03/10/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

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

- See page 2 for further details.

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Certified By: B.G. Chittim **Date:** 04/01/2015 (mm/dd/yyyy)

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

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CALA

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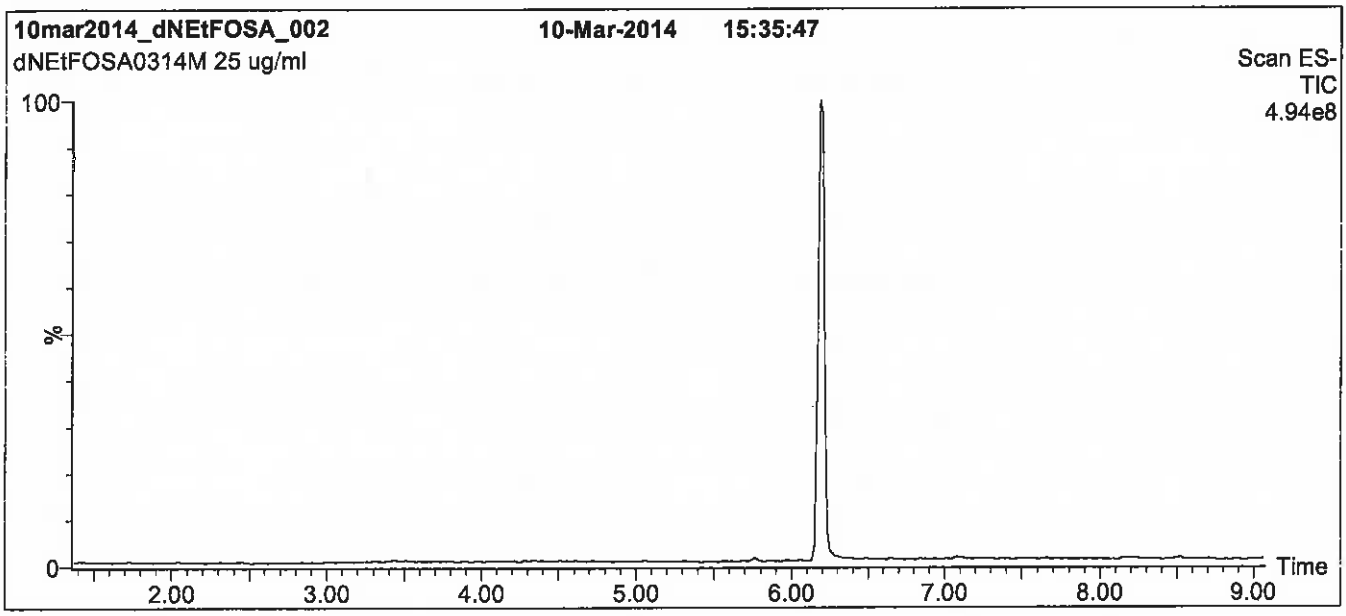
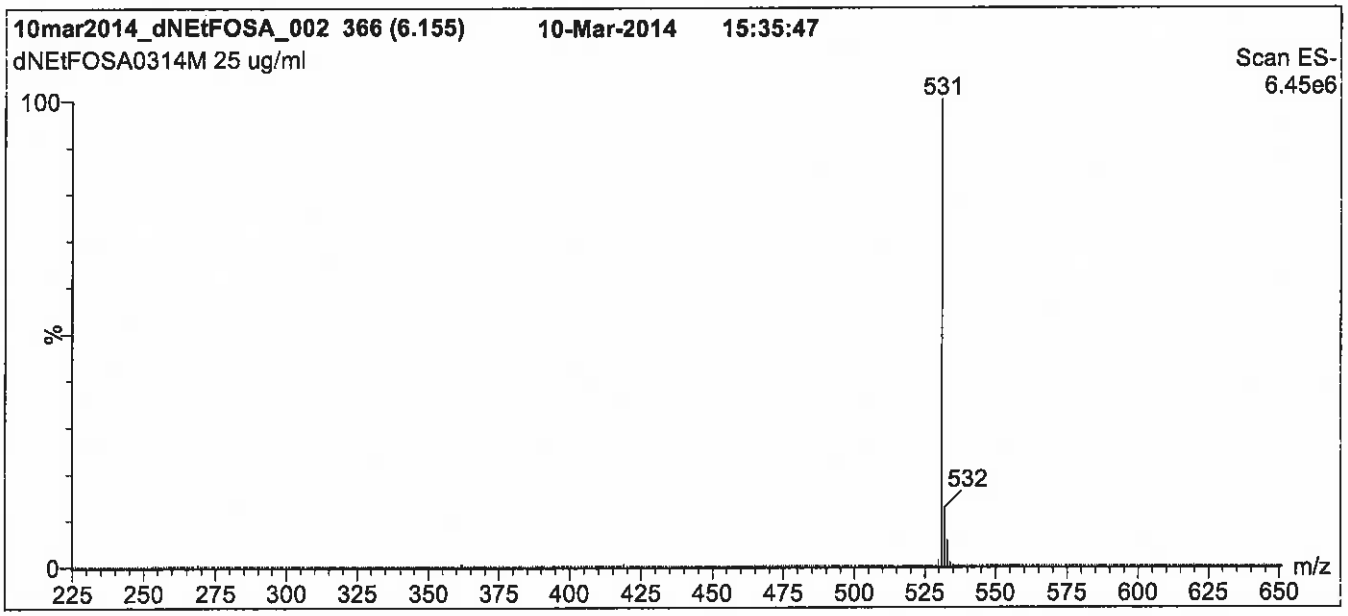




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gracient
Start: 40% H_2O / 60% (80:20 MeOH:ACN)
(both with 10mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

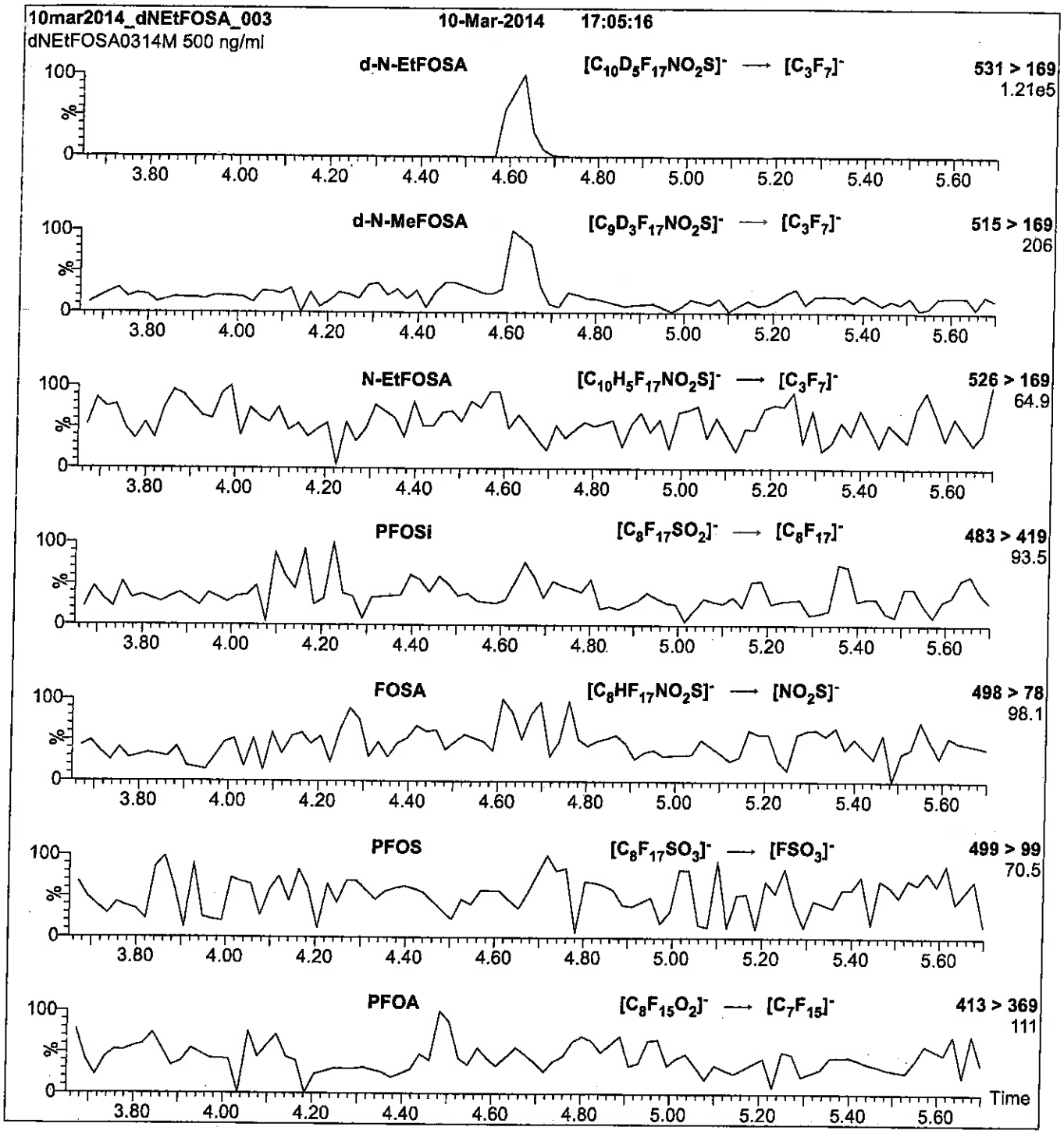
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d-N-EtFOSA-M)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NMeFOSA-M_00001

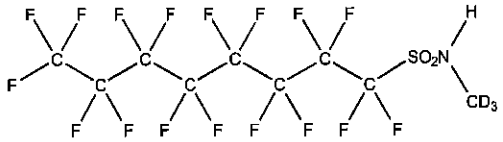
R: 7/16/15 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M
LOT NUMBER: dNMeFOSA0114M
COMPOUND: N-methyl-d_3-perfluoro-1-octanesulfonamide

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_9D_3HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	516.19
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	01/28/2014		
EXPIRY DATE: (mm/dd/yyyy)	01/28/2019		
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CALA Testing Accreditation No. A1226

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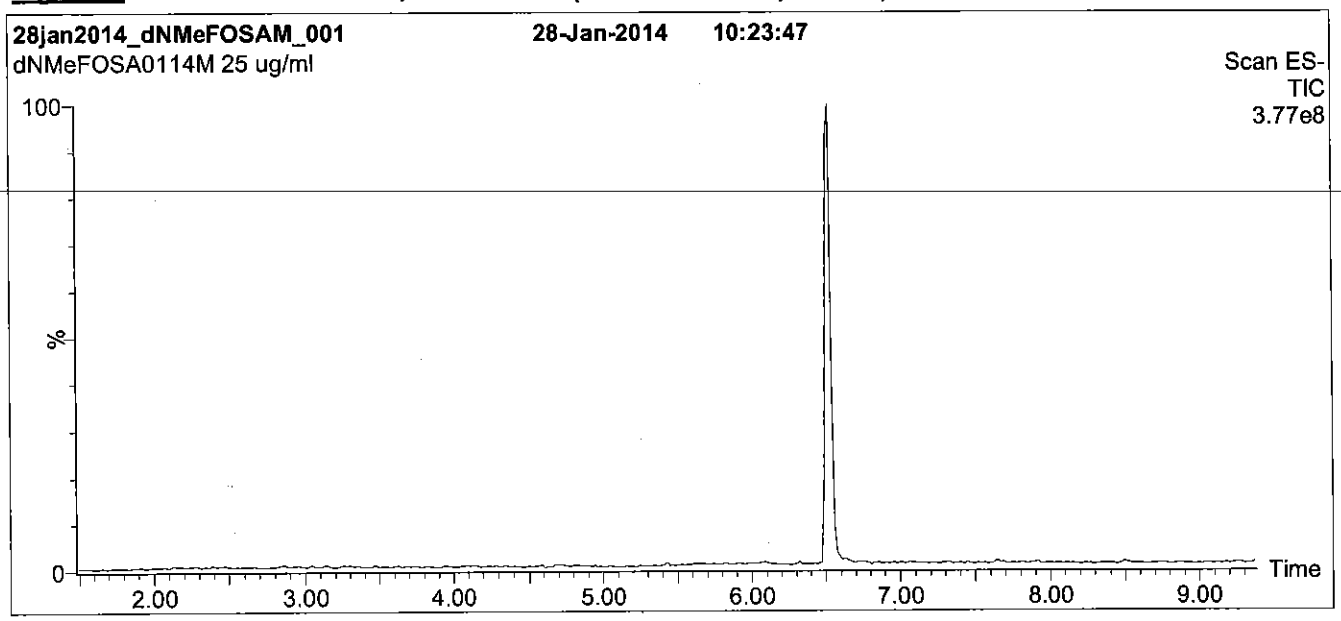

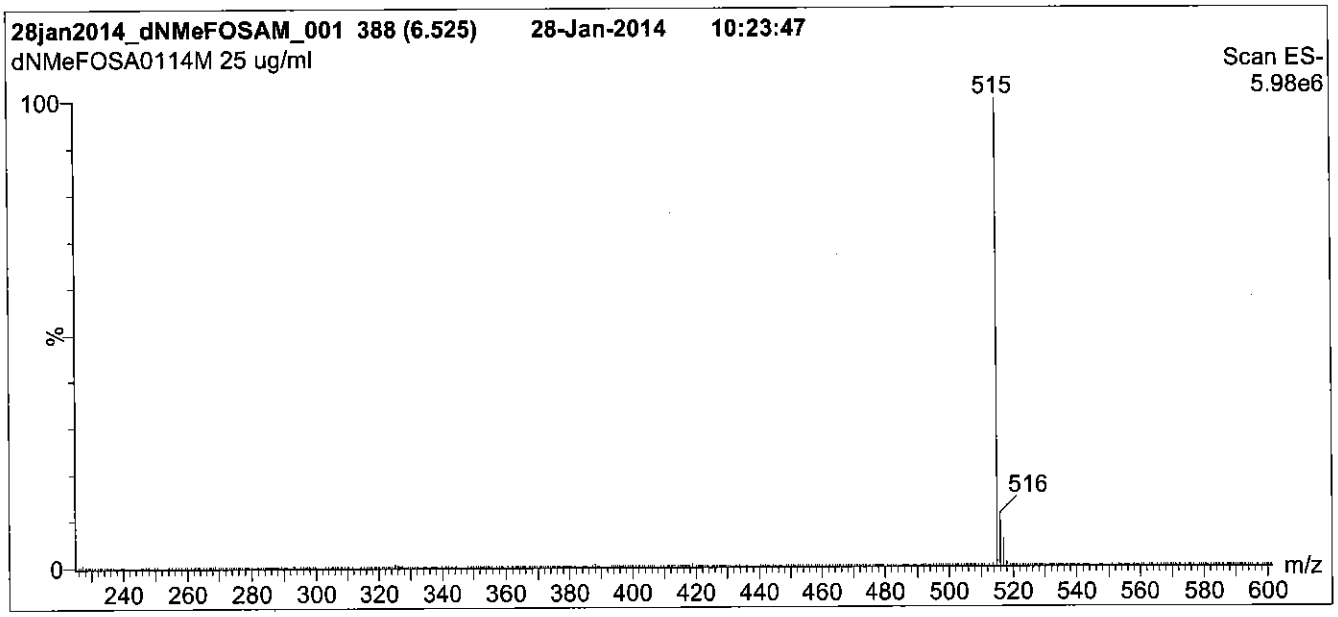

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1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
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Ramp to 90% organic over 7 min and hold for
1.5 min. Return to initial conditions over 0.5 min.
Time: 10 min

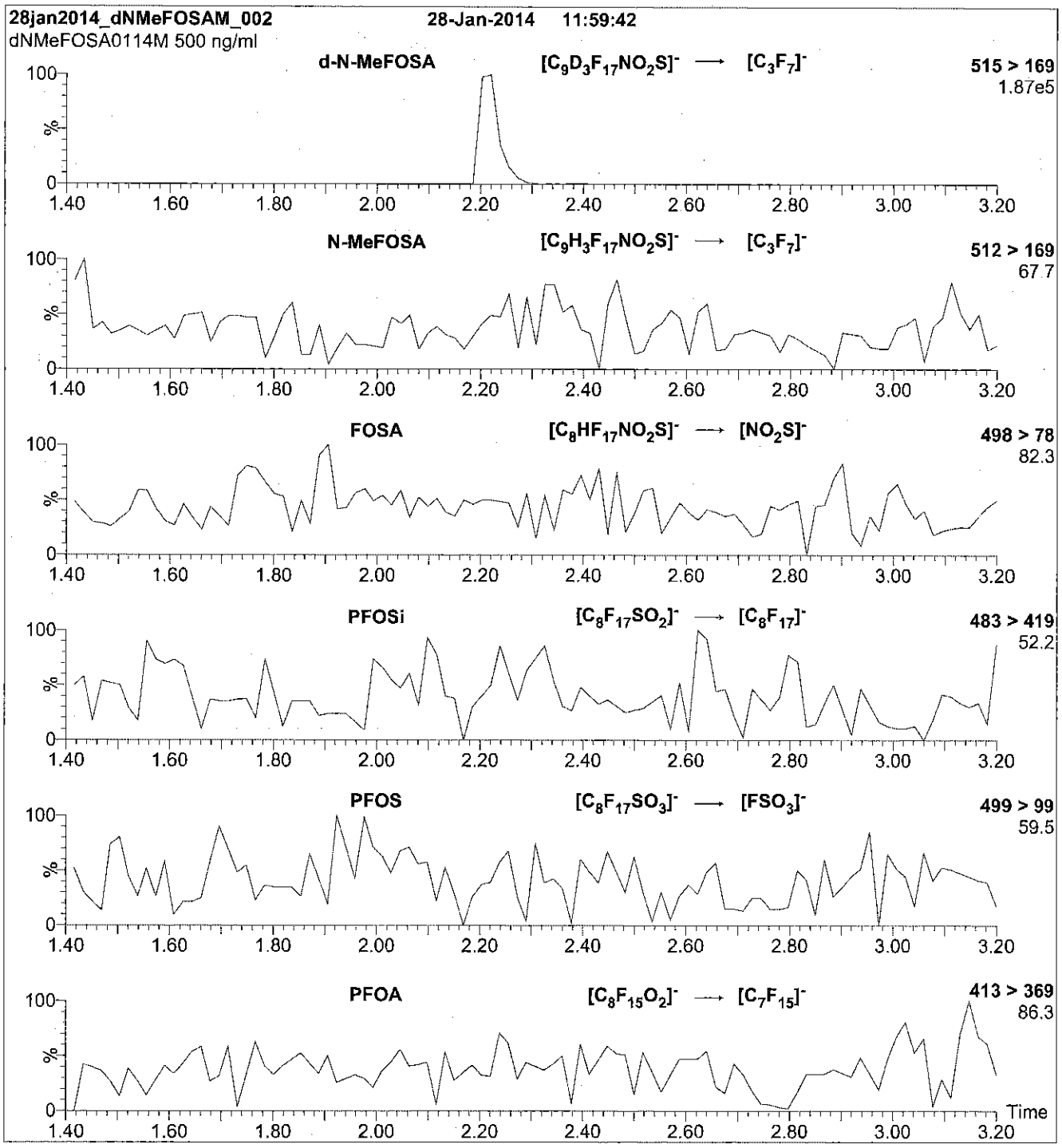
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d-N-MeFOSA-M)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NMeFOSA-M_00002

R: 7/6/16 CBW

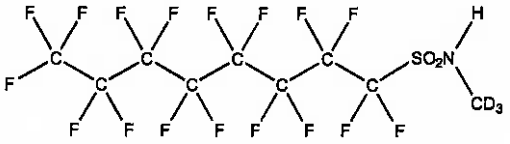
671625
ID: LCd-NMeFOSA-M_00002
Exp: 06/13/21 Prpd: CBW
d-N-MeFOSA-M

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M
LOT NUMBER: dNMeFOSA0616M
COMPOUND: N-methyl-d_3-perfluoro-1-octanesulfonamide

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA:	$C_9D_3HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	516.19
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	06/10/2016		
EXPIRY DATE: (mm/dd/yyyy)	06/10/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/16/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

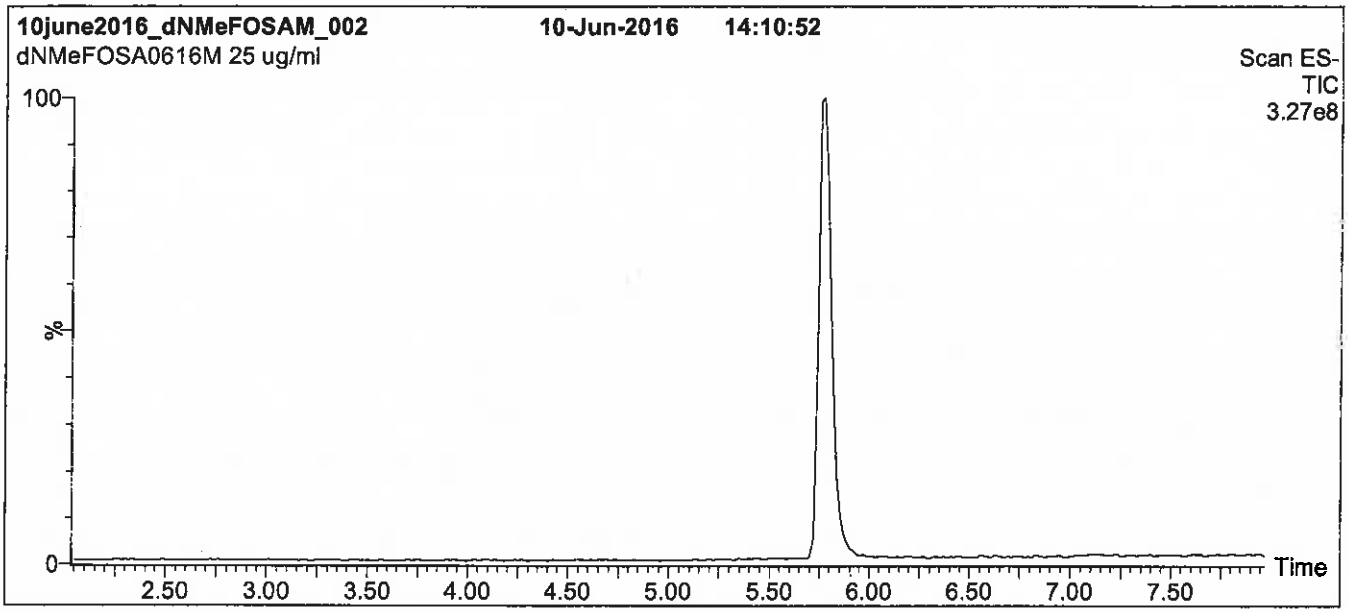
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

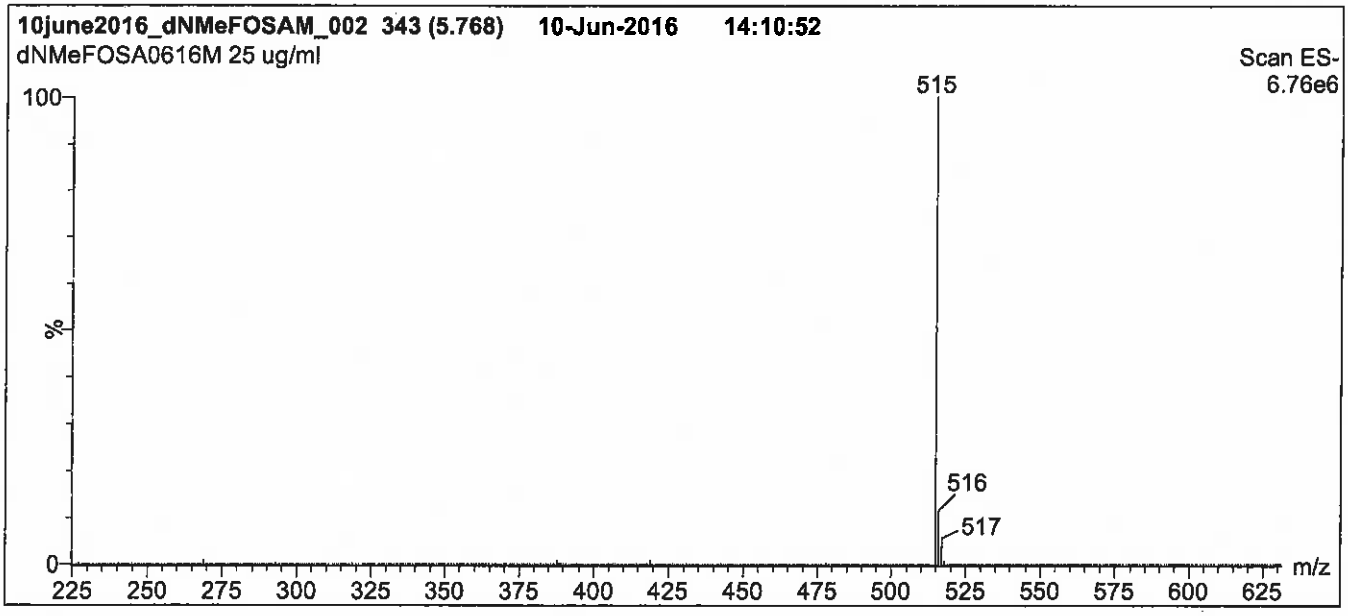
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% H_2O / 60% (80:20 MeOH:ACN)
(both with 10mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

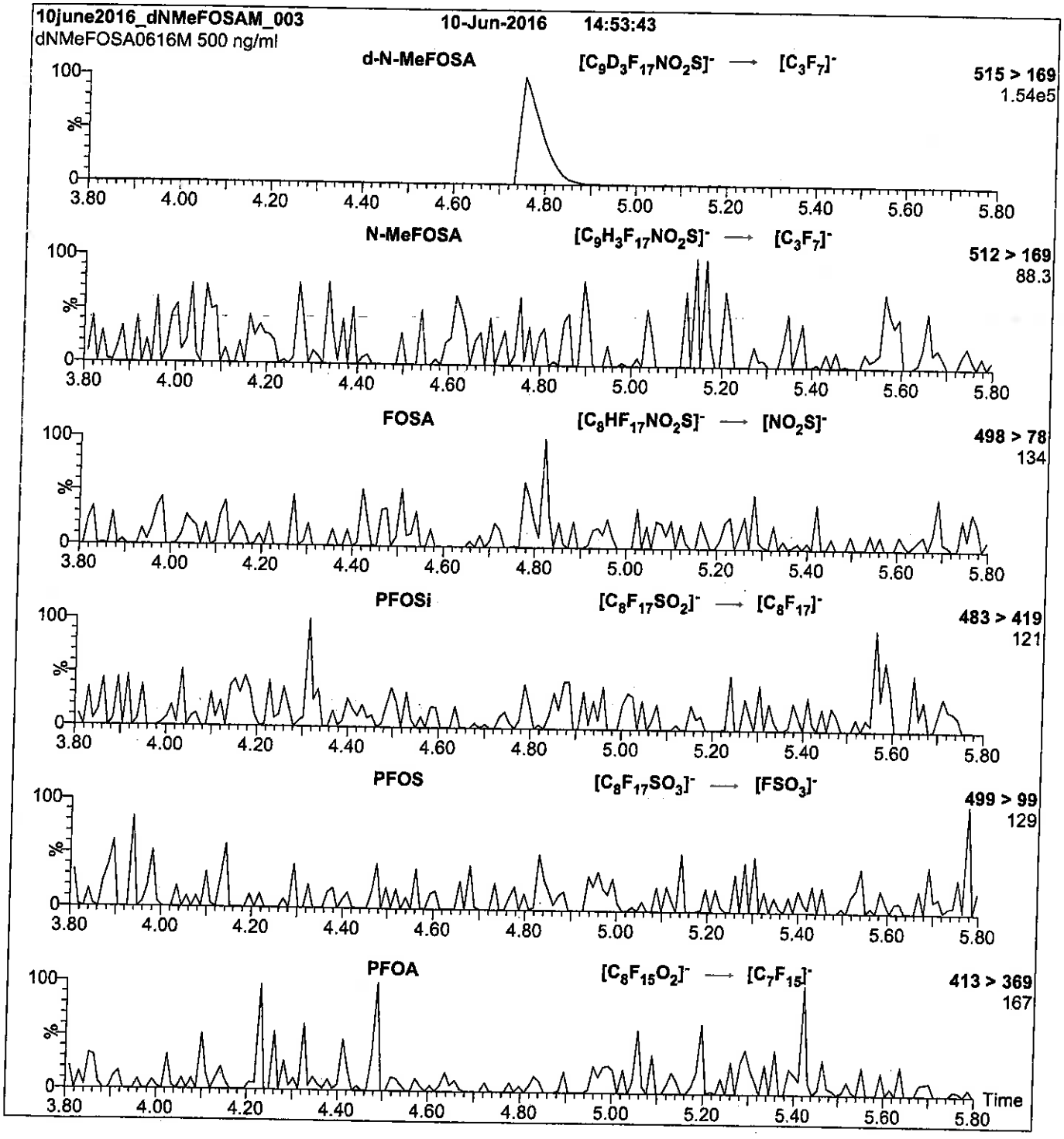
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d-N-MeFOSA-M)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd3-NMeFOSAA_00001

r: 7/16/15 SKV

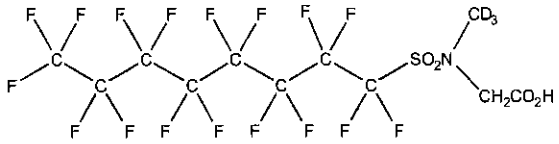
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0113

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{11}D_3H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	574.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	01/31/2013		
EXPIRY DATE: (mm/dd/yyyy)	01/31/2018		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/06/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

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

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

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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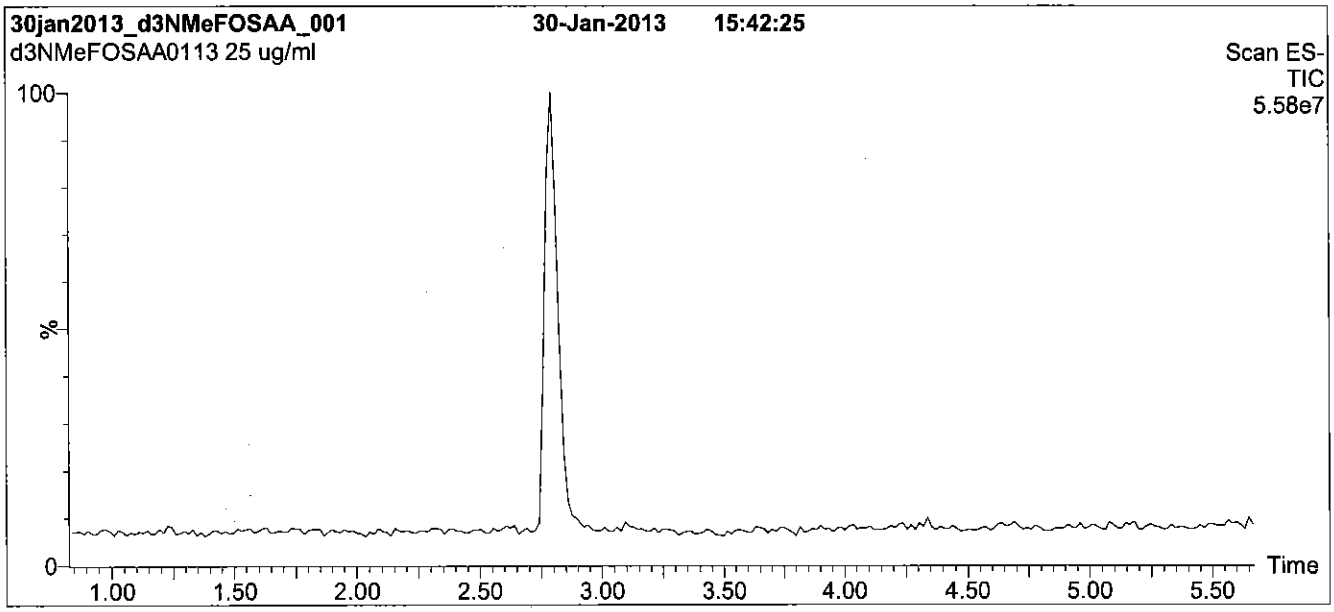
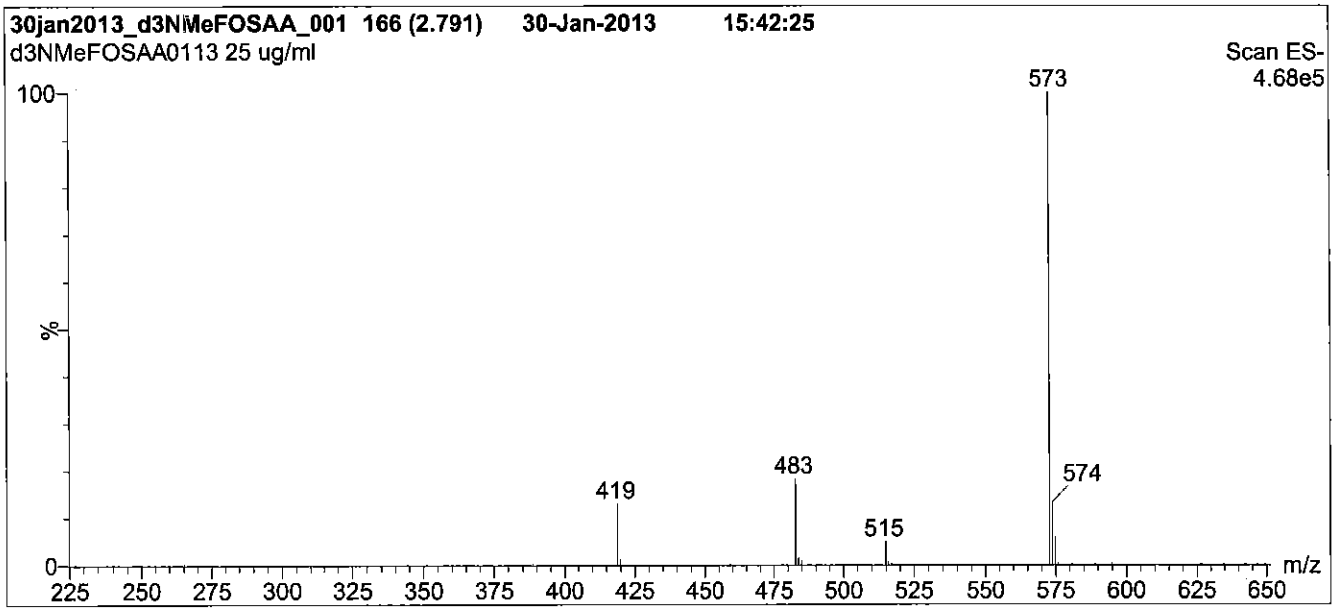
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

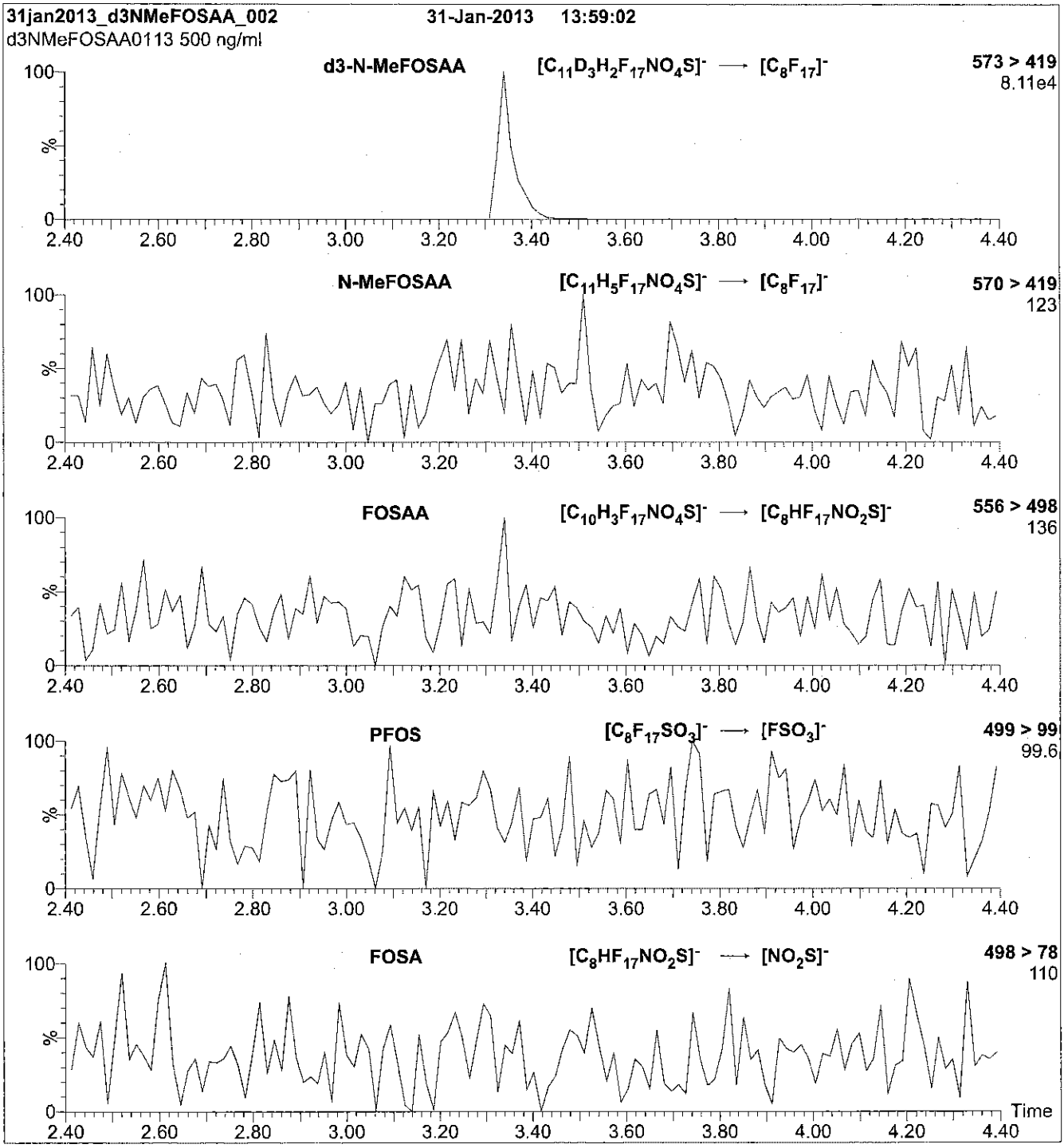
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d3-N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LCd3-NMeFOSAA_00002

R: 7/6/16 CBW

671572
ID: LCd3-NMeFOSAA_00002
Exp: 01/20/21 Prpd: CBW
d3-N-MeFOSAA

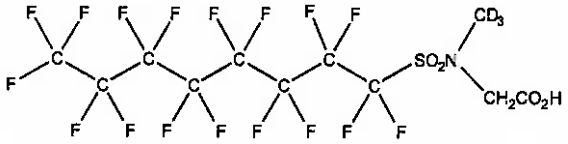
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0116

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{11}D_3H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	574.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	01/20/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/20/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/25/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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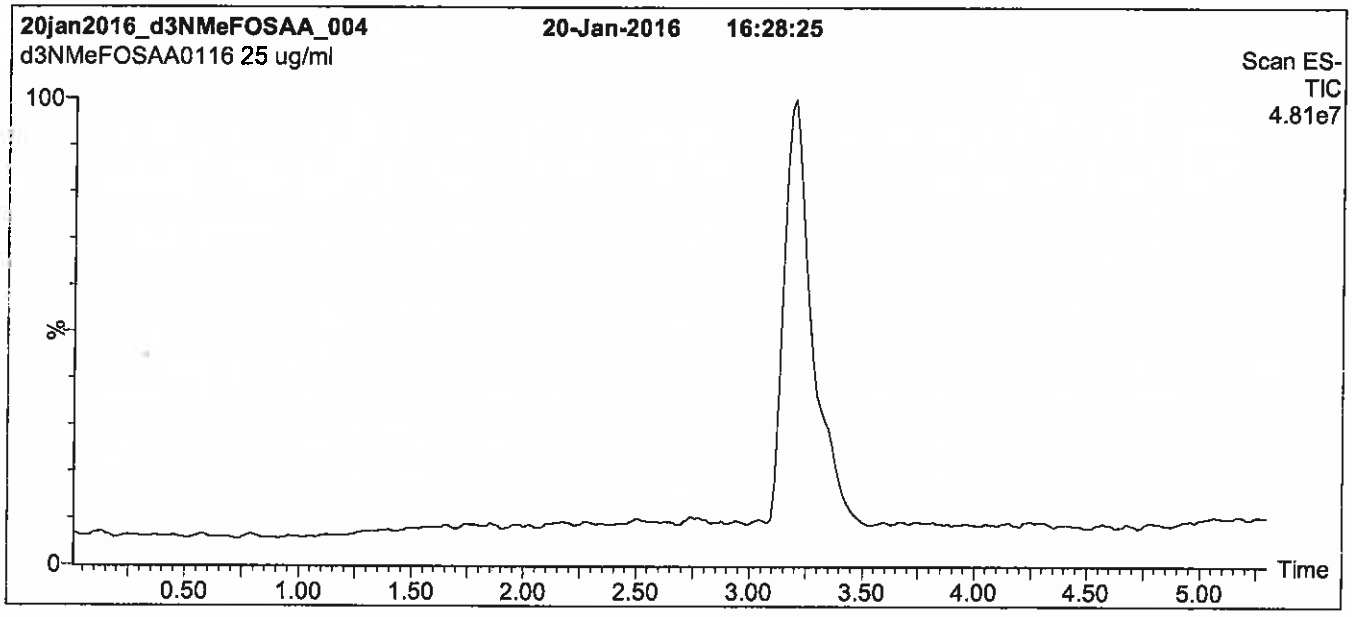
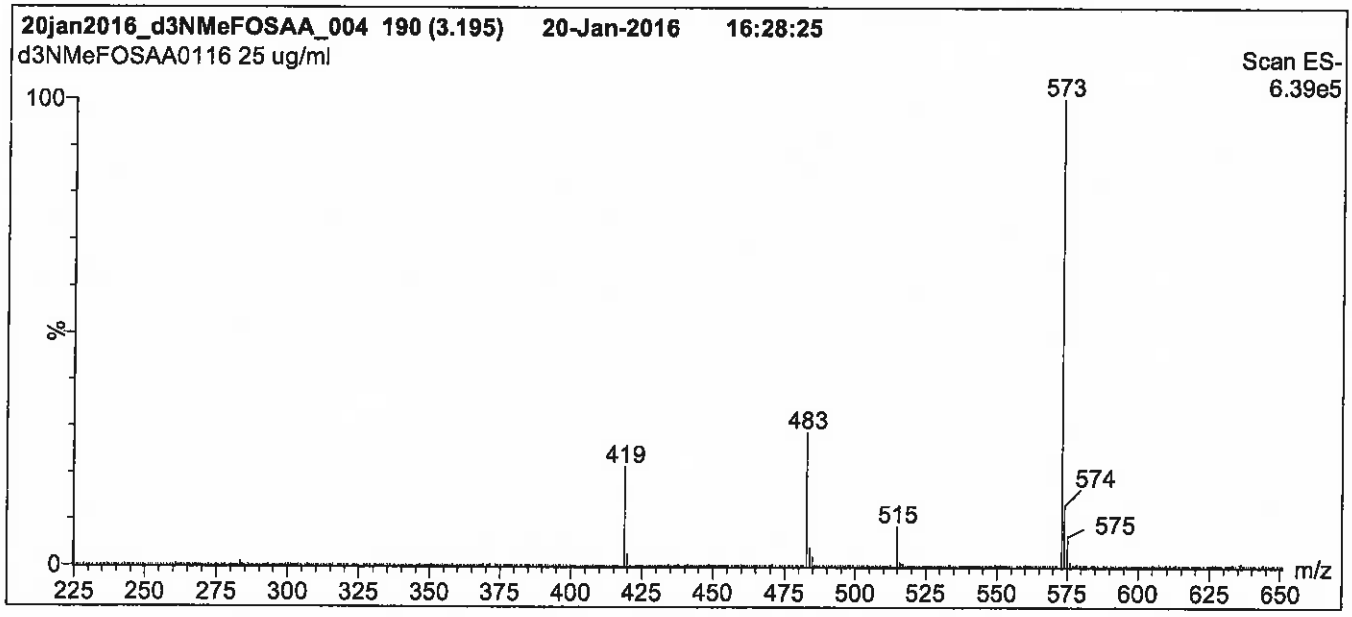
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

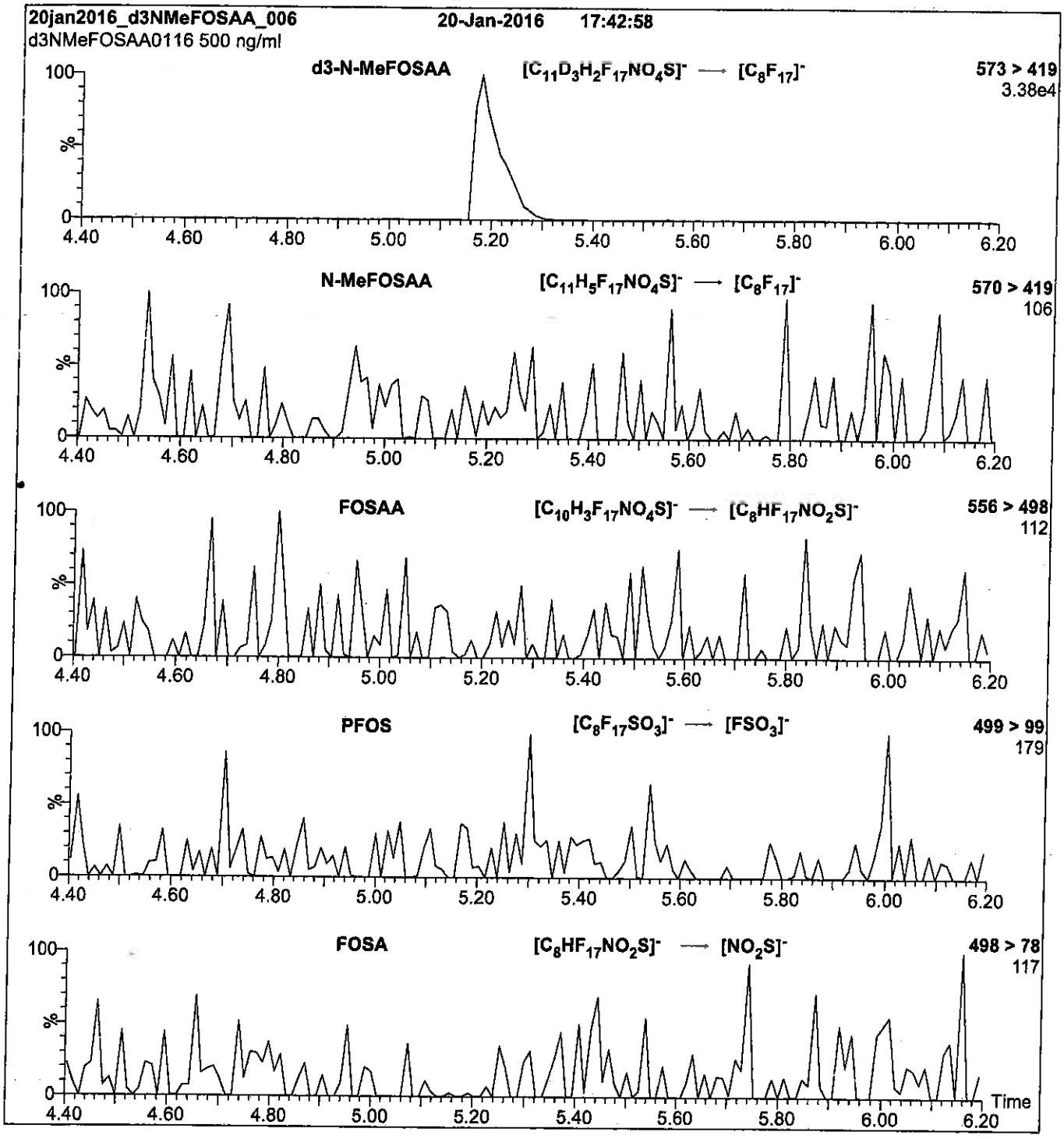
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d3-N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd5-NEtFOSAA_00001

P: 7/10/15 SW

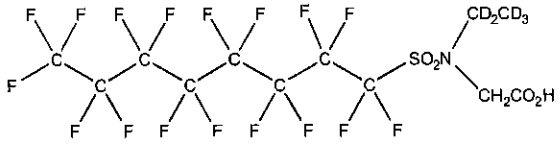
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA0515

COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{12}D_5H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	590.27
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	05/08/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/08/2020		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/11/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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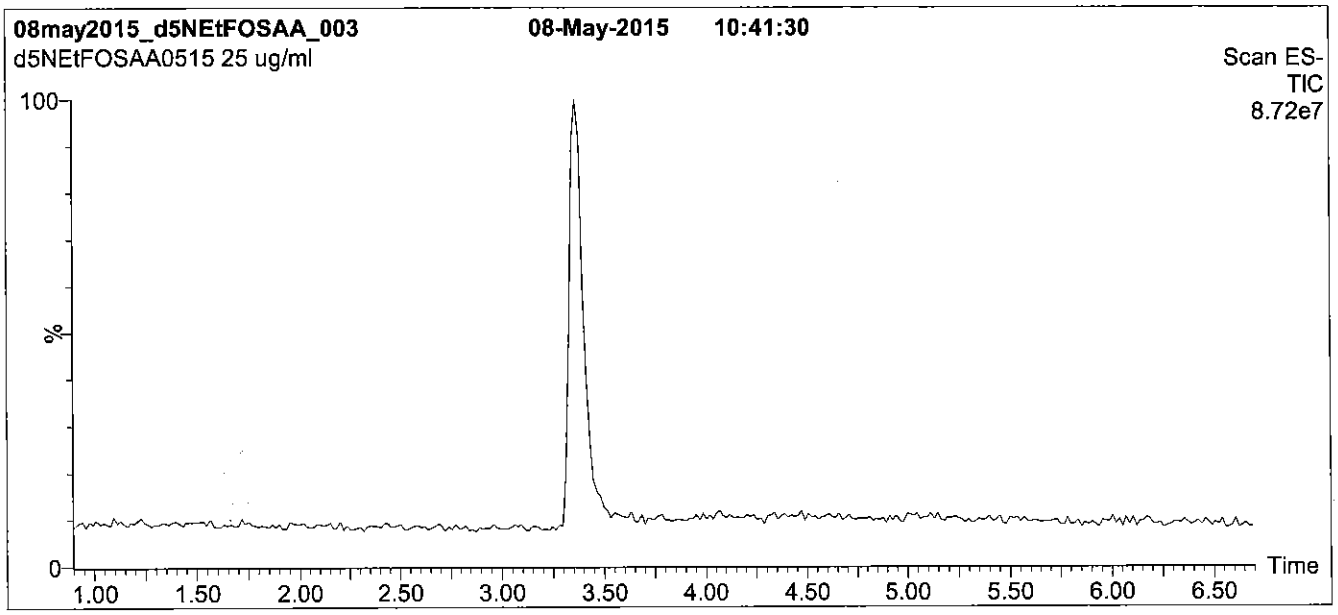
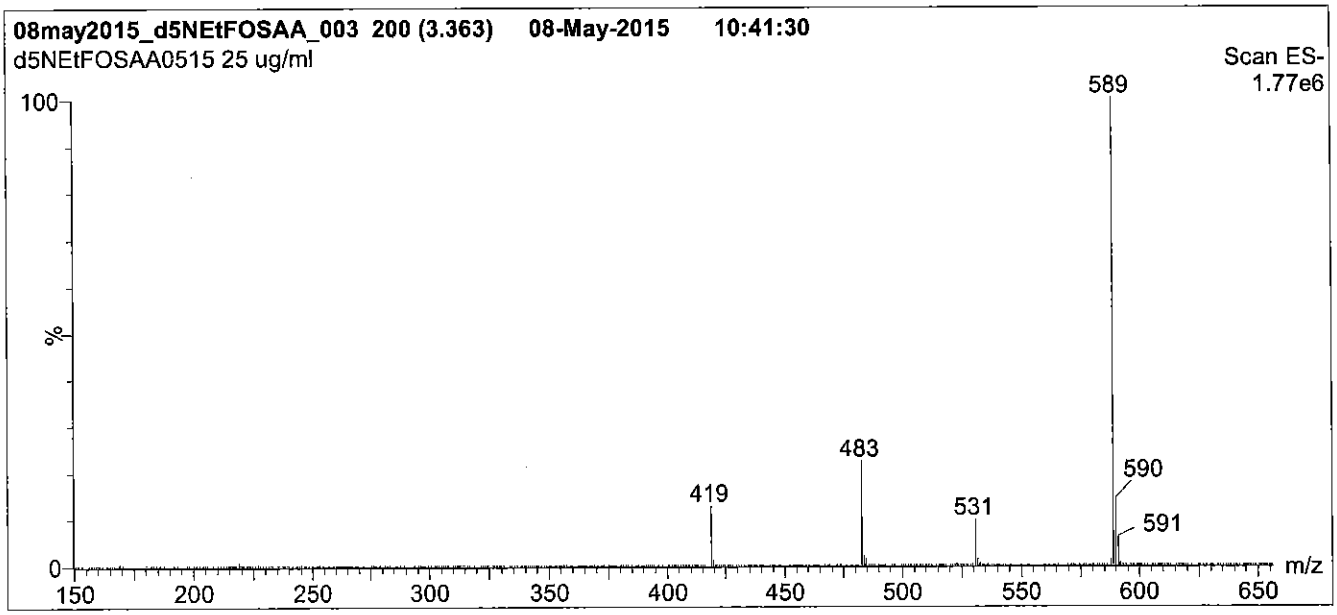
Figure 1: **d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

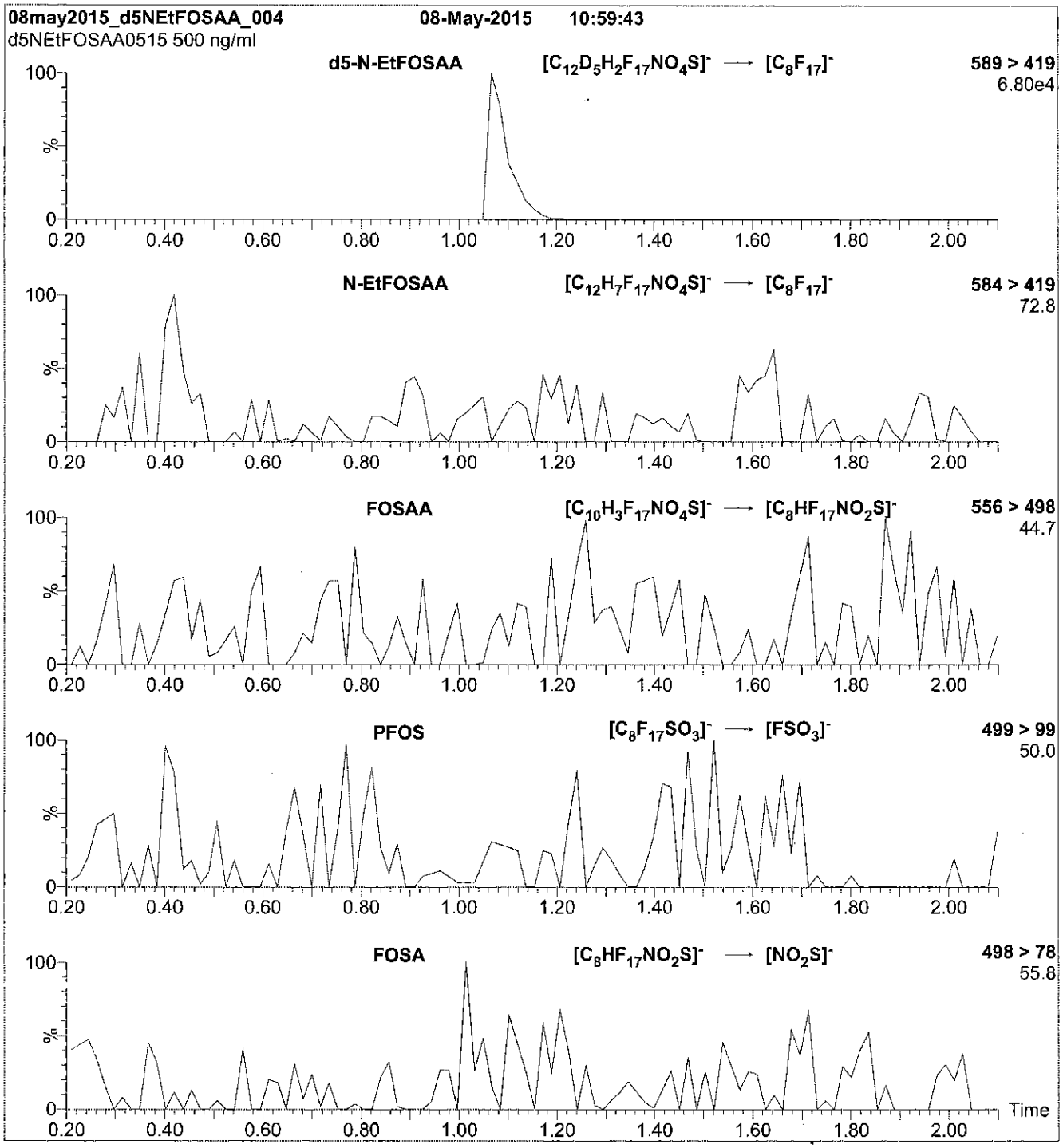
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Figure 2: **d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml d5-N-EtFOSAA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 25

Reagent

LCd5-NEtFOSAA_00002

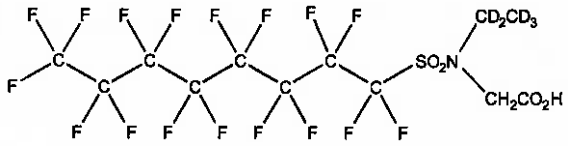
R: 7/6/16 CBW

671603
ID: LCd5-NEtFOSAA_00002
Exp: 12/07/20 Prpd: CBW
d5-N-EtFOSAA

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	d5-N-EtFOSAA	**LOT NUMBER:**	d5NEtFOSAA1115
COMPOUND:	N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_{12}D_5H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	590.27
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_6$
LAST TESTED: (mm/dd/yyyy)	12/07/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/07/2020		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 12/07/2015 (mm/dd/yyyy)

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

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CALA

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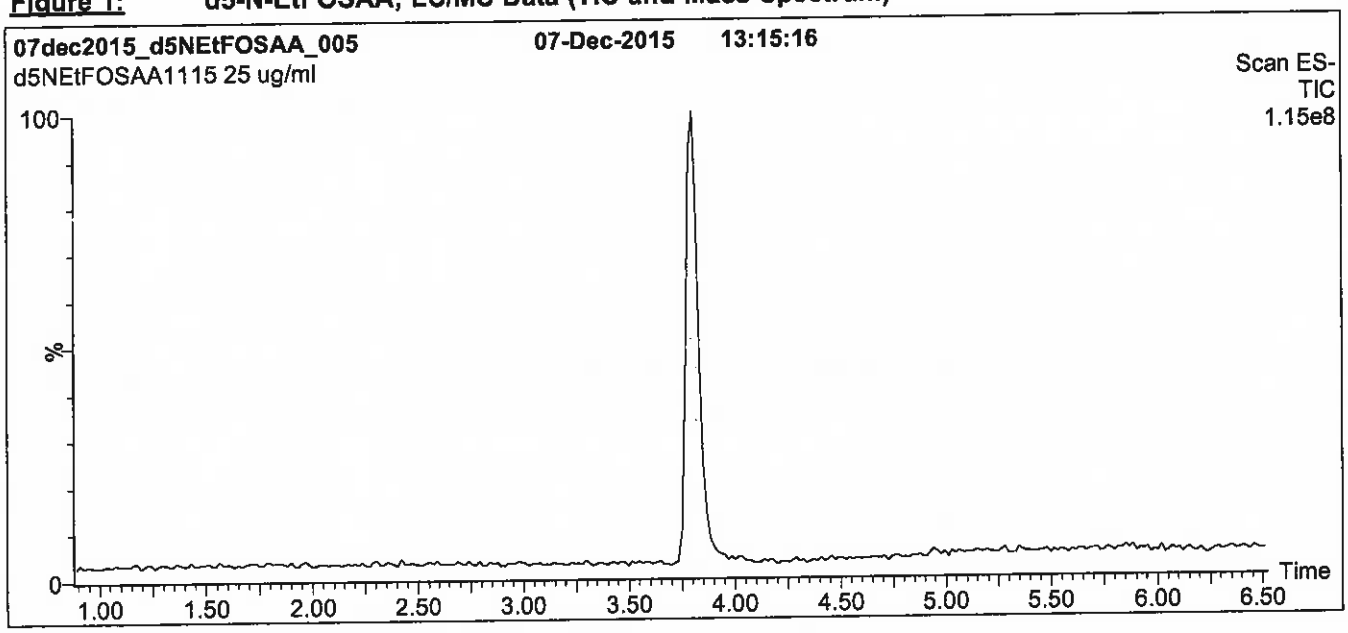
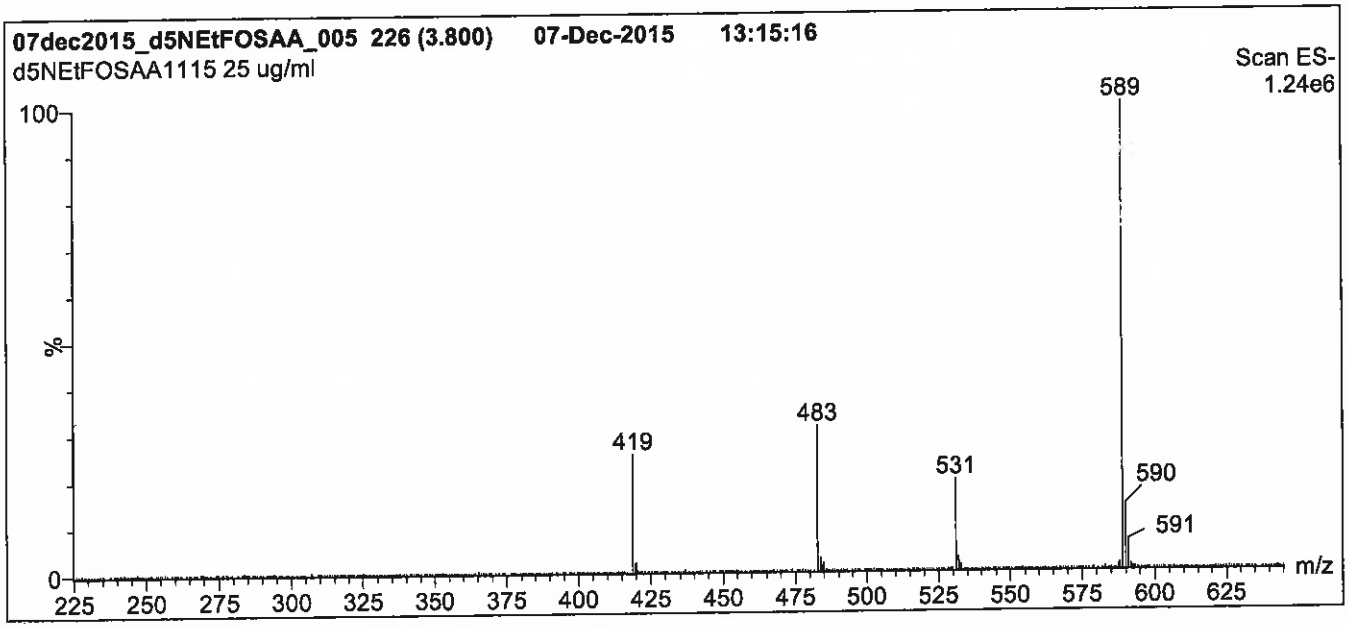




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

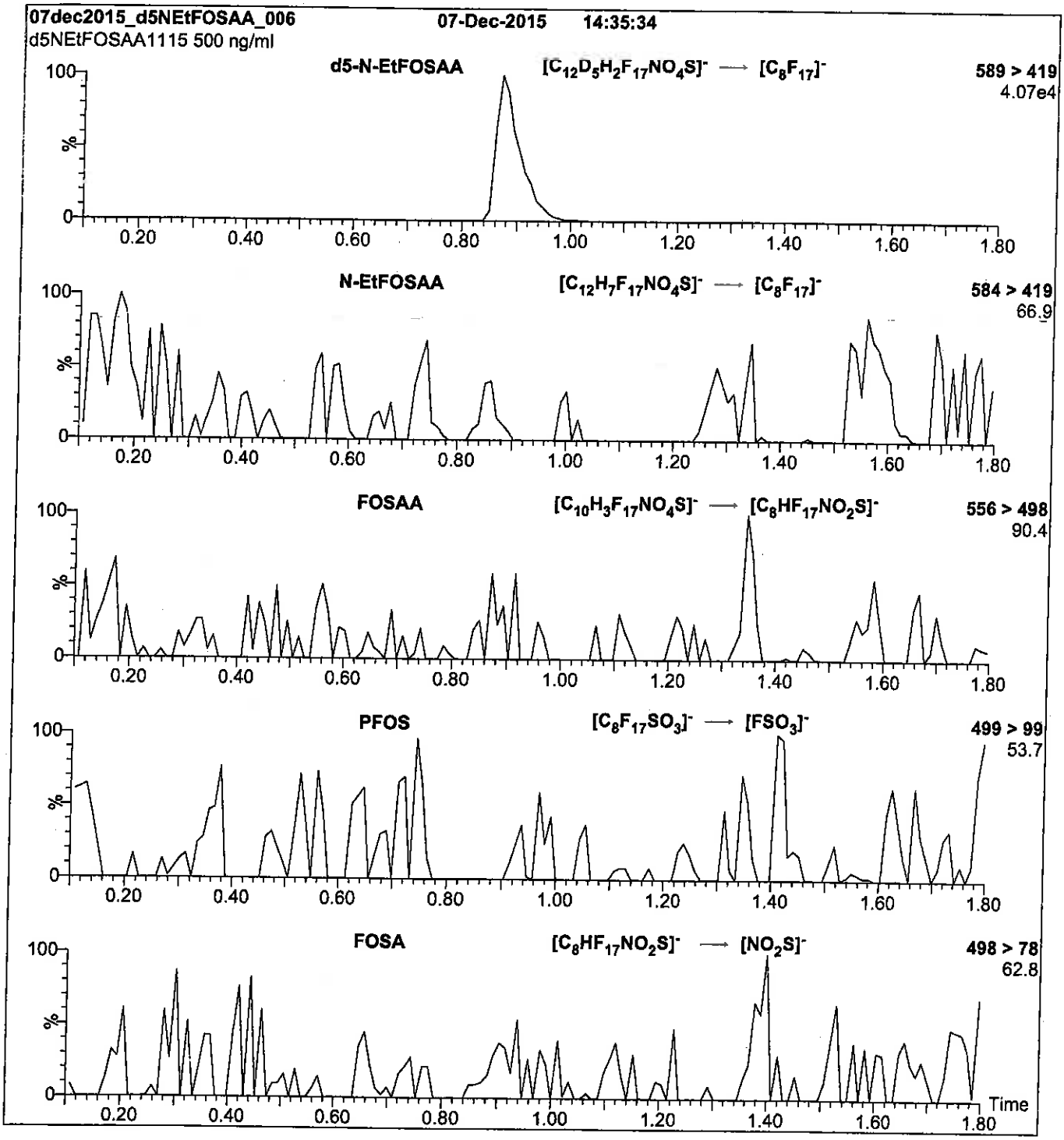
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml d5-N-EtFOSAA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCM2-6:FTS_00001

R: 7/16/15 SN
S: 7/20/15 SN

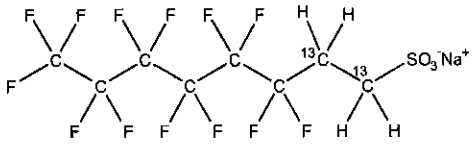
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0714

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6H_4F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	452.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.5 ± 2.4 µg/ml (M2-6:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/15/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/15/2017		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/27/2015 (mm/dd/yyyy)
B.G. Chittim

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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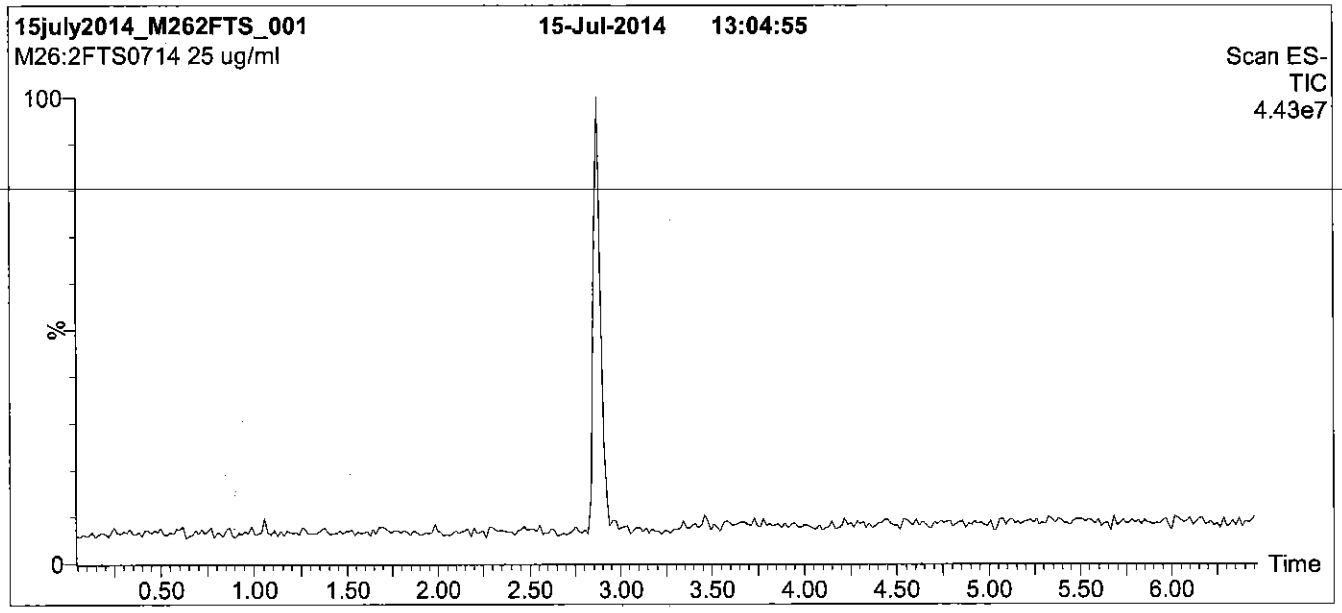
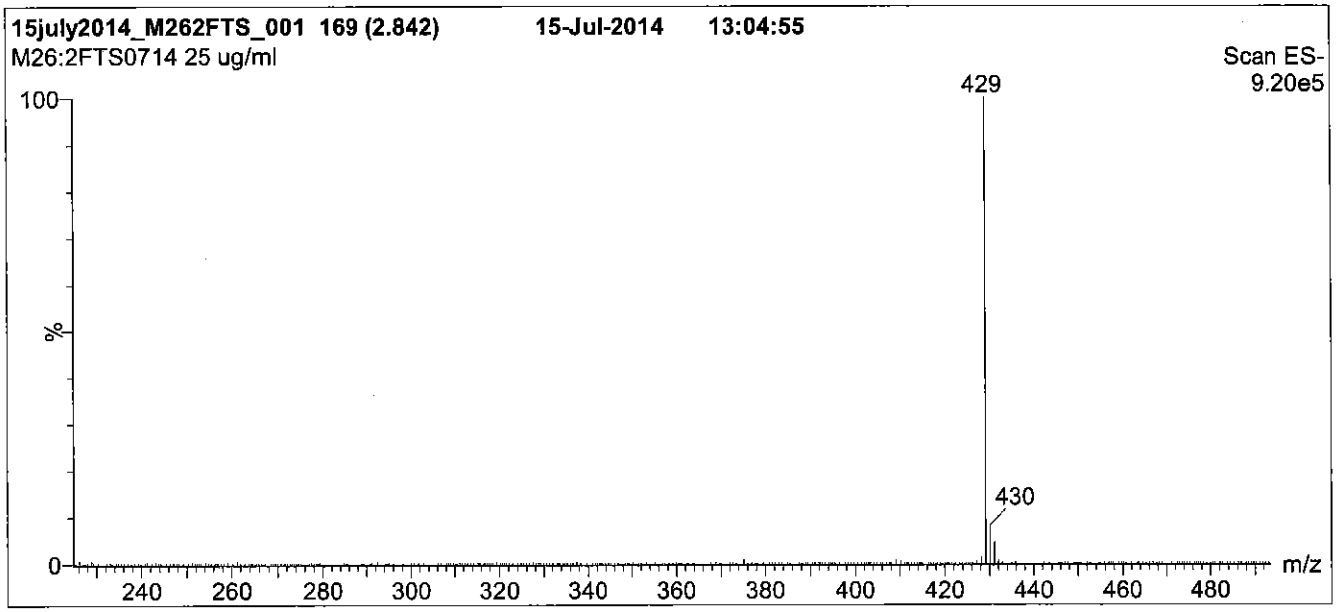
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

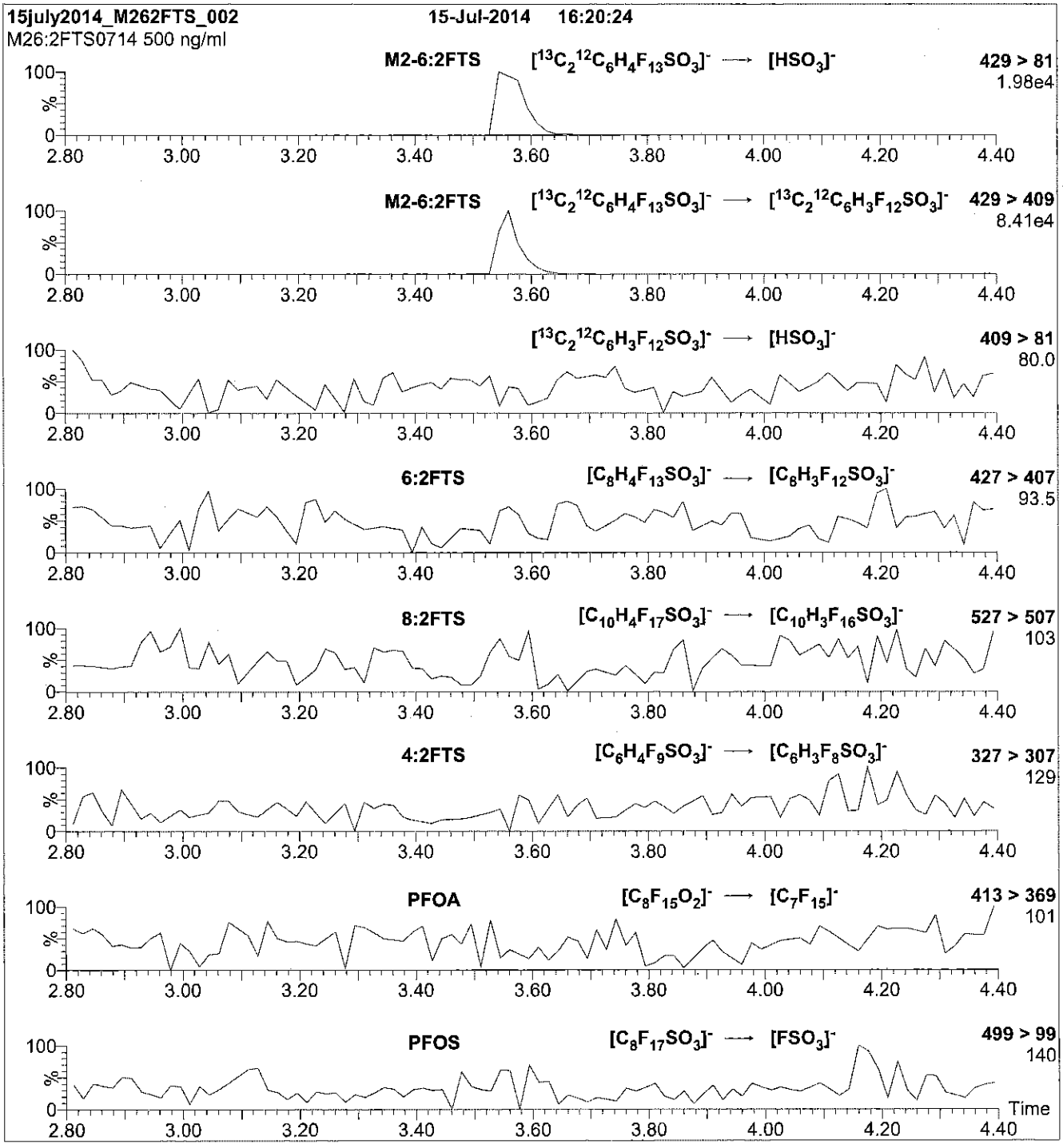
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

Figure 2: **M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-6:2FTS)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM2-6:FTS_00002

R: 7/6/16 CBW

671575
ID: LCM2-6:FTS_00002
Exp: 01/08/21 Prpd: CBW
M2-6:2FTS

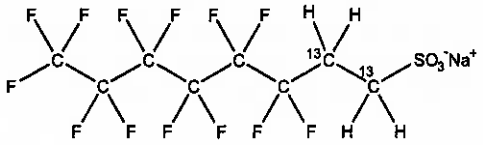
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0116

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]octane sulfonate

STRUCTURE: **CAS #:** Not available



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LAST TESTED: (mm/dd/yyyy)	01/08/2016		($1,2\text{-}^{13}C_2$)
EXPIRY DATE: (mm/dd/yyyy)	01/08/2021		
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$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED

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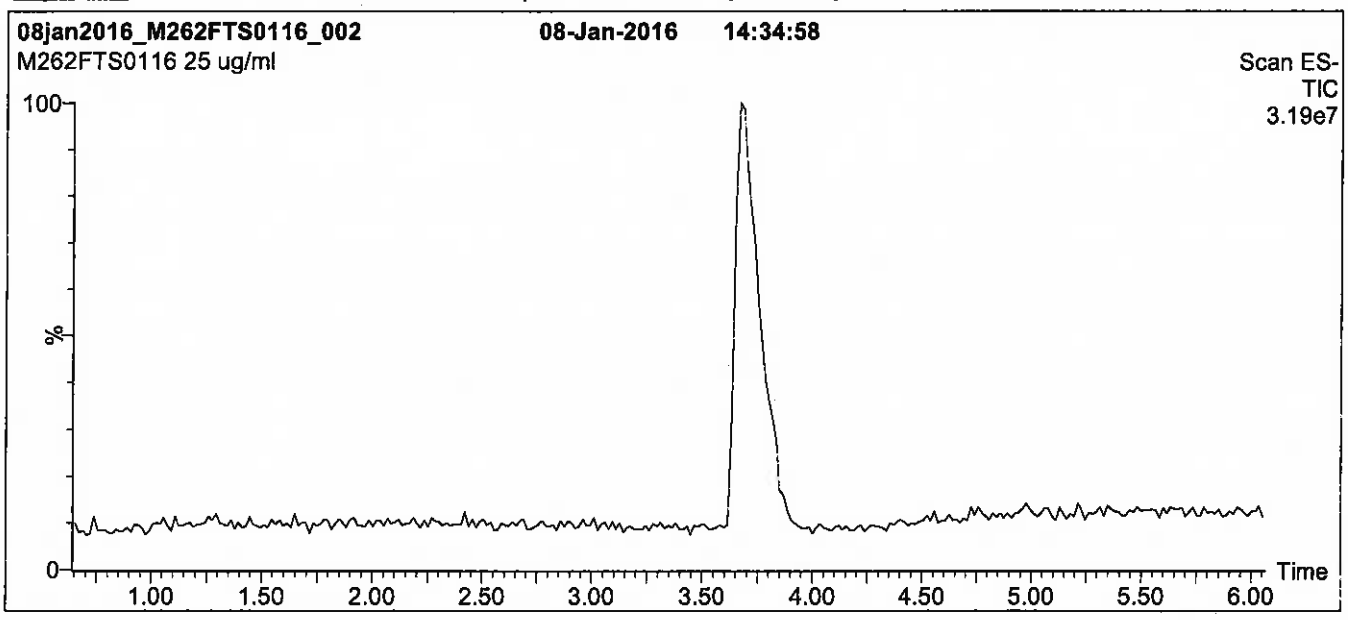
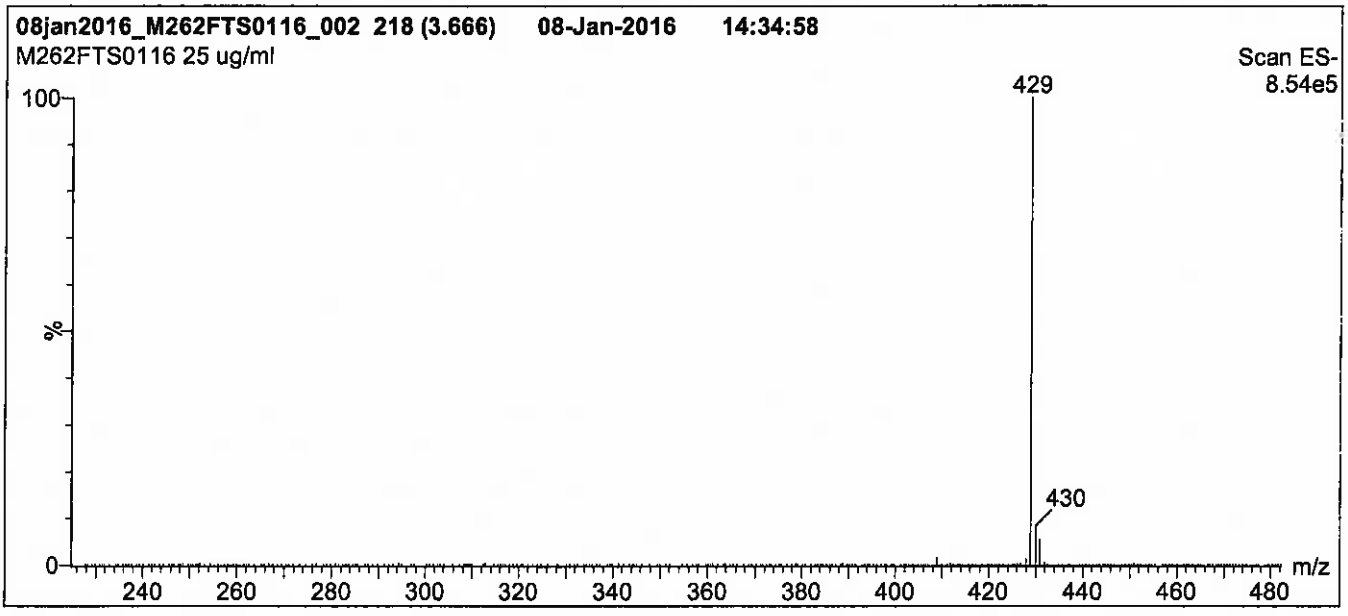
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

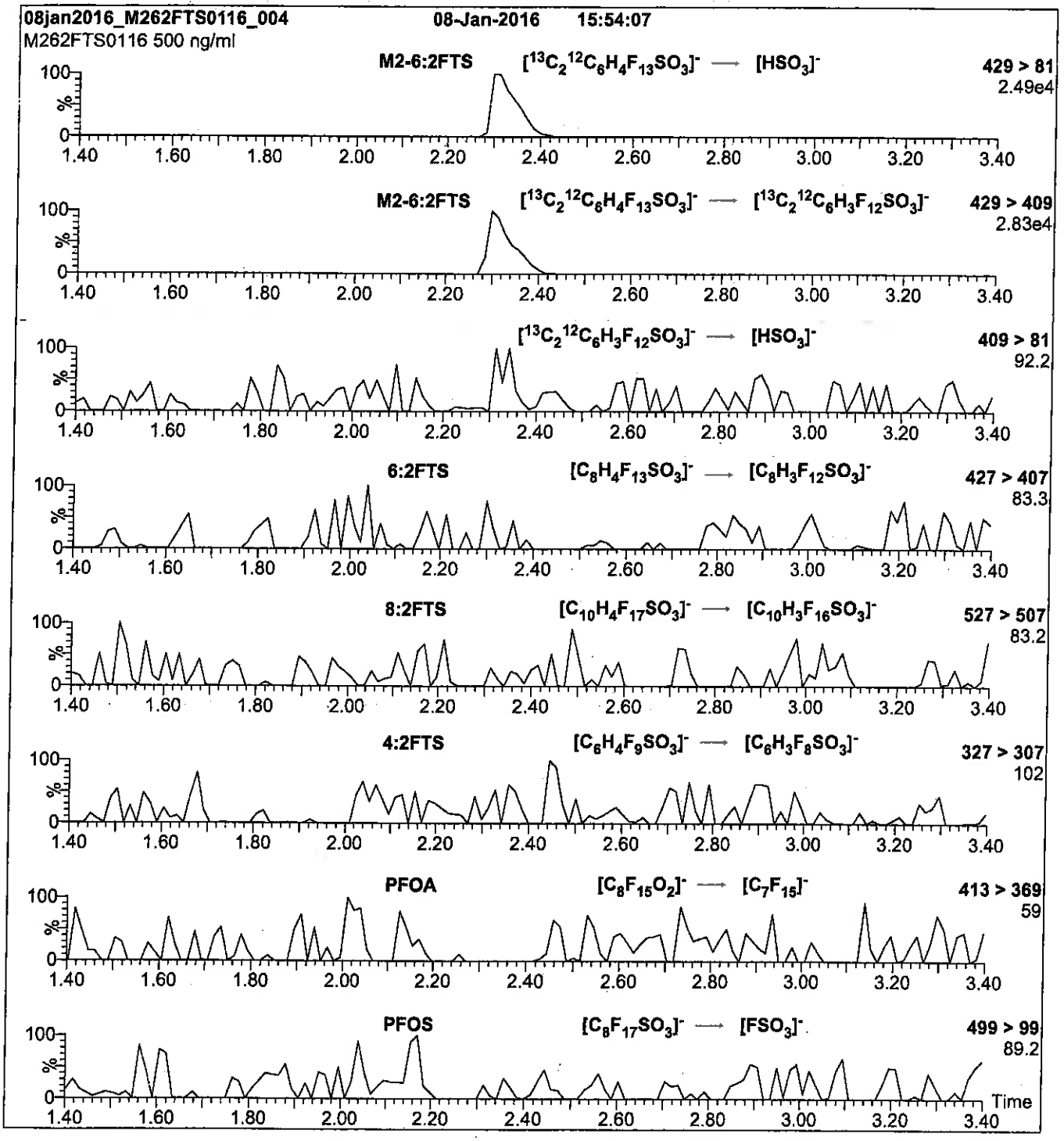
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-6:2FTS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 25

Reagent

LCM2-8:2FTS_00001

r: 7/16/15 BV
S · 7/22/15 STV

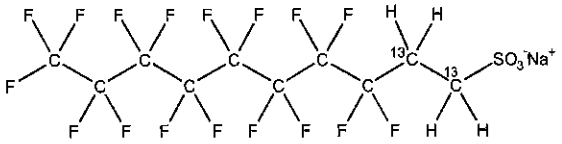
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0414

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/13/2014		
EXPIRY DATE: (mm/dd/yyyy)	04/13/2017		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/27/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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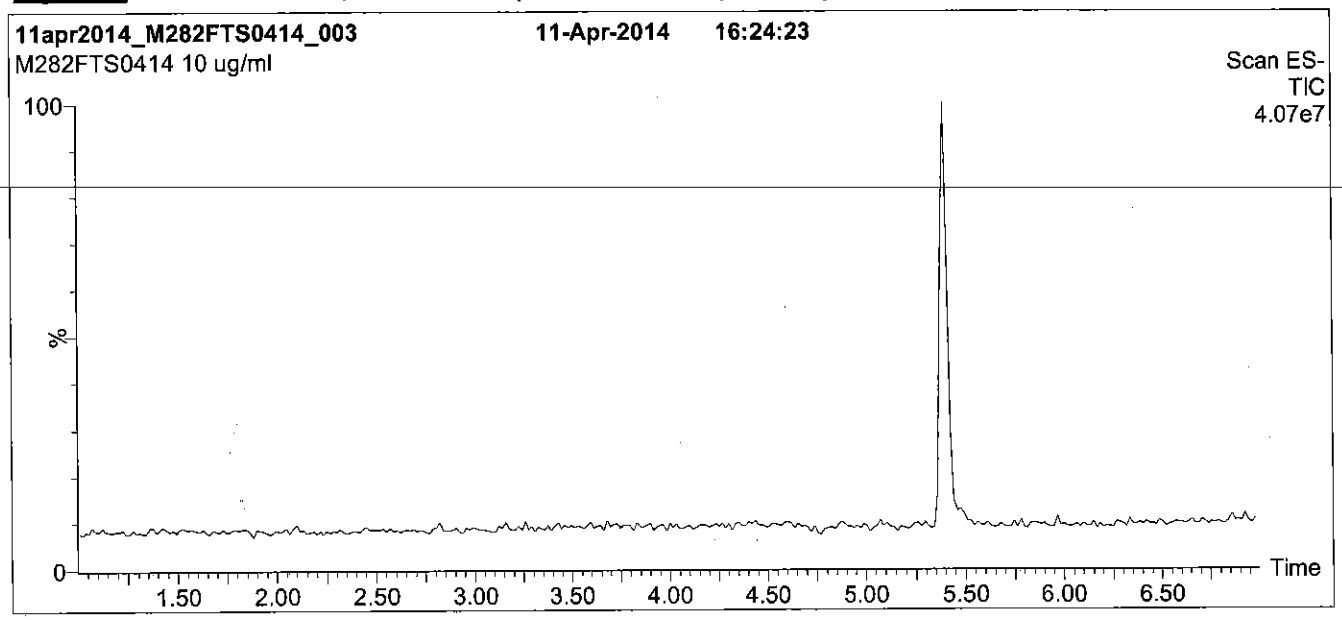
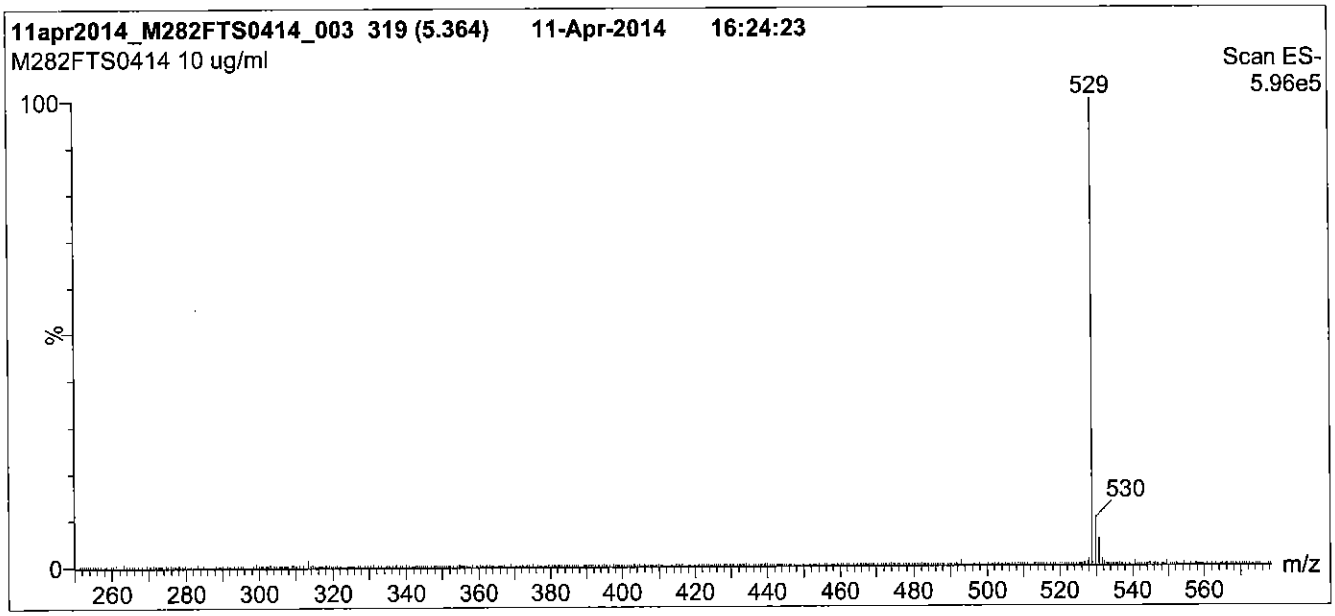




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

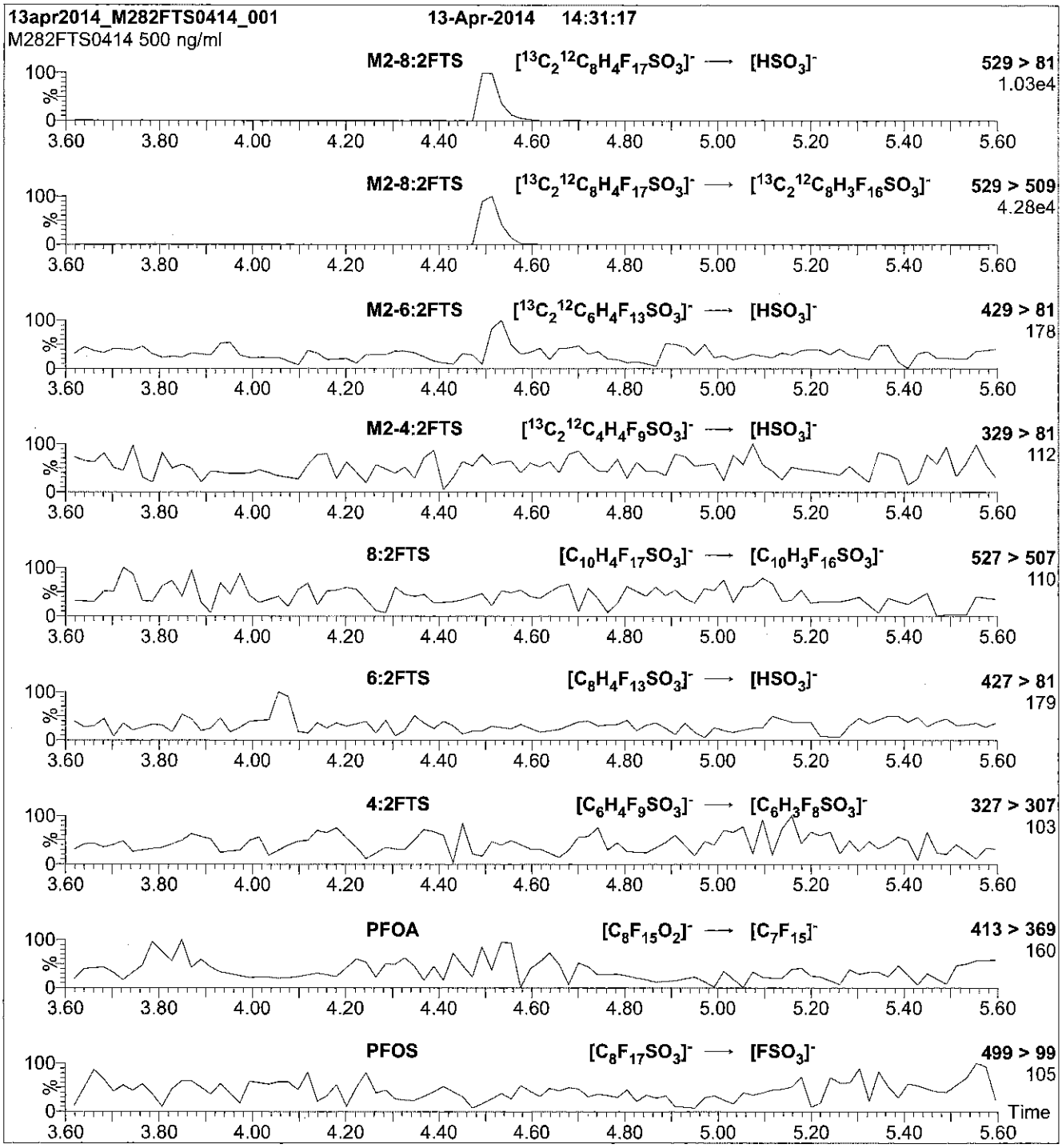
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

Figure 2: **M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-8:2FTS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 25

Reagent

LCM2-8:2FTS_00002

R: 7/6/16 cw

671602
ID: LCM2-8:2FTS_00002
Exp: 01/08/21 Prpd: CBW
M2-8:2FTS

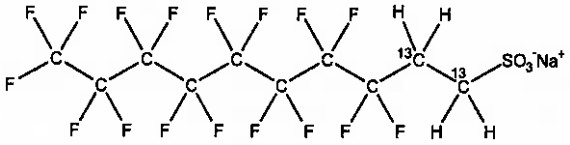
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0116

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	01/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/08/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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Certified By: B.G. Chittim **Date:** 01/18/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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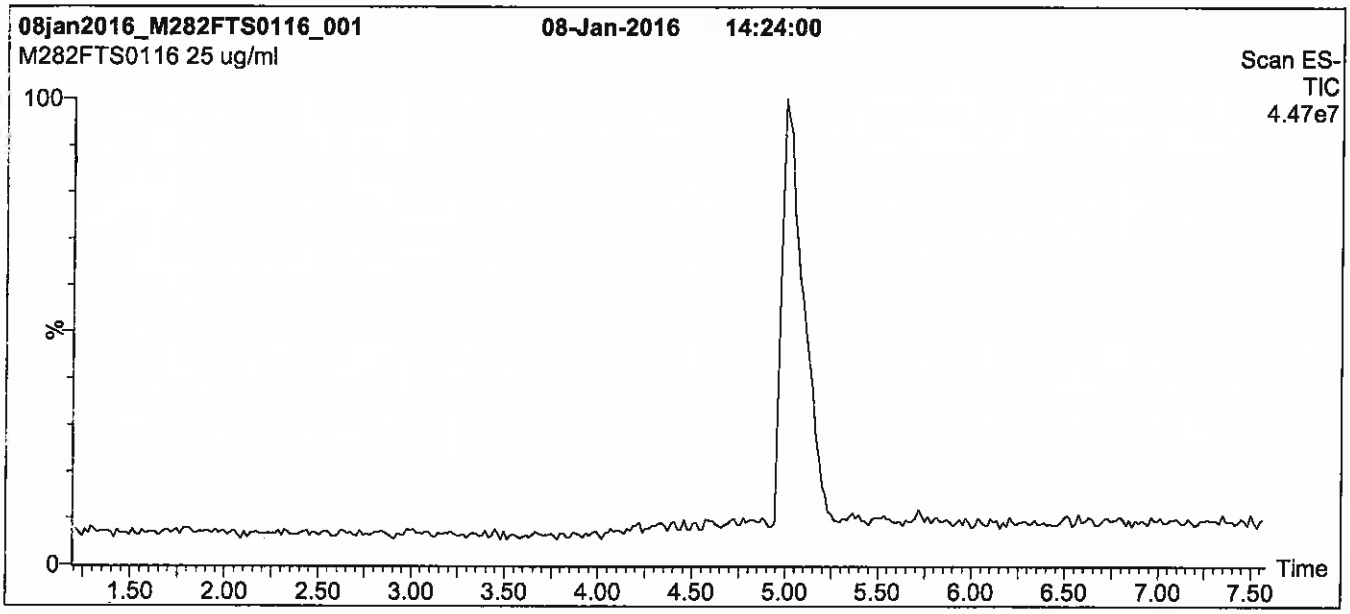
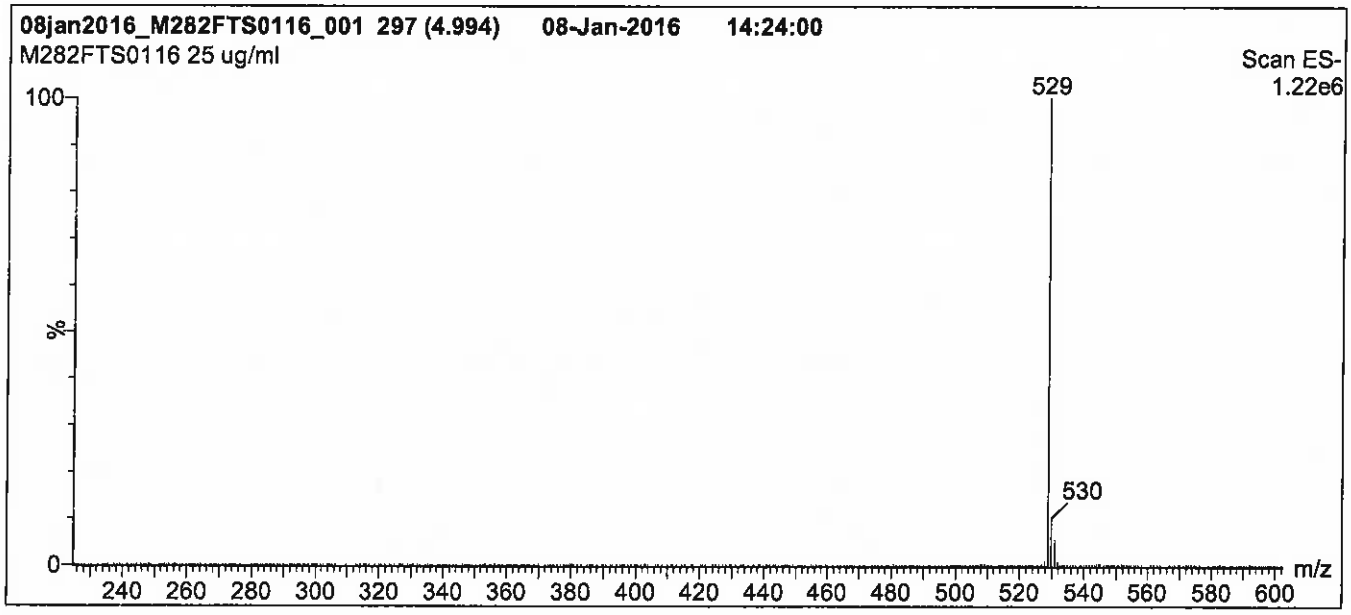




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

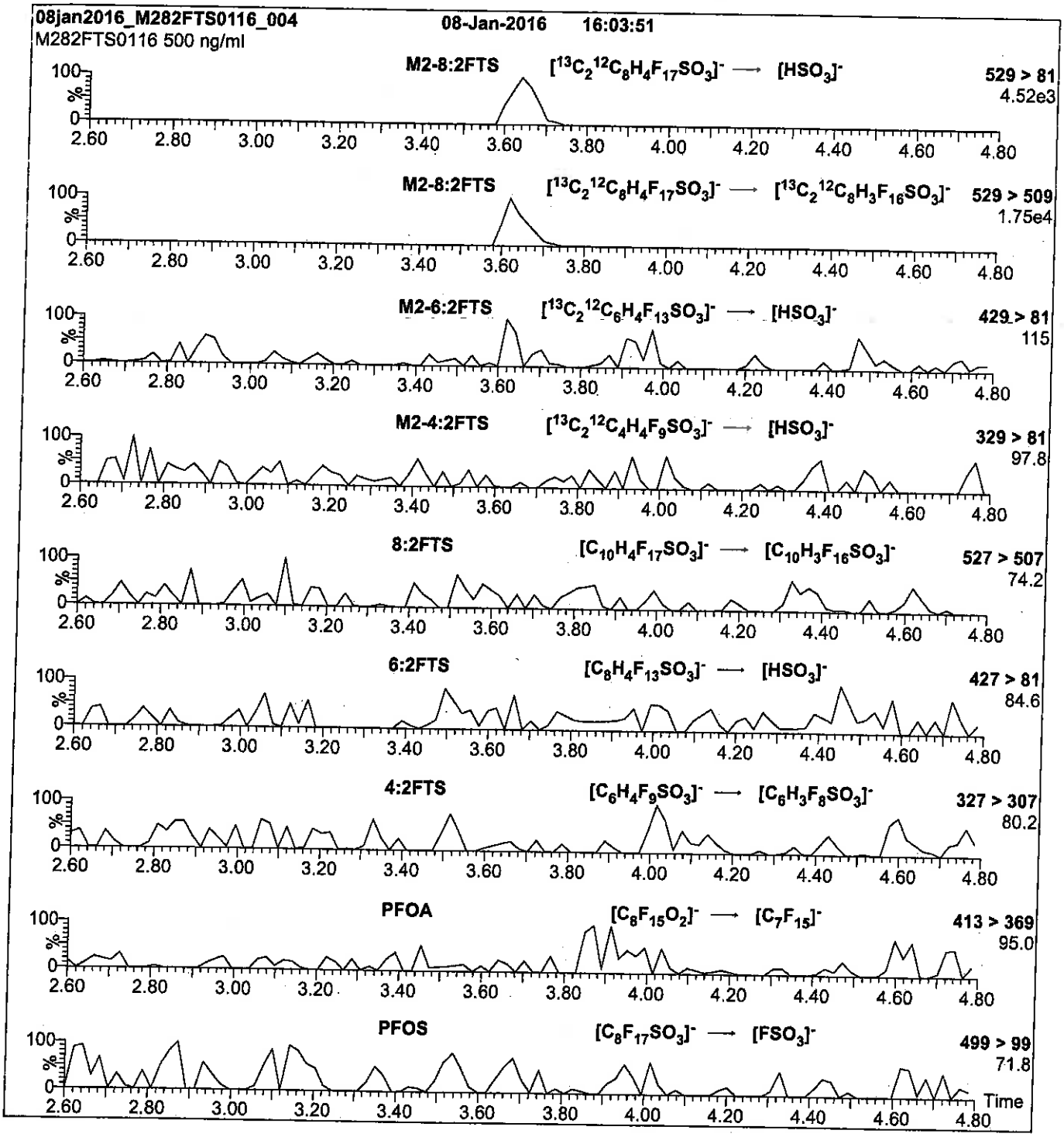
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-8:2FTS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

Reagent

LCM2PFHxDA_00008

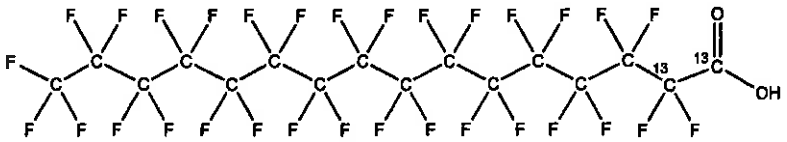
R: SBC 9/22/16

739512
ID: LCM2PFHxDA_00008
Exp: 01/07/21 Prpd: SBC
13C2-PFHxDA at 50ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFHxDA	**LOT NUMBER:**	M2PFHxDA1112
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{14}HF_{31}O_2$	**MOLECULAR WEIGHT:**	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	01/07/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/07/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

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Certified By: B.G. Chittim **Date:** 01/11/2016 (mm/dd/yyyy)

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UNCERTAINTY:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

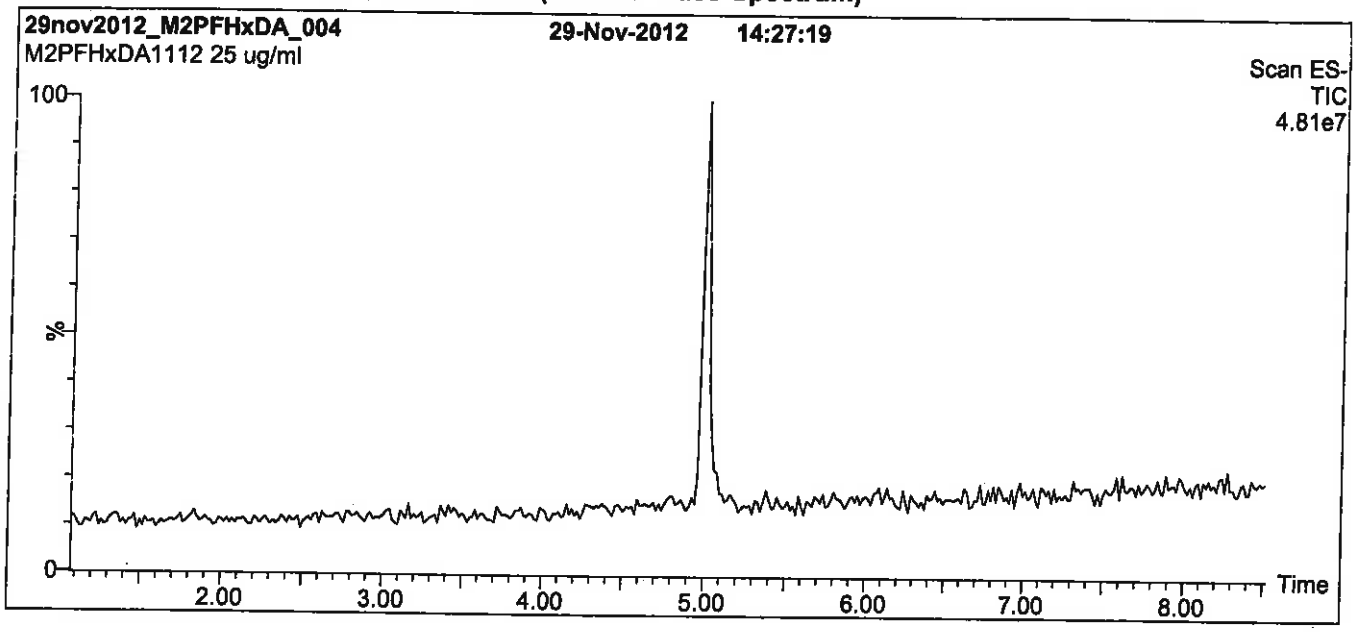
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

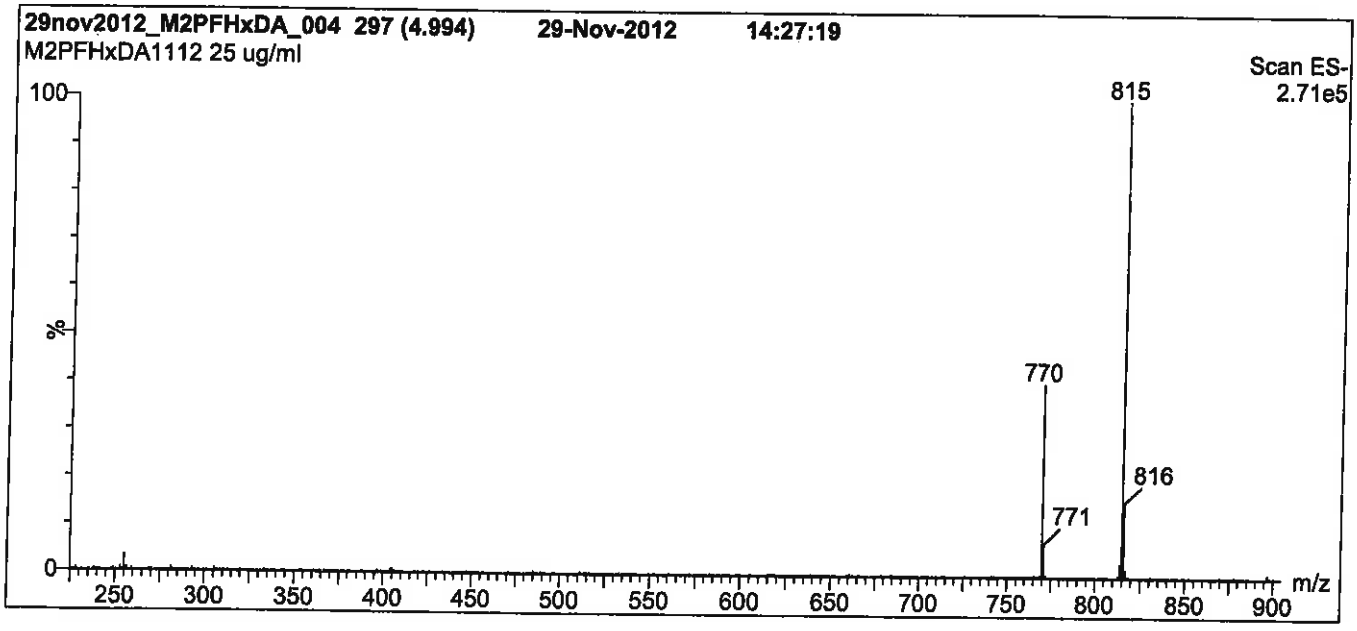
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

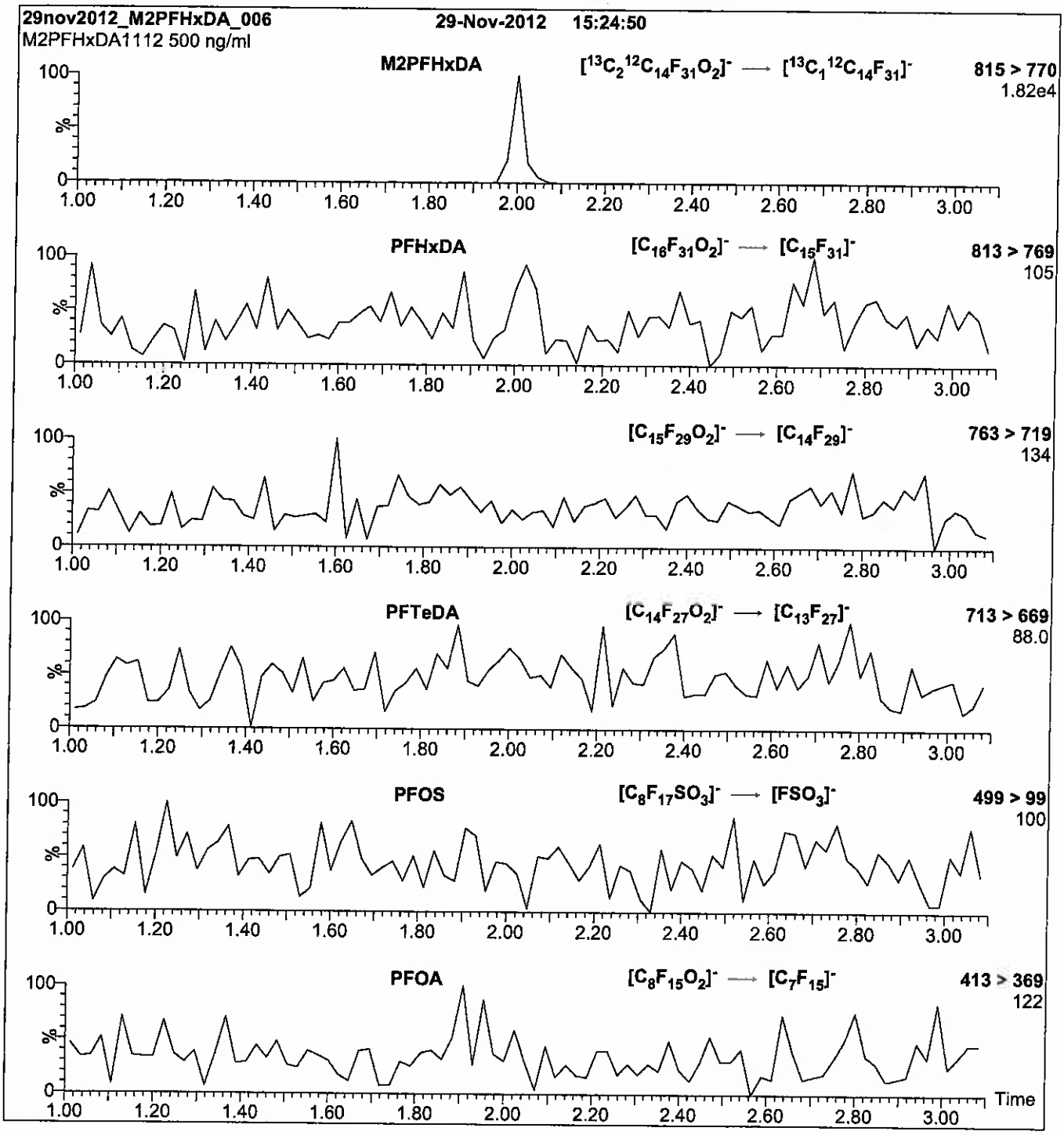
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M2PFHxDA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCM2PFTeDA_00007

Scanned 10/14/16 R: SBC 9/22/16

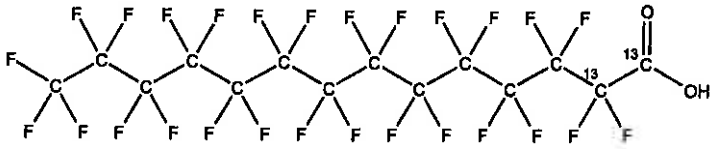
738563
ID: LCM2PFTeDA_00007
Exp: 12/07/20 Prpd: SBC
13C2-PFTeDA at 50ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFTeDA
LOT NUMBER: M2PFTeDA1115
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{12}HF_{27}O_2$	**MOLECULAR WEIGHT:**	716.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	12/07/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/07/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/08/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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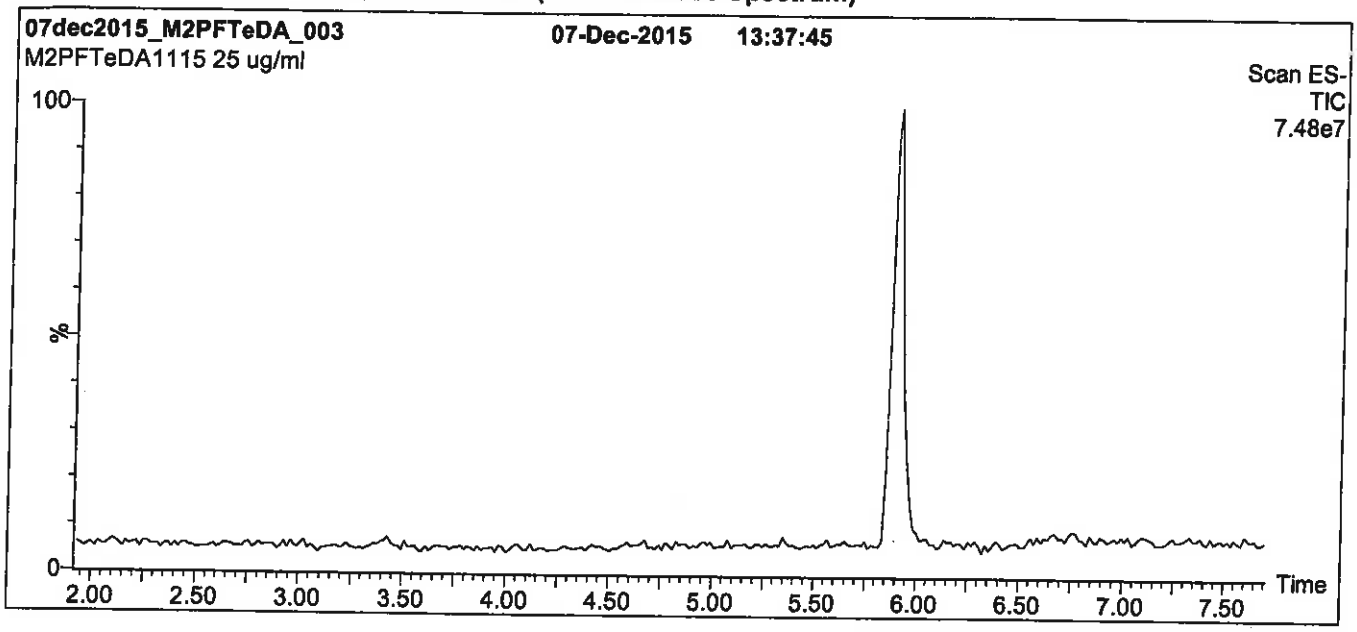
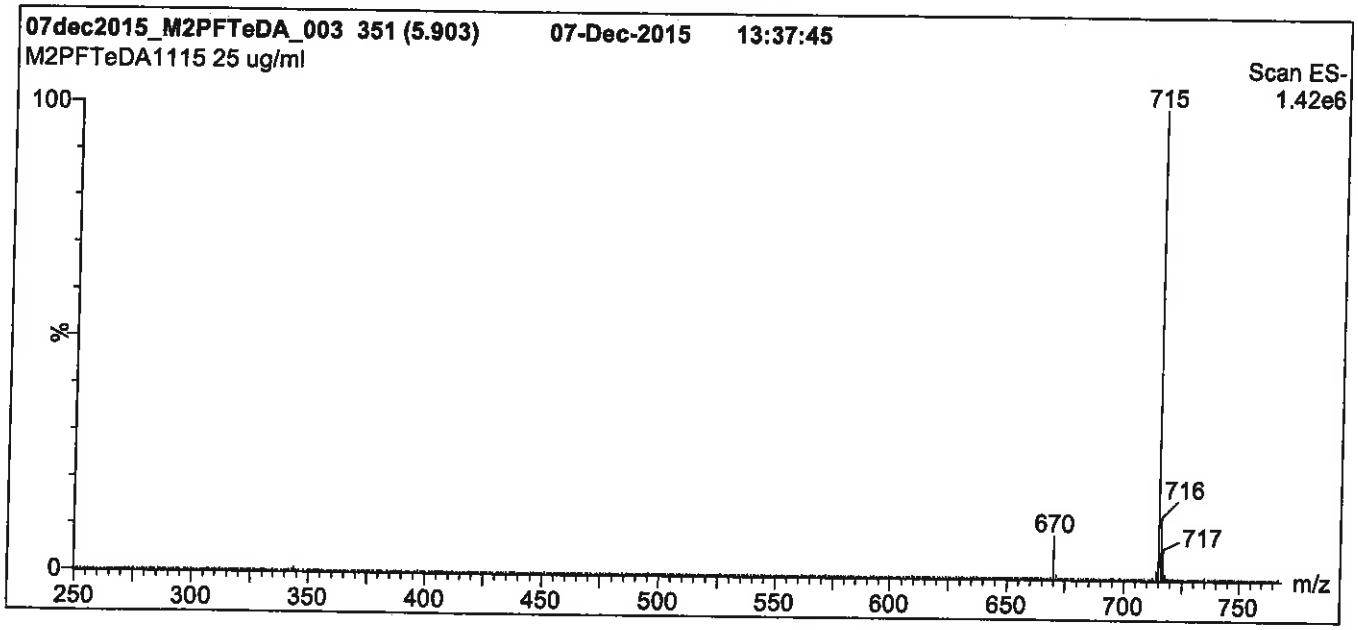
Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

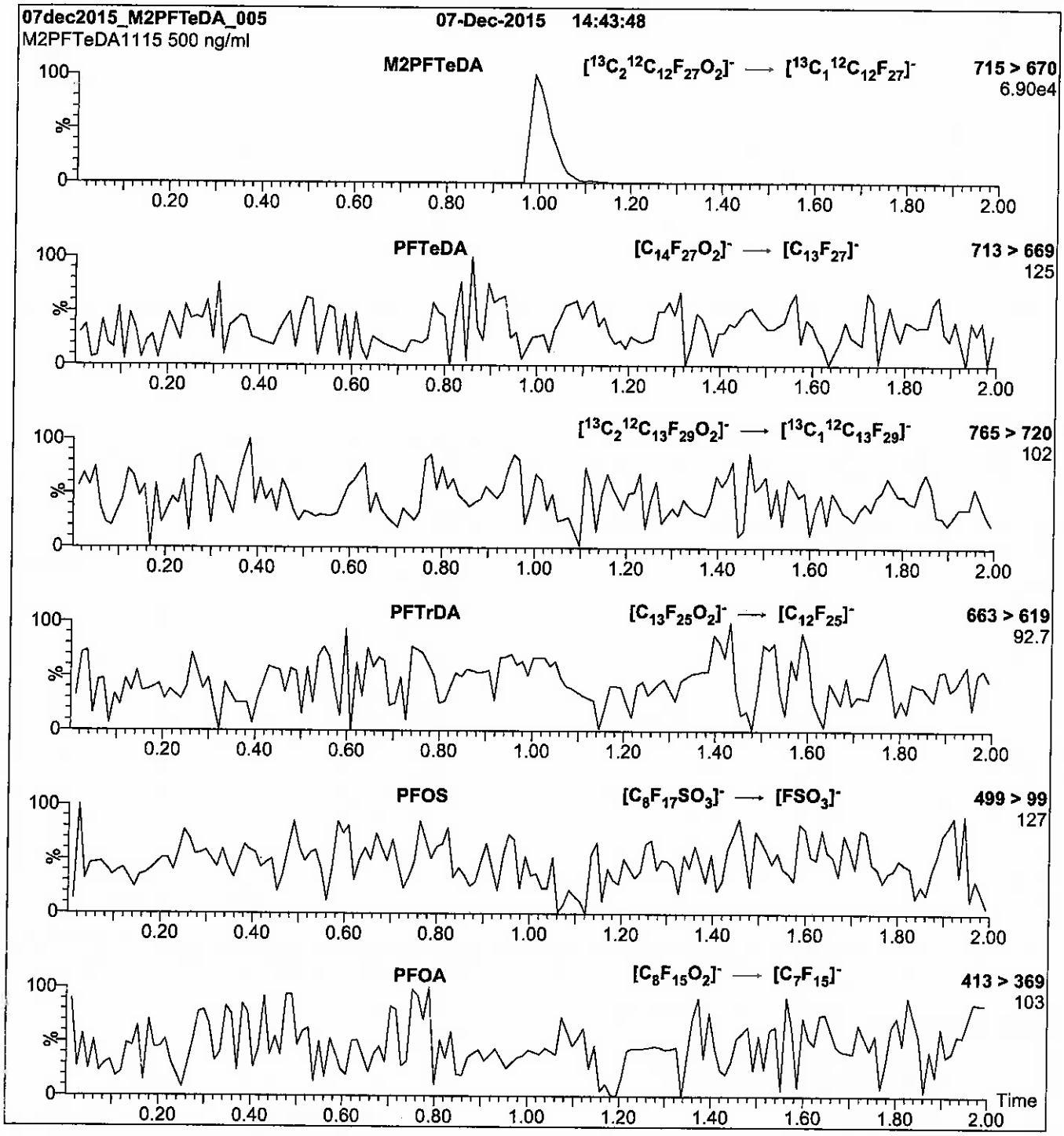
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFTeDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00007

R: SBC 9/22/16

739567
ID: LCM4PFHPA_00007
Exp: 05/27/21 Prpd: SBC
13C4-Perfluoroheptanoic a

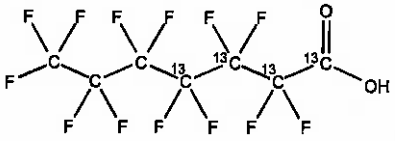
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS

DOCUMENTATION

Scanned 10/14/16 SBC

PRODUCT CODE:	M4PFHpA	**LOT NUMBER:**	M4PFHpA0516
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_3HF_{13}O_2$	**MOLECULAR WEIGHT:**	368.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/27/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/27/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/05/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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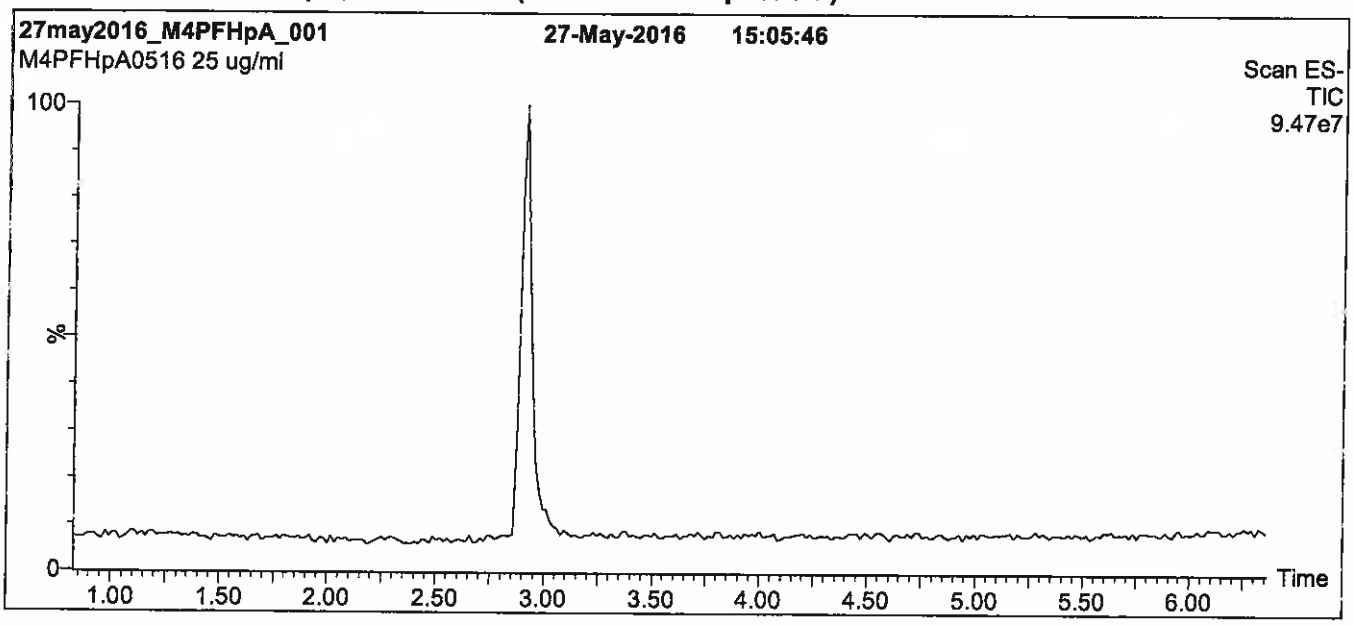
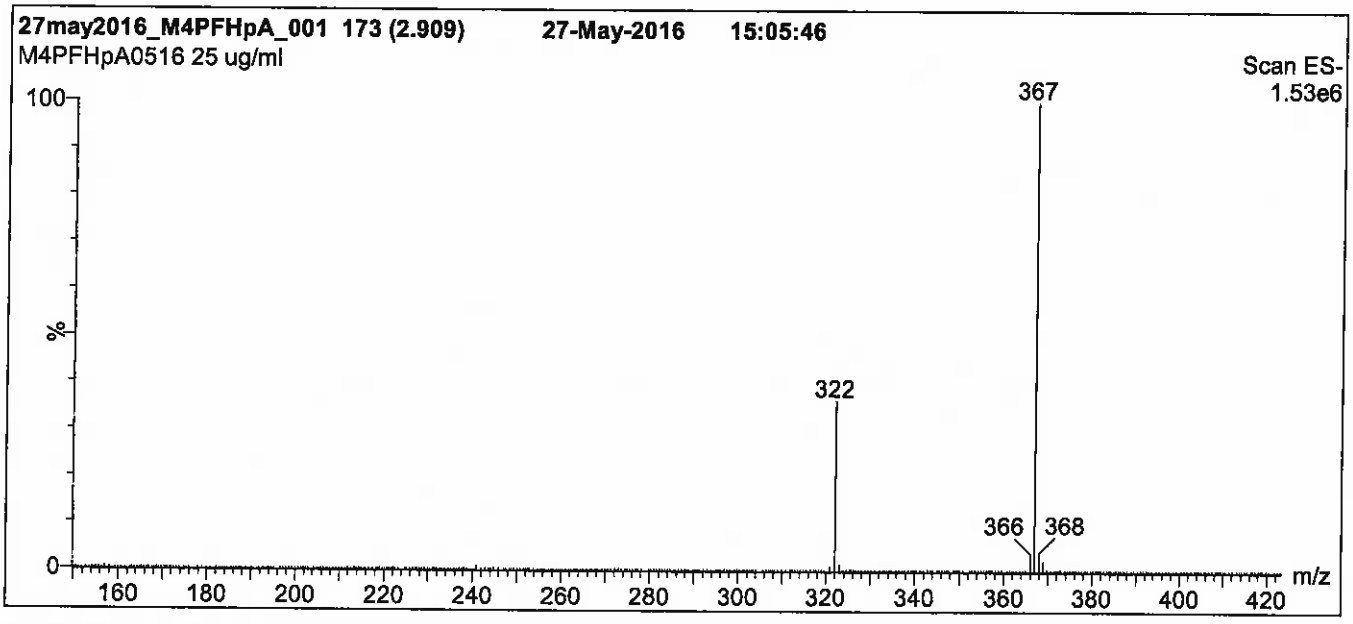
Figure 1: **M4PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

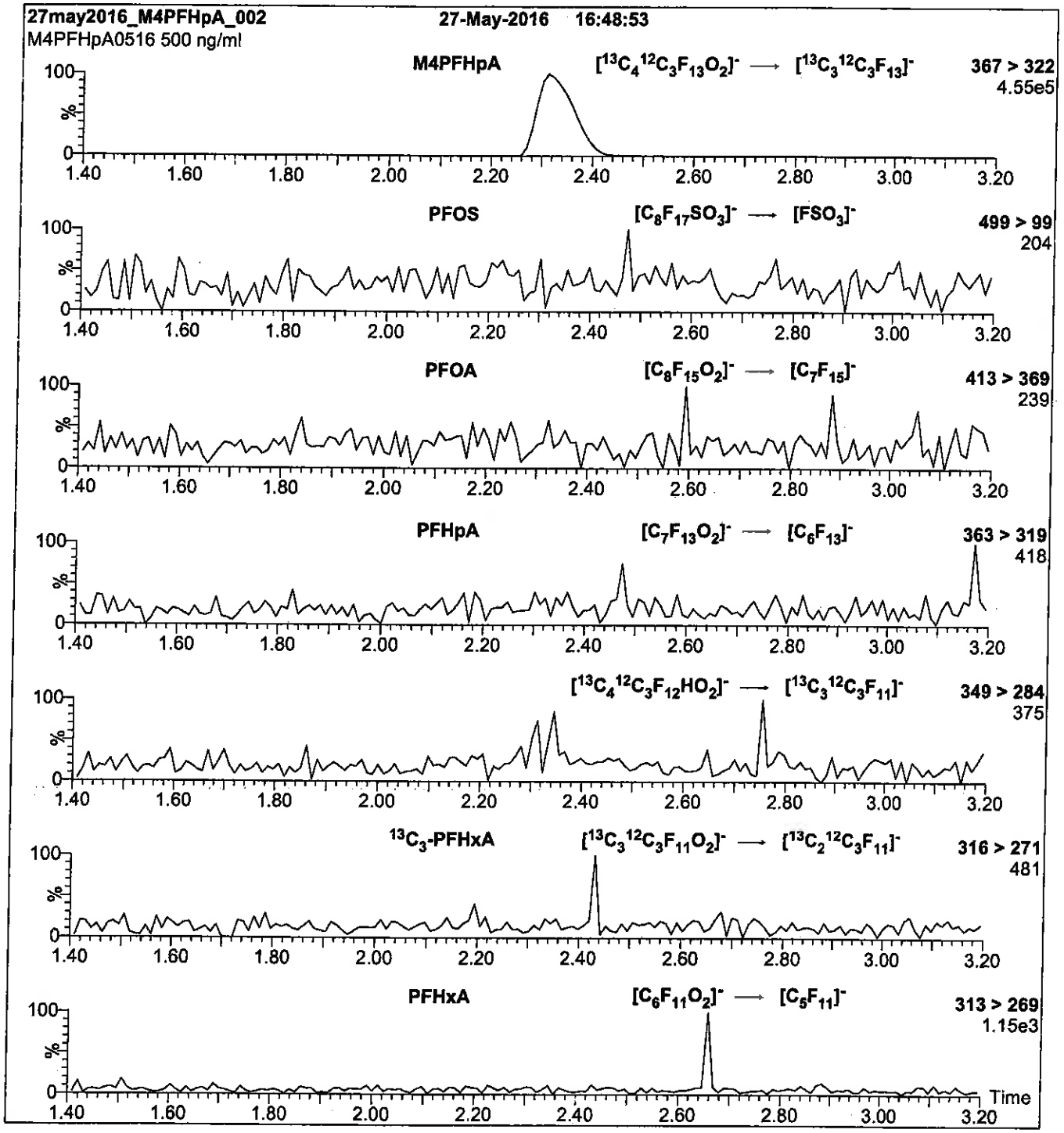
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Figure 2: **M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M4PFHpA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM5PFPEA_00008

R: SBC 9/22/16

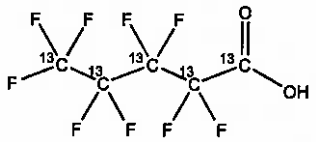
739590
ID: LCM5PFPEA_00008
Exp: 05/22/20 Prpd: SBC
13C5-Perfluoropentanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE:	M5PFPeA	**LOT NUMBER:**	M5PFPeA0515
COMPOUND:	Perfluoro-n-[$^{13}C_5$]pentanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_5HF_9O_2$	**MOLECULAR WEIGHT:**	269.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	05/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/22/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/25/2015 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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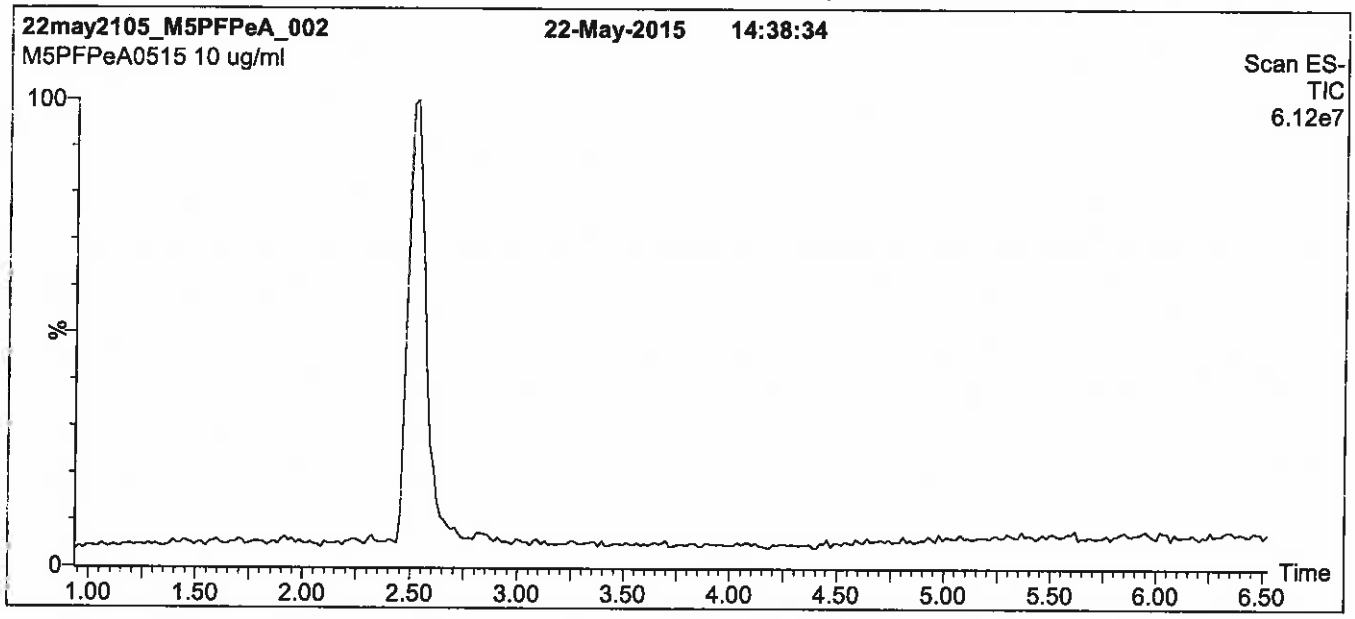
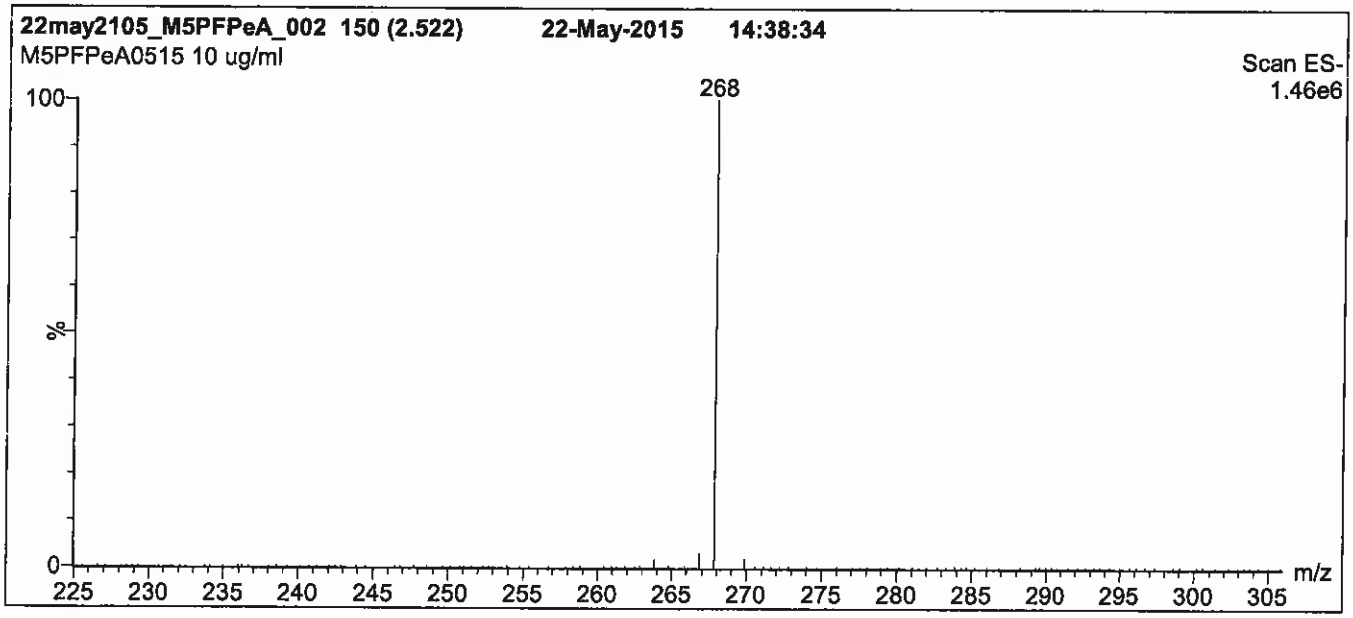
Figure 1: **M5PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

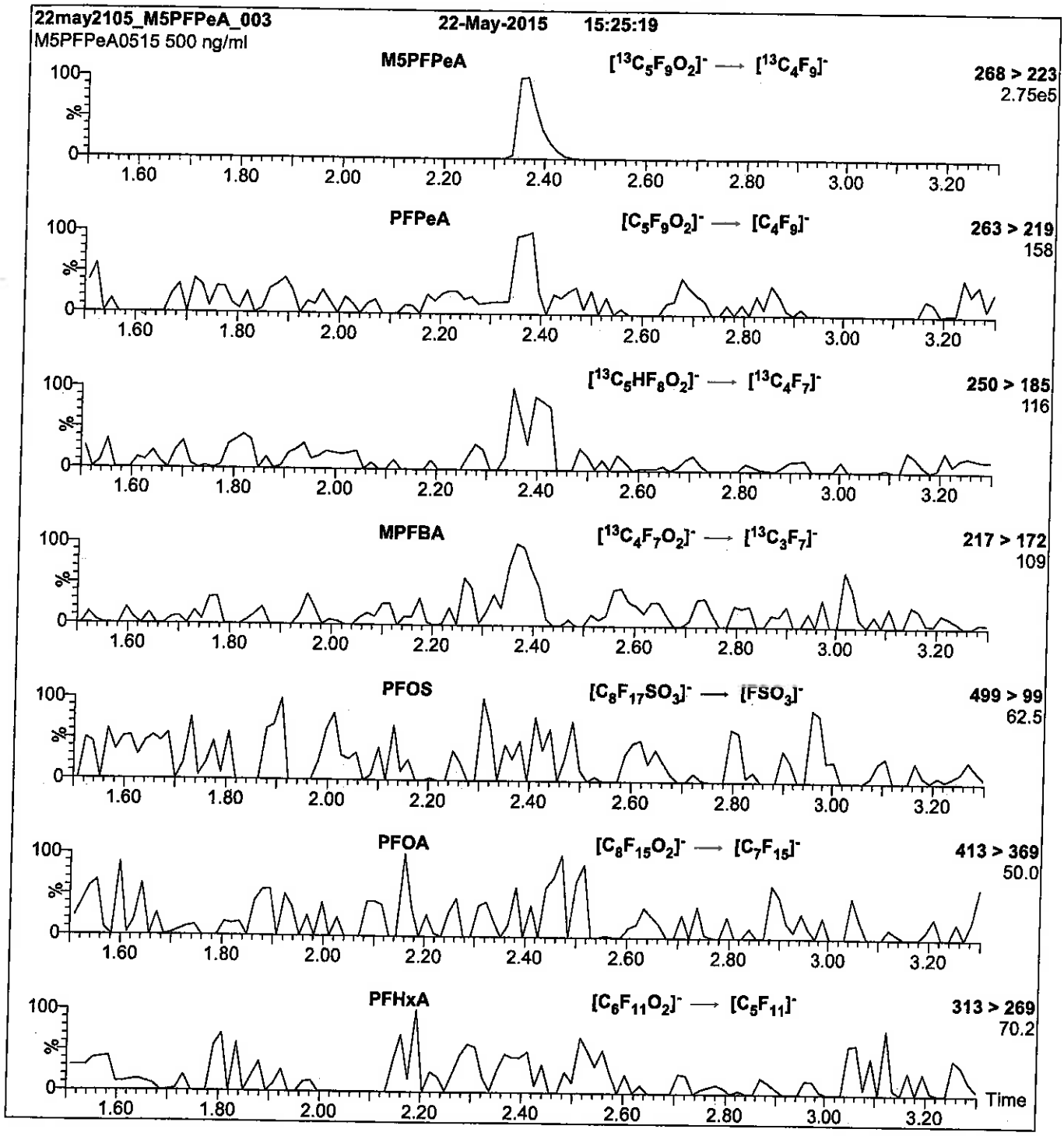
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M5PFPeA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 9

Reagent

LCM8FOSA_00011

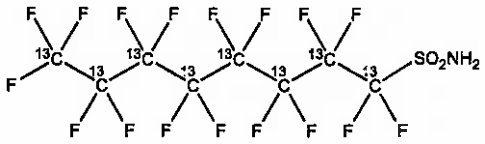
R: SBC 9/22/16
Issued 10/14/16 SBC

739615
ID: LCM8FOSA_00011
Exp: 12/22/17 Prpd: SBC
13C8-Perfluorooctanesulfo

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M8FOSA-I	**LOT NUMBER:**	M8FOSA1215I
COMPOUND:	Perfluoro-1-[$^{13}C_8$]octanesulfonamide		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	12/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/22/2017		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/14/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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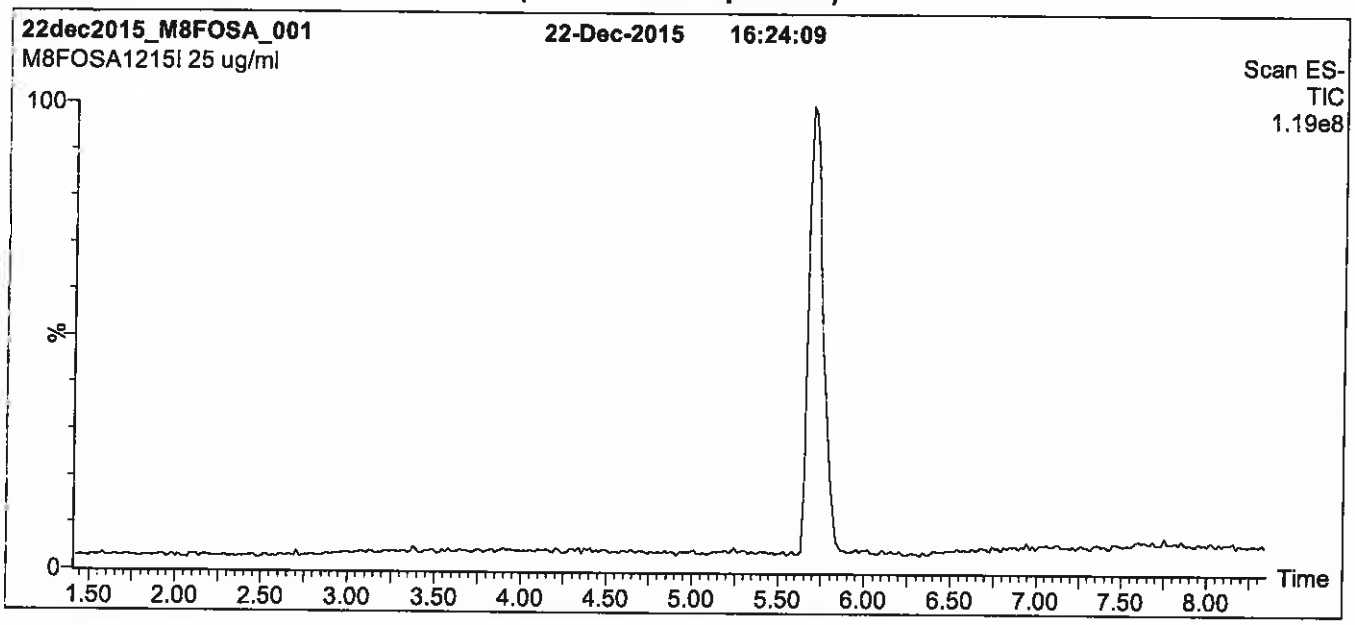
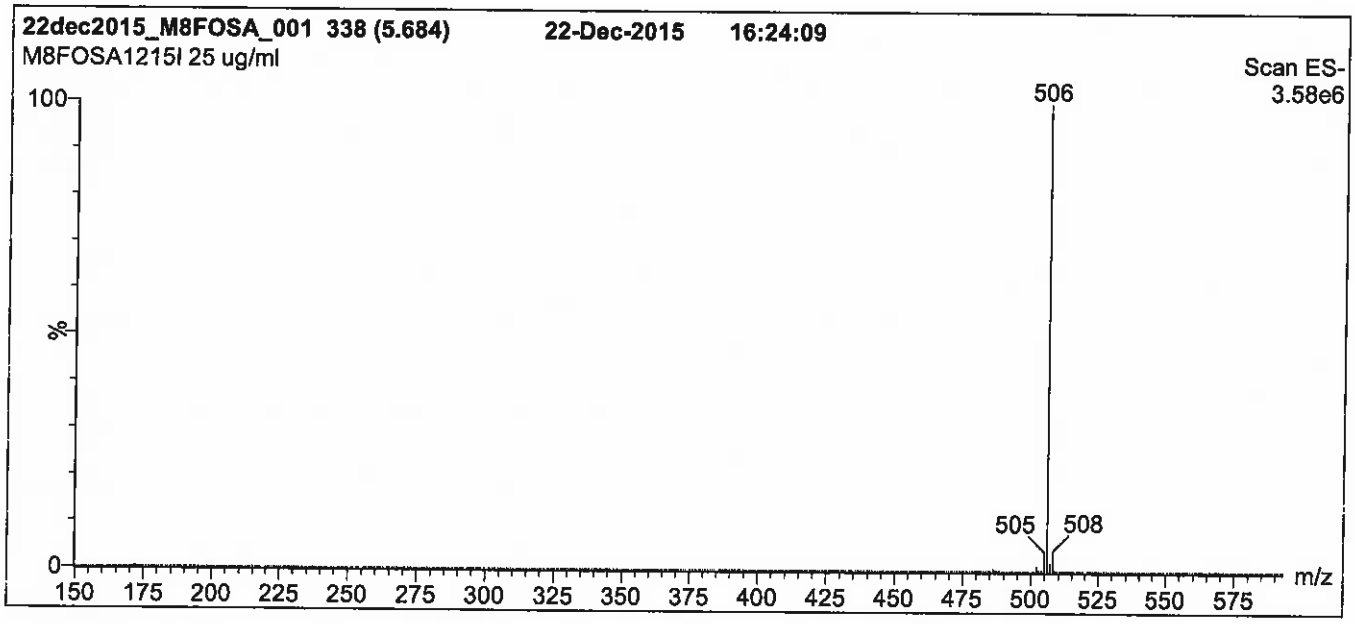
Figure 1: **M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

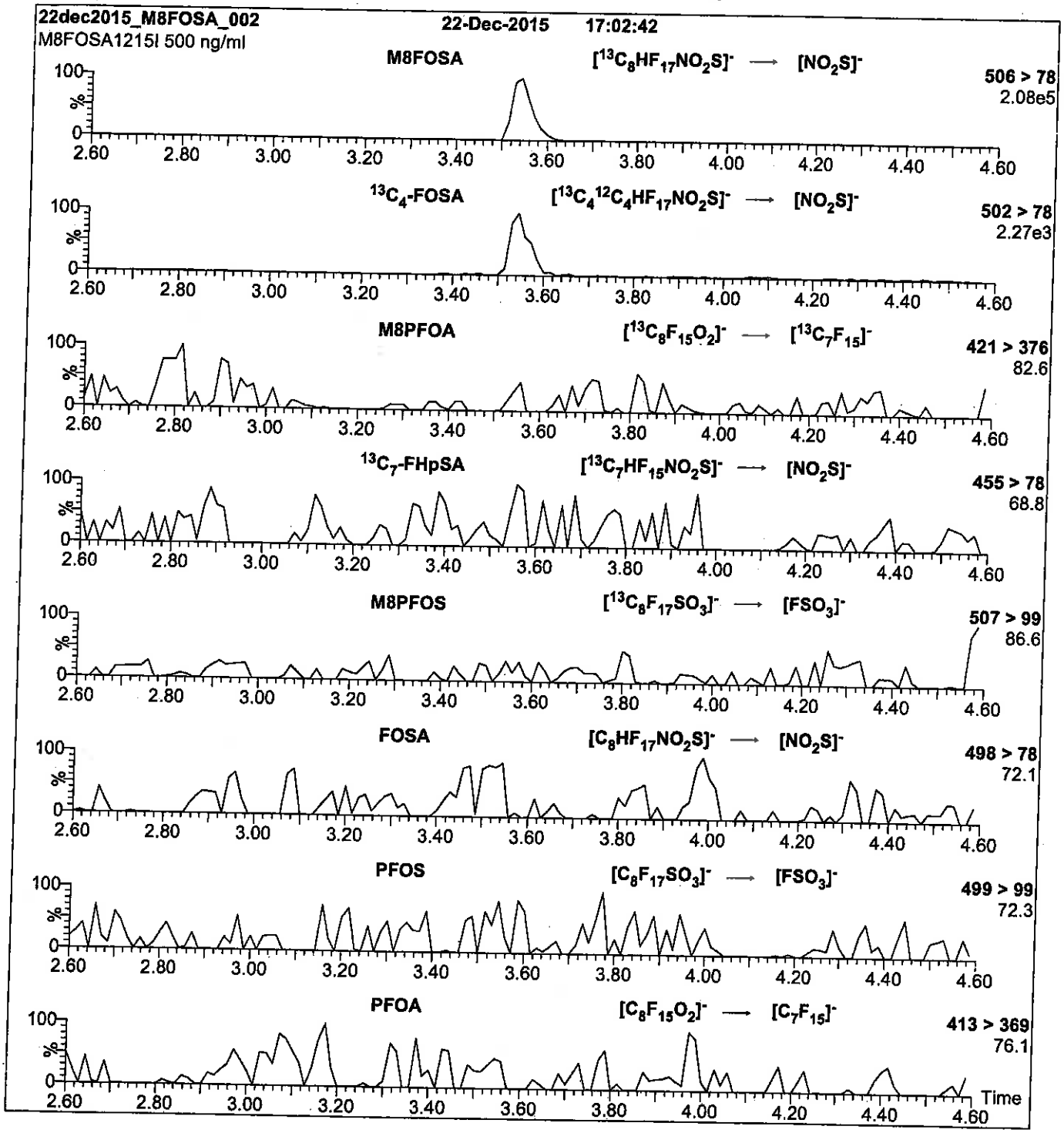
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Figure 2: **M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M8FOSA-I)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00008

R: SBC 9/22/16

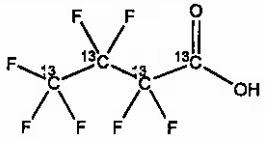
739593
ID: LCMPFBA_00008
Exp: 05/24/21 Prpd: SBC
13C4-Perfluorobutanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE:	MPFBA	**LOT NUMBER:**	MPFBA0516
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4HF_7O_2$	**MOLECULAR WEIGHT:**	218.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/30/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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TRACEABILITY:

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

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CALA

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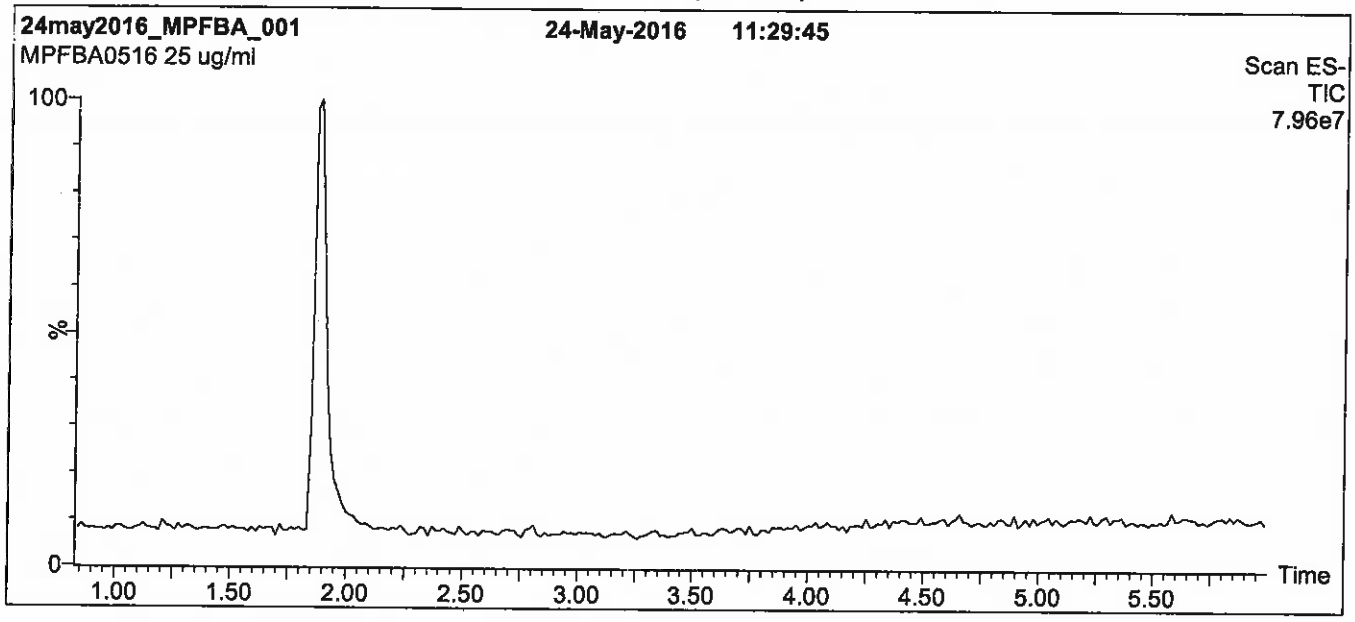
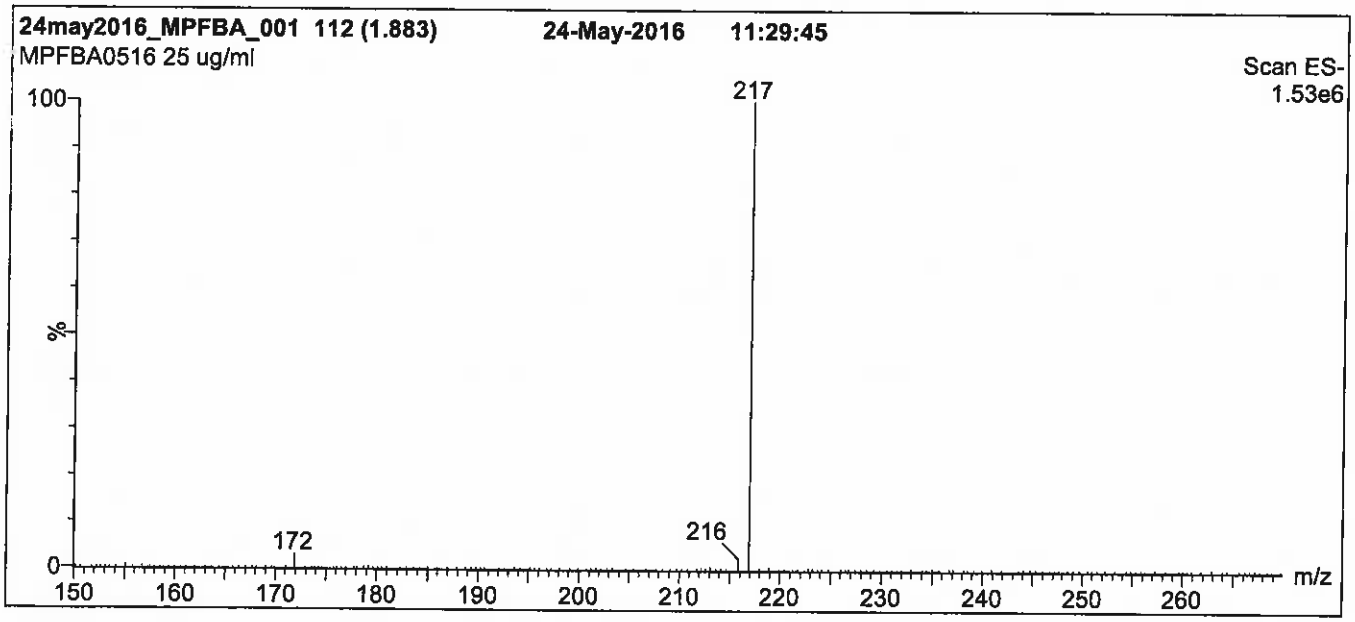
Figure 1: **MPFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

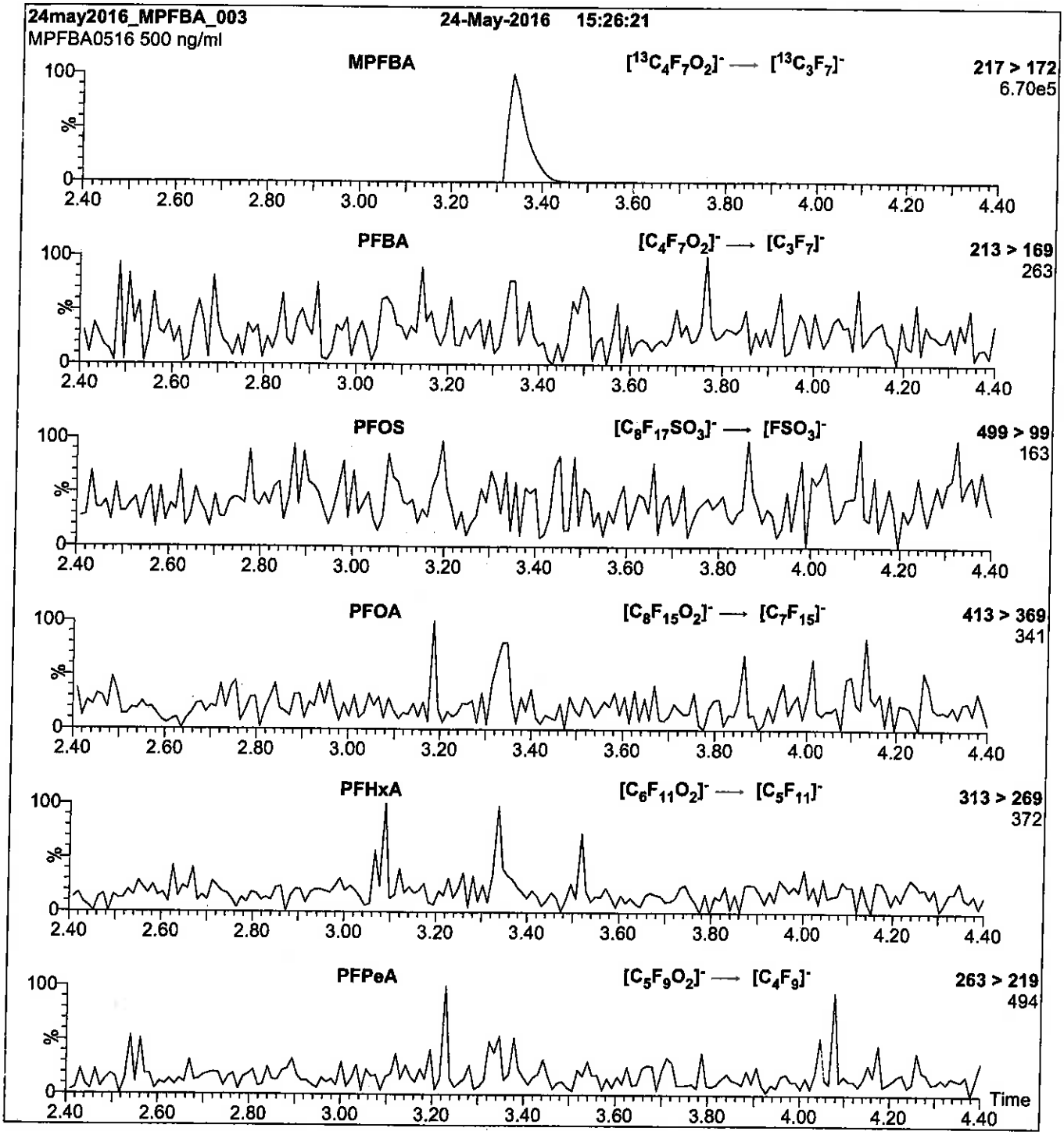
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 10

Reagent

LCMPFDA_00011

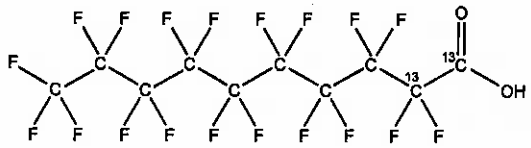
Scanned 10/14/16 R: SBC 9/22/16

739609
ID: LCMPFDA_00011
Exp: 08/19/20 Prpd: SBC
13C2-Perfluorodecanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFDA	**LOT NUMBER:**	MPFDA0815
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	08/19/2015		
EXPIRY DATE: (mm/dd/yyyy)	08/19/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/21/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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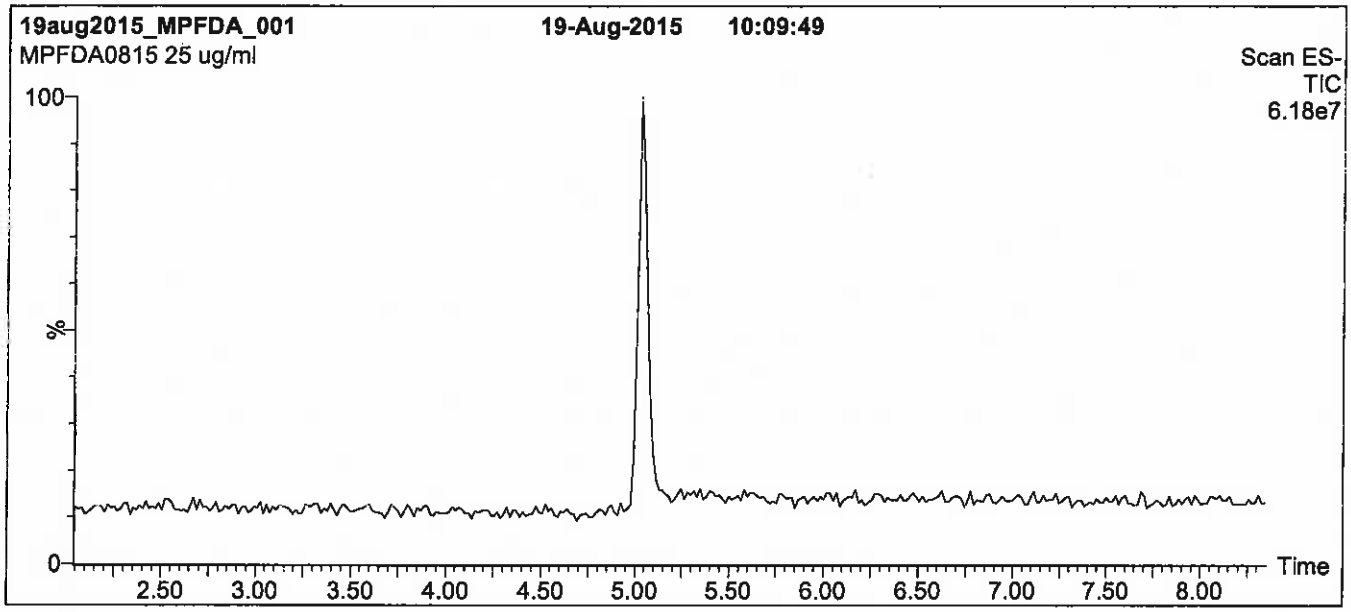

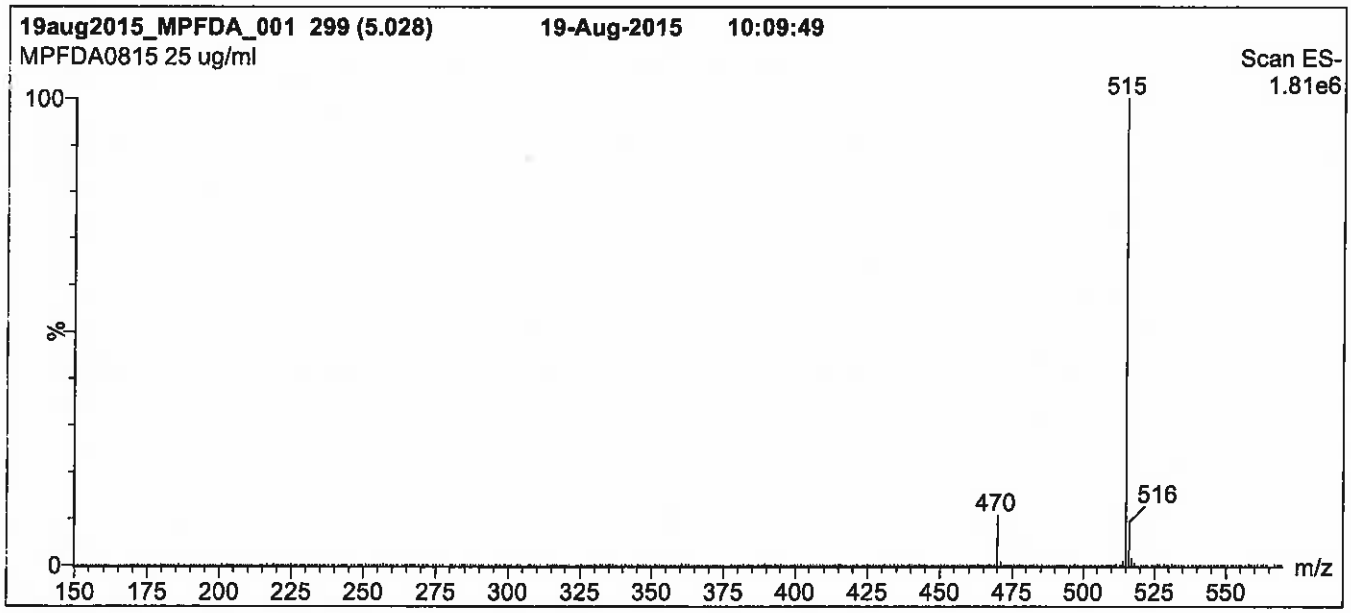

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1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
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before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

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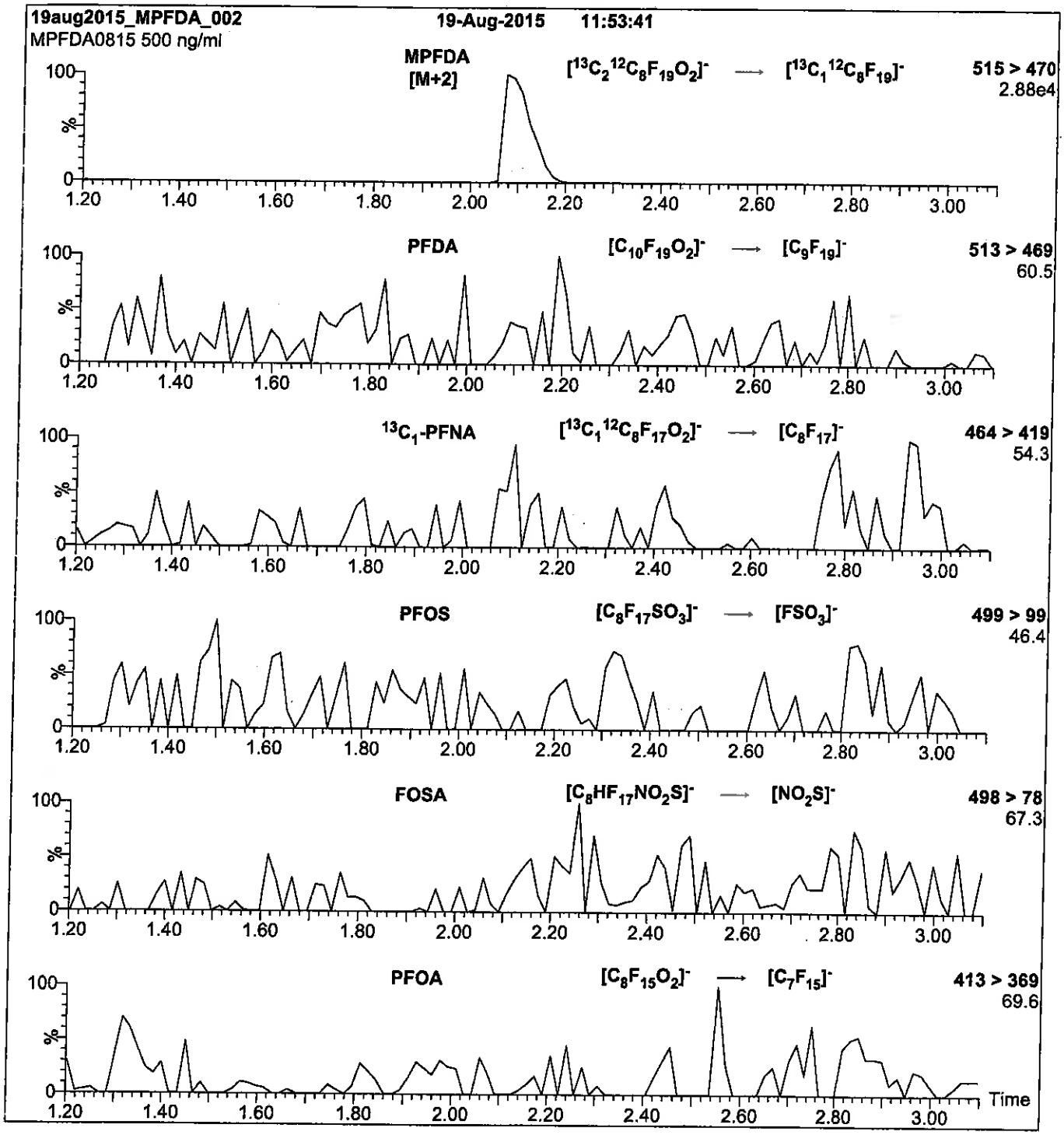
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFDoA_00008

R: SBC 9/22/16

739598
ID: LCMPFDoA_00008
Exp: 04/08/21 Prpd: SBC
13C2-Perfluorododecanoic

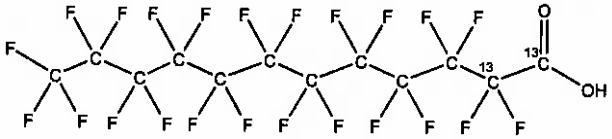
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE: MPFDoA
LOT NUMBER: MPFDoA0416
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_{10}HF_{23}O_2$
MOLECULAR WEIGHT: 616.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 04/08/2016
EXPIRY DATE: (mm/dd/yyyy) 04/08/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/15/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

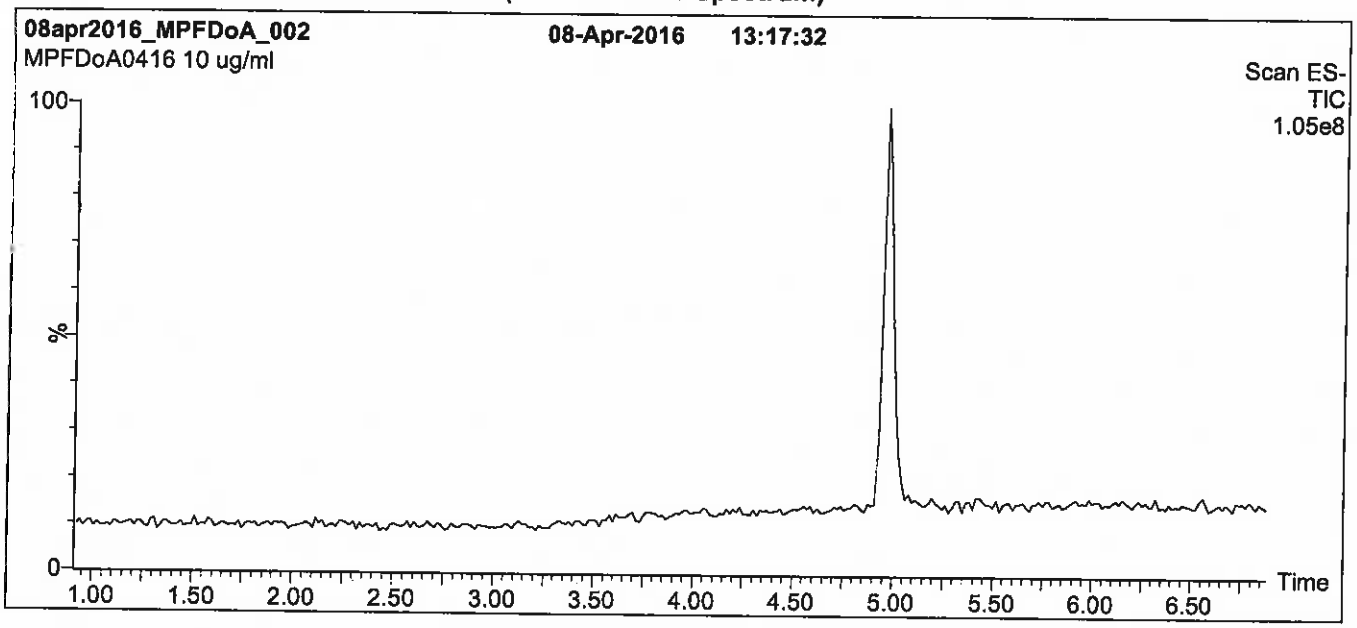
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

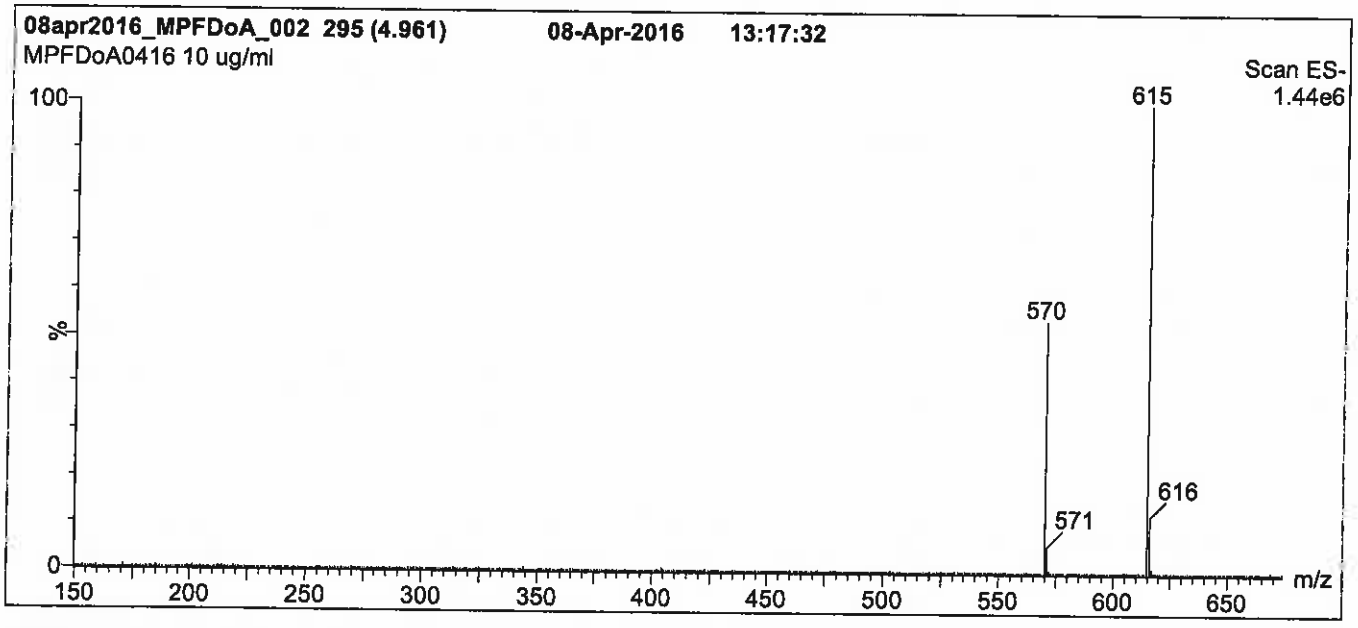
QUALITY MANAGEMENT:

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

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

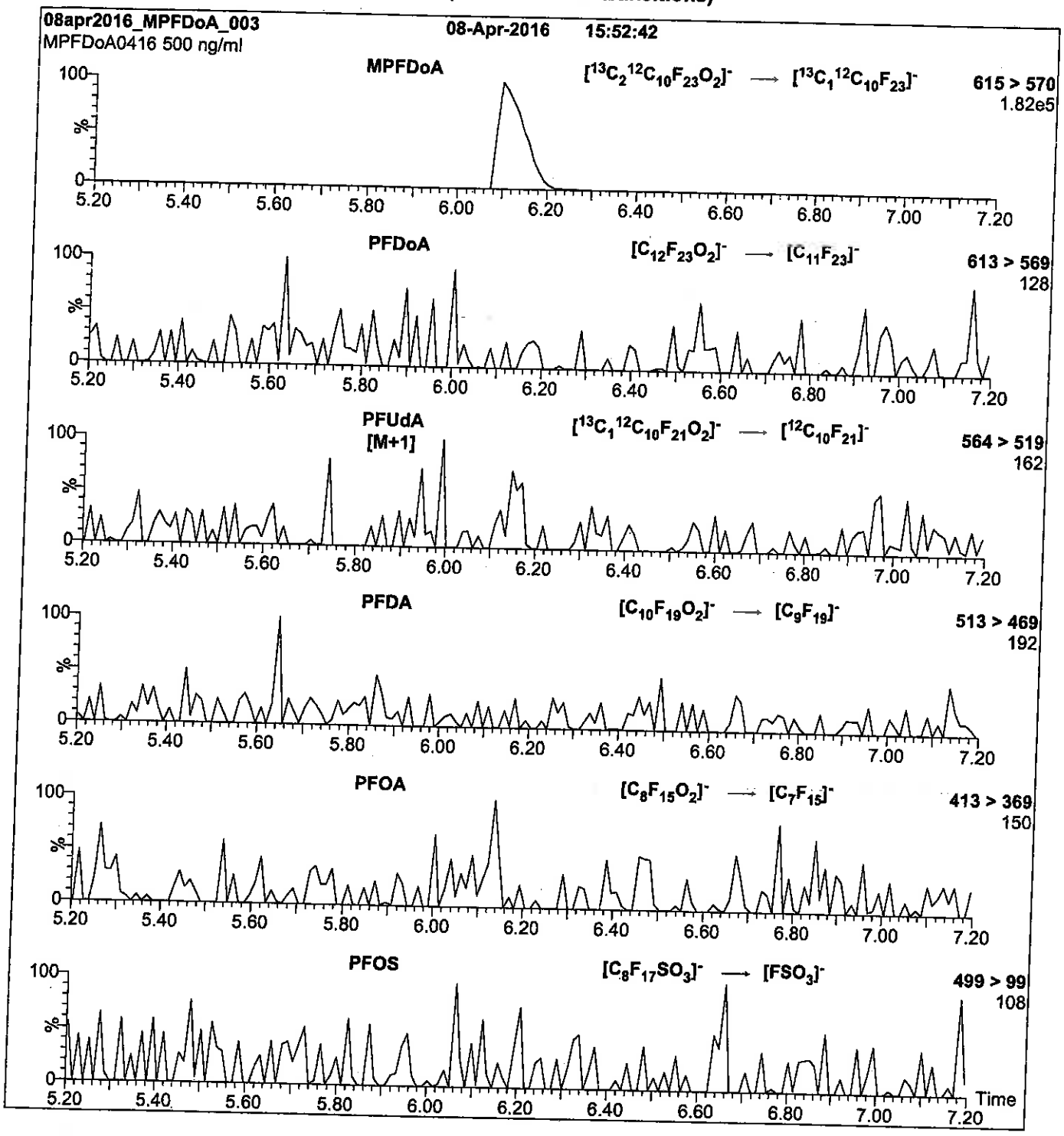
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml MPFDoA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00012

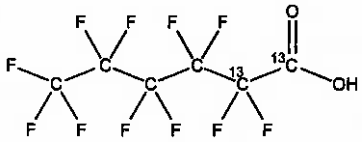
Scanned 10/14/16 JR R: SBC 9/22/16

739612
ID: LCMPFHxA_00012
Exp: 04/08/21 Prpd: SBC
13C2-Perfluorohexanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFHxA	**LOT NUMBER:**	MPFHxA0416
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99%^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/08/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/29/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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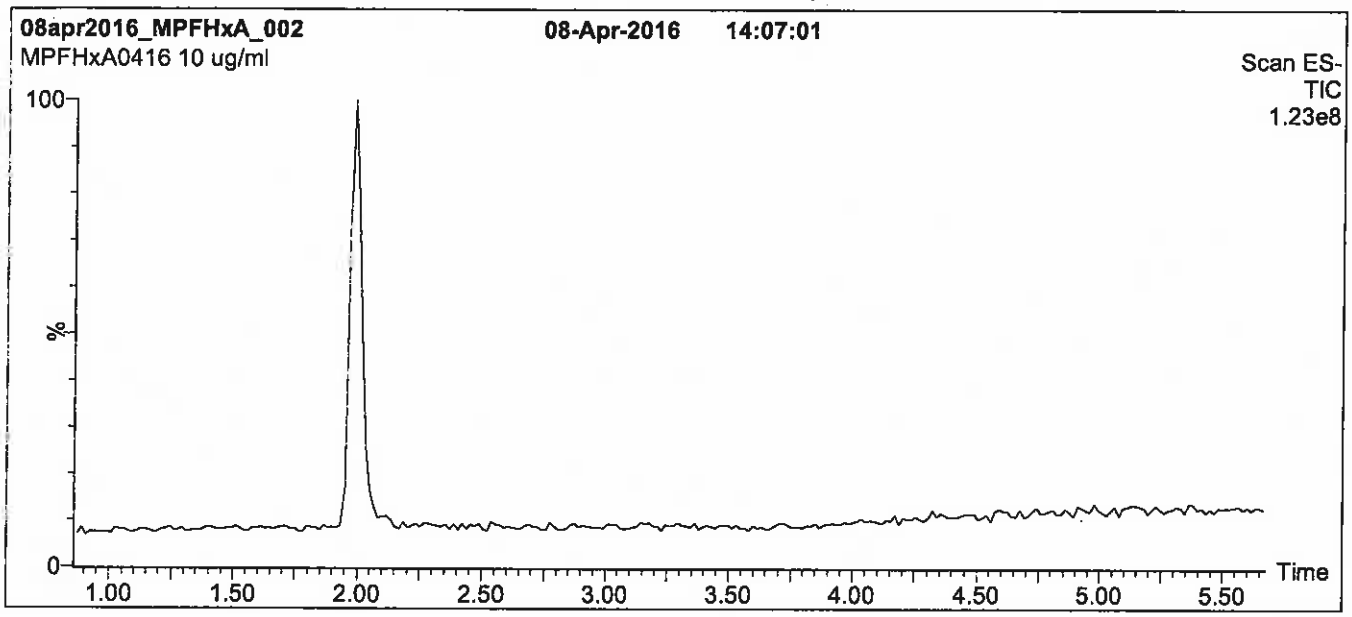
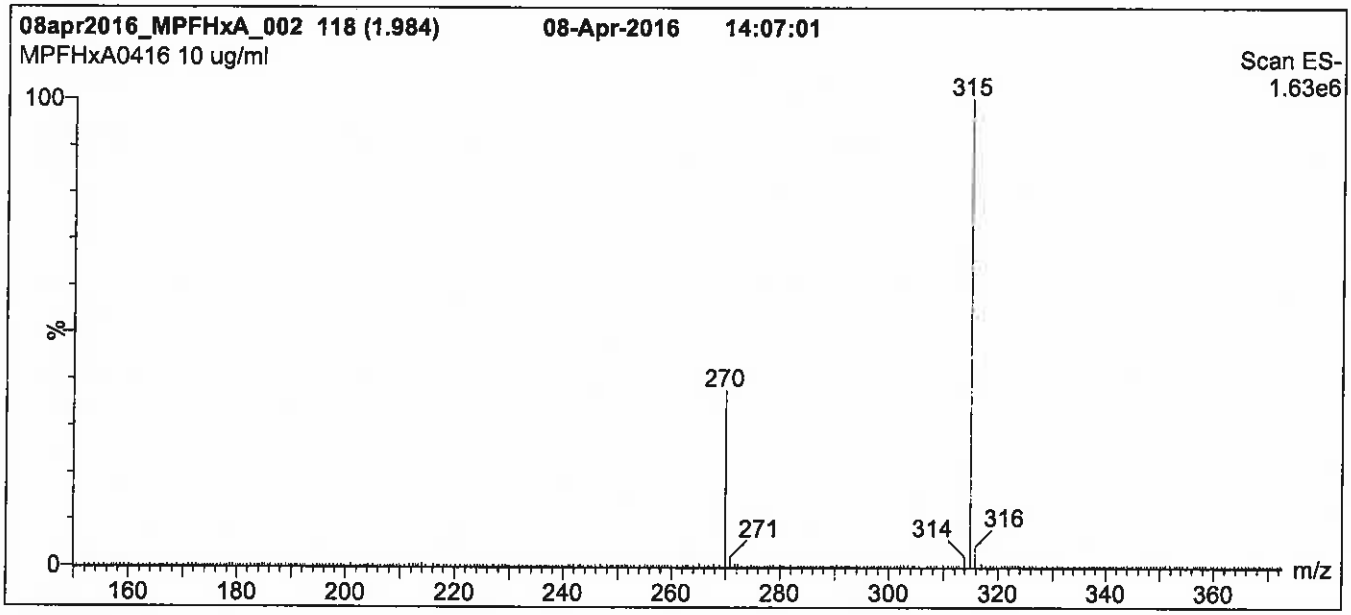
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions over 0.5 min.
Time: 10 min

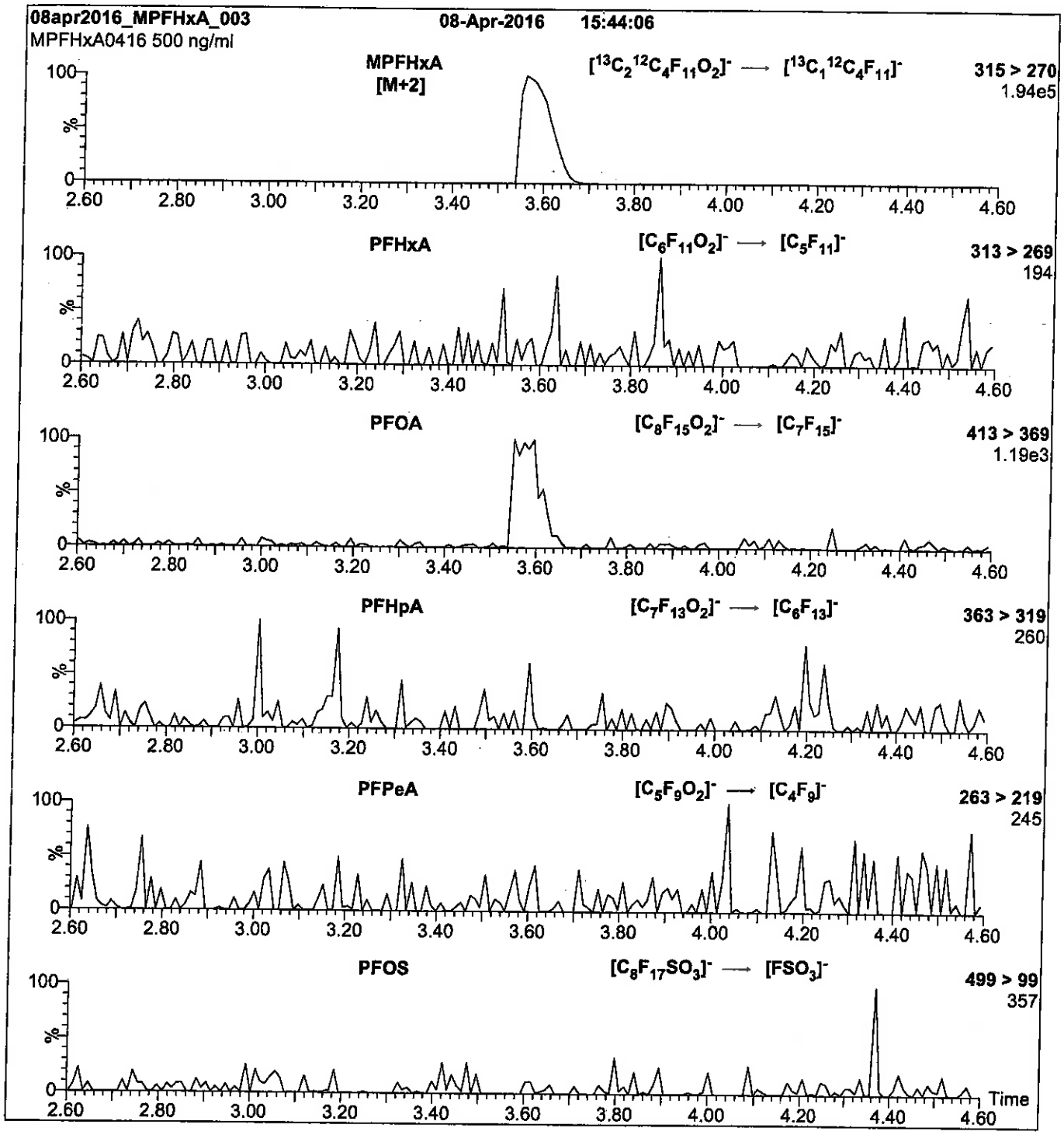
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFHxS_00008

R: SBC 9/22/16

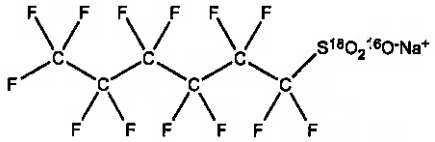
739601
ID: LCMPFHxS_00008
Exp: 10/23/20 Prpd: SBC
18O2-Perfluorohexanesulfo

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE:	MPFHxS	**LOT NUMBER:**	MPFHxS1015
COMPOUND:	Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_6F_{13}S^{18}O_2{}^{16}ONa$	**MOLECULAR WEIGHT:**	426.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (MPFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>94% ($^{18}O_2$)
LAST TESTED: (mm/dd/yyyy)	10/23/2015		
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS ($C_6F_{13}S^{18}O_2{}^{16}O^-$) has been observed to be up to 10% lower than for PFHxS ($C_6F_{13}S^{16}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Due to the isotopic purity of the starting material ($^{18}O_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/28/2015 (mm/dd/yyyy)

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

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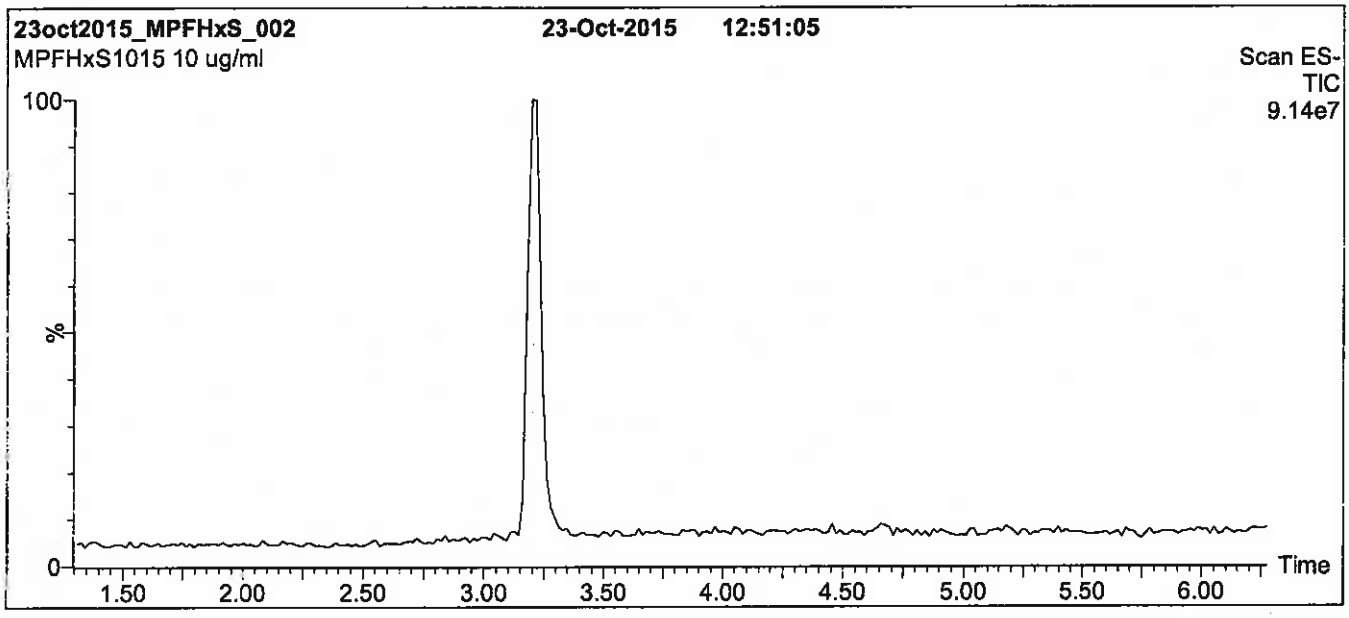
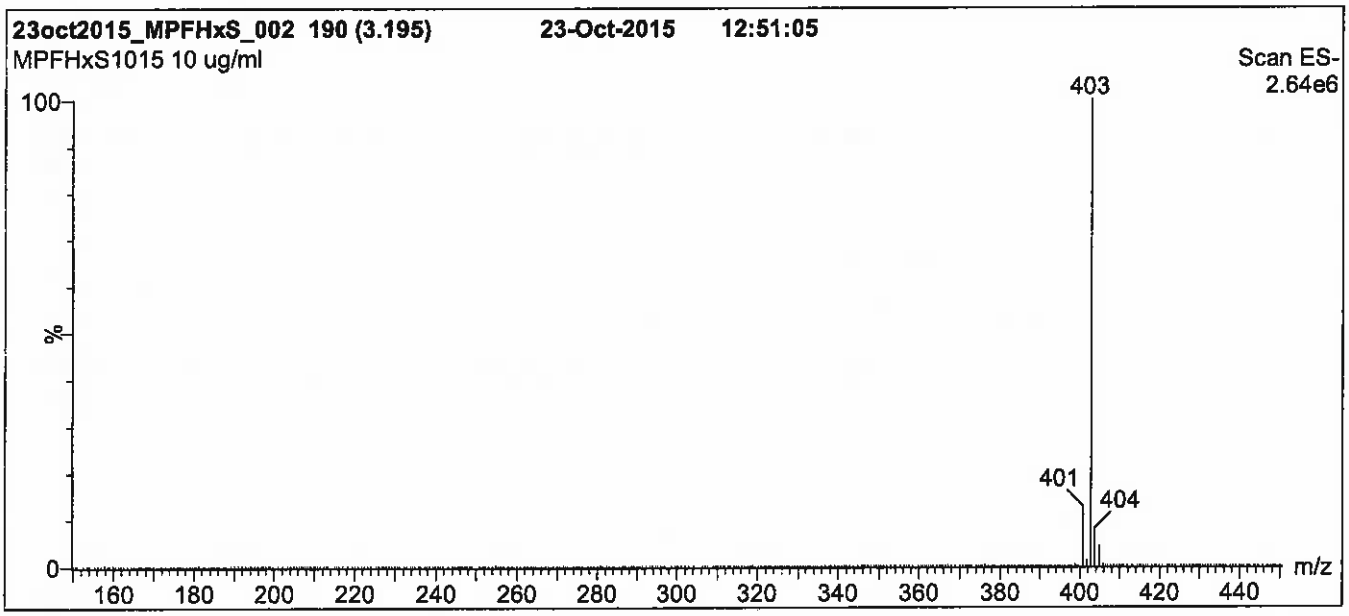




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

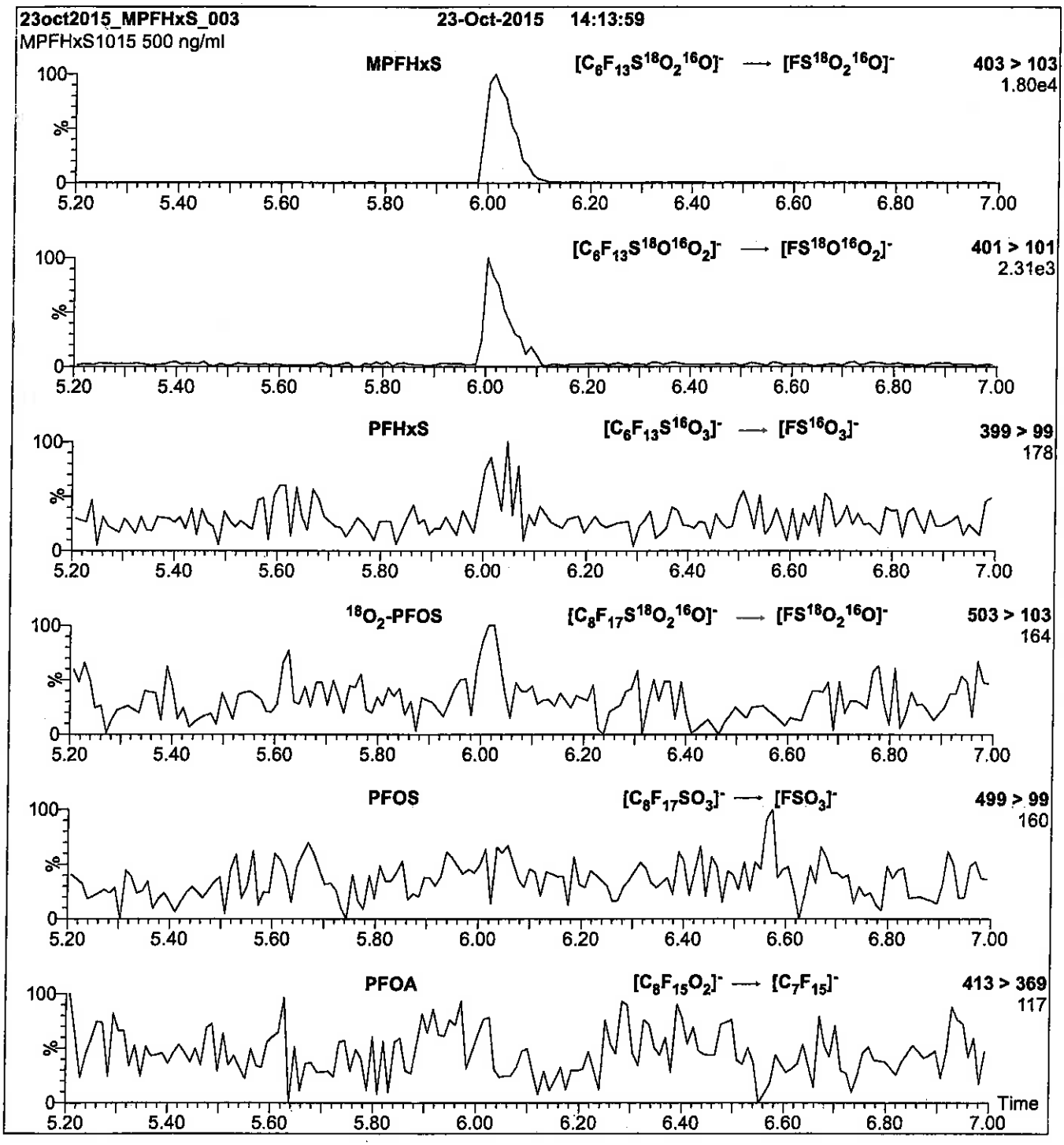
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFNA_00008

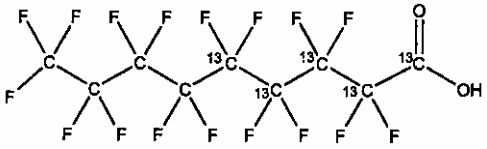
Scanned 10/14/16 R: SBC 9/22/16

739637
ID: LCMPFNA_00008
Exp: 04/13/19 Prpd: SBC
13C5-Perfluorononanoic aci

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFNA	**LOT NUMBER:**	MPFNA0414
COMPOUND:	Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_4HF_{17}O_2$	**MOLECULAR WEIGHT:**	469.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5-$^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	04/13/2014		
EXPIRY DATE: (mm/dd/yyyy)	04/13/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/01/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

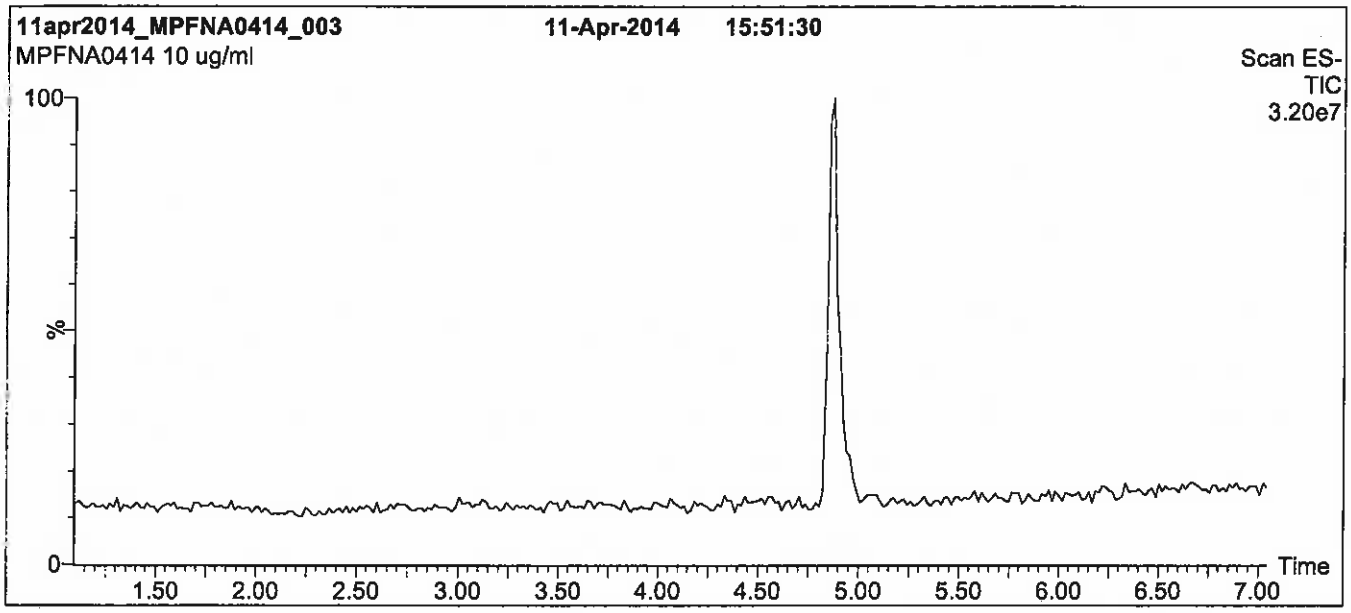
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

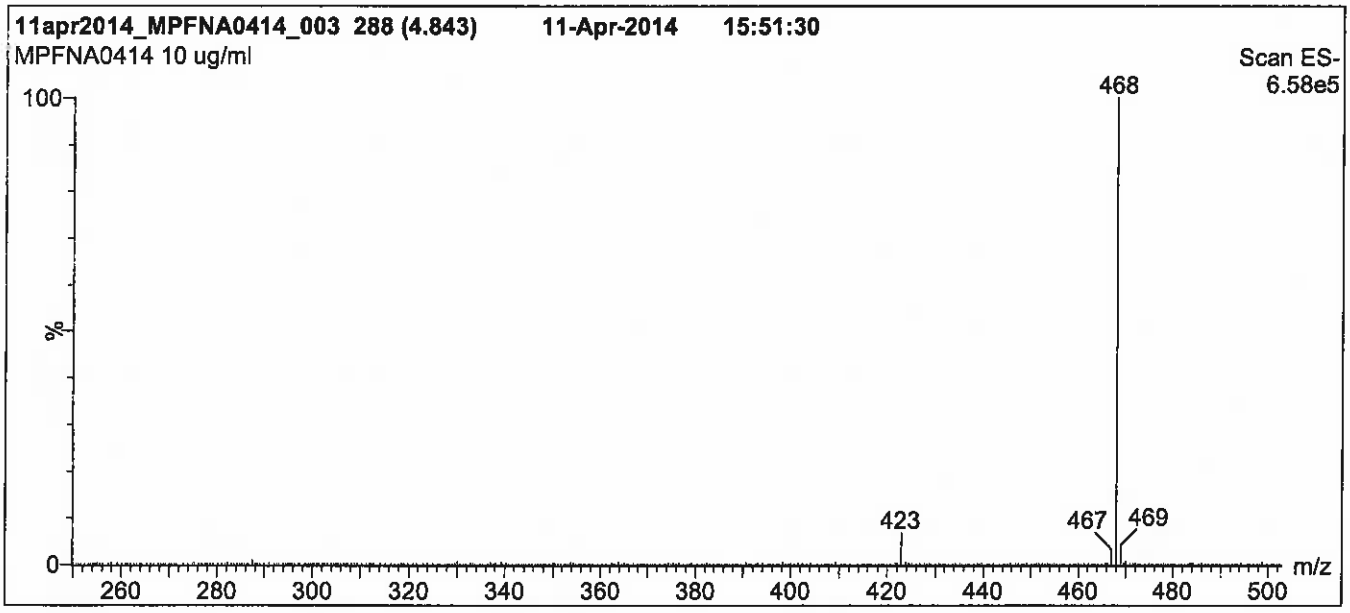
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

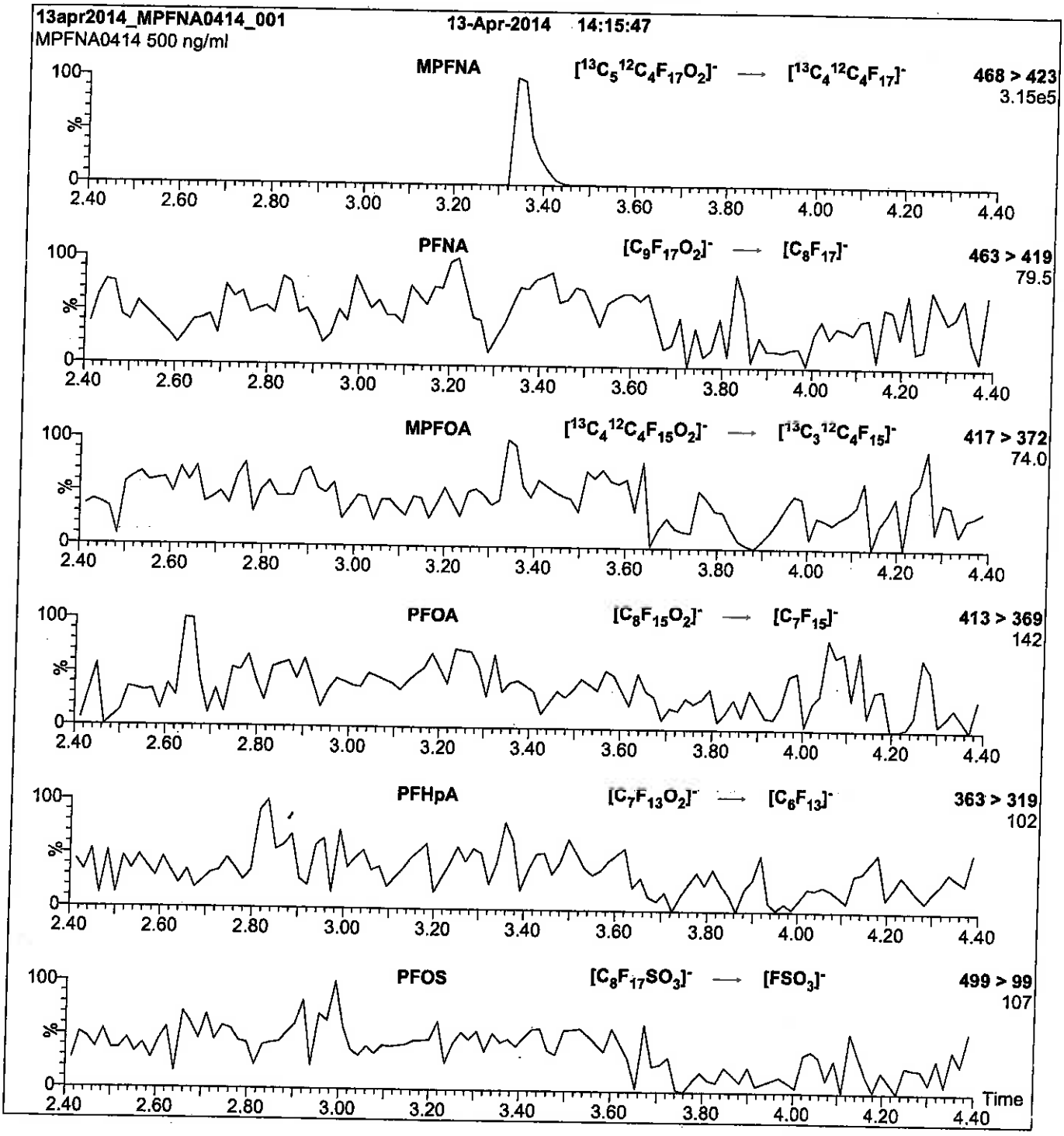
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00012

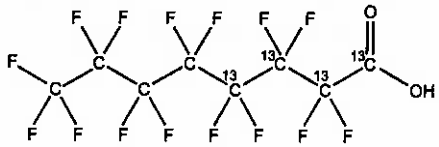
R: SBC 9/22/16

738683
ID: LCMPFOA_00012
Exp: 01/22/21 Prpd: SBC
13C4-Perfluorooctanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFOA	**LOT NUMBER:**	MPFOA0116
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4HF_{15}O_2$	**MOLECULAR WEIGHT:**	418.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	01/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/22/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/01/2016 (mm/dd/yyyy)

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

Form#:27, Issued 2004-11-10
Revision#:3, Revised 2015-03-24

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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QUALITY MANAGEMENT:

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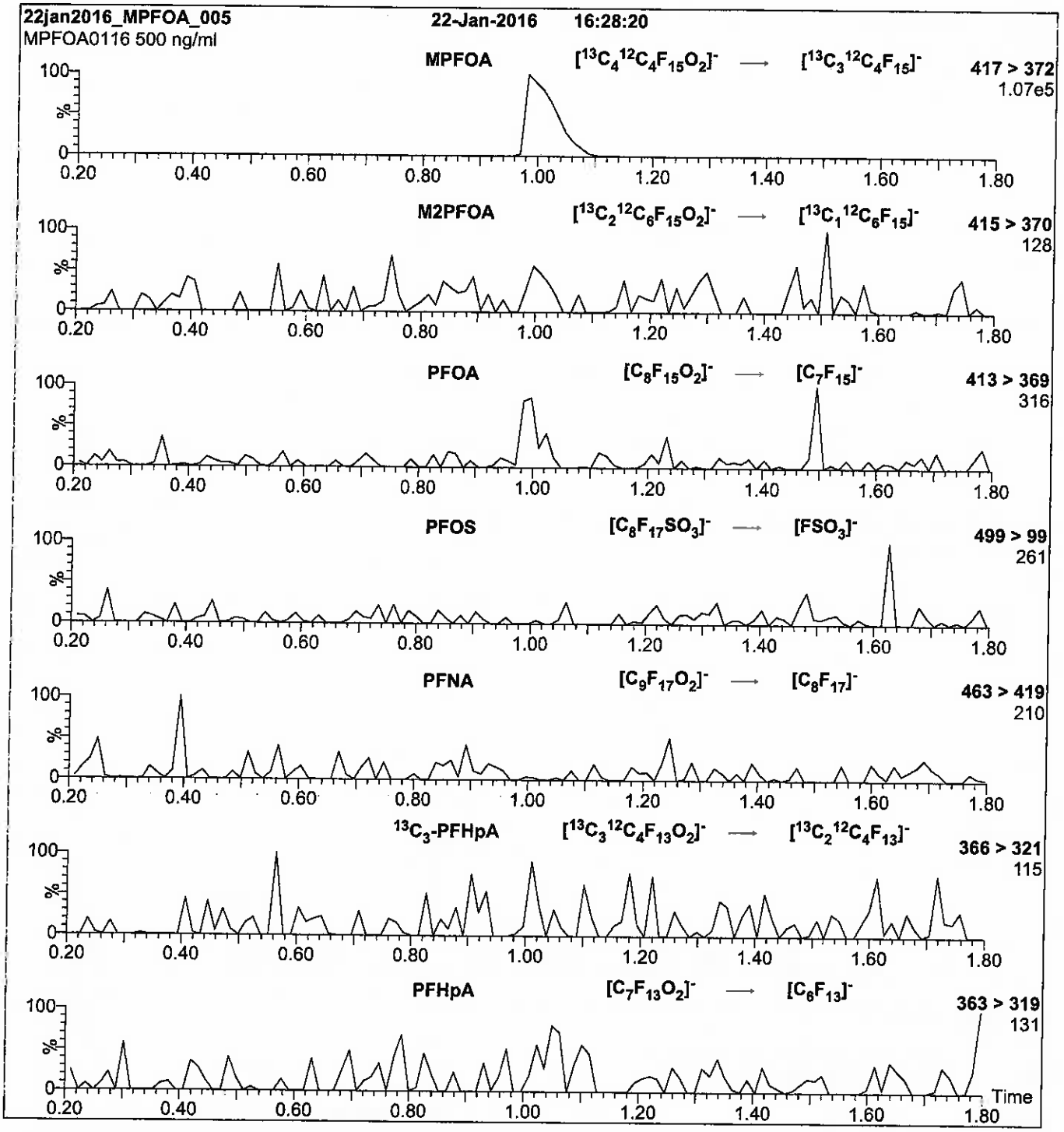
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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



Conditions for Figure 2:

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

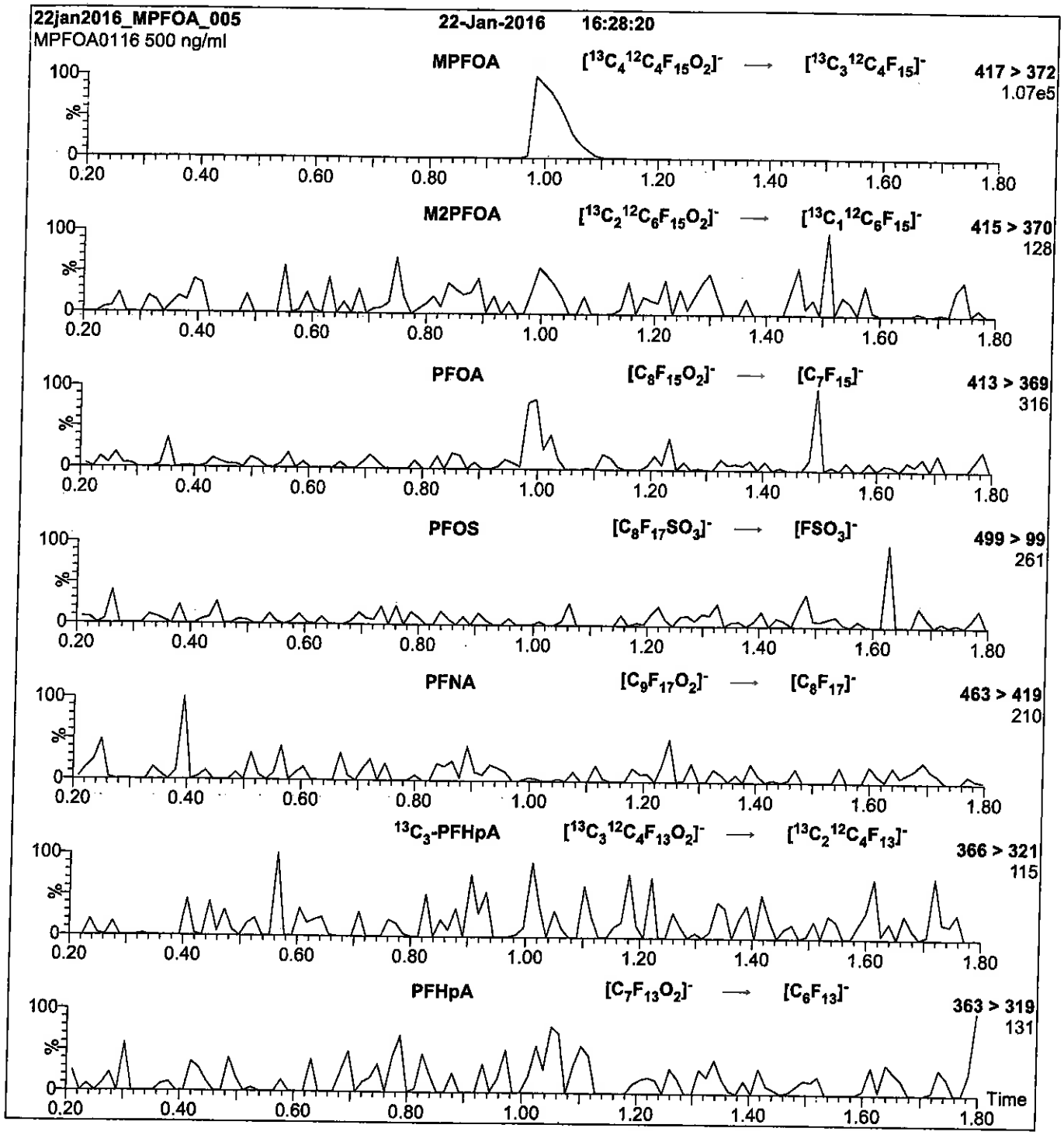
Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 10

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml MPFOA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 10

Reagent

LCMPFOS_00017

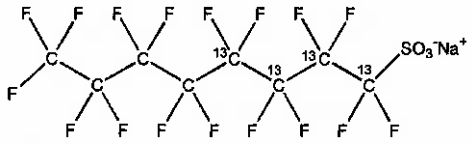
R: 9/9/16 SBC

728309
ID: LCMPFOS_00017
Exp: 08/03/21 Prpd: SBC
13C4-Perfluorooctanesulfo

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFOS	**LOT NUMBER:**	MPFOS0816
COMPOUND:	Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	08/03/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/03/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/05/2016 (mm/dd/yyyy)

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

INTENDED USE:

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CALA

ANAB ACCREDITED

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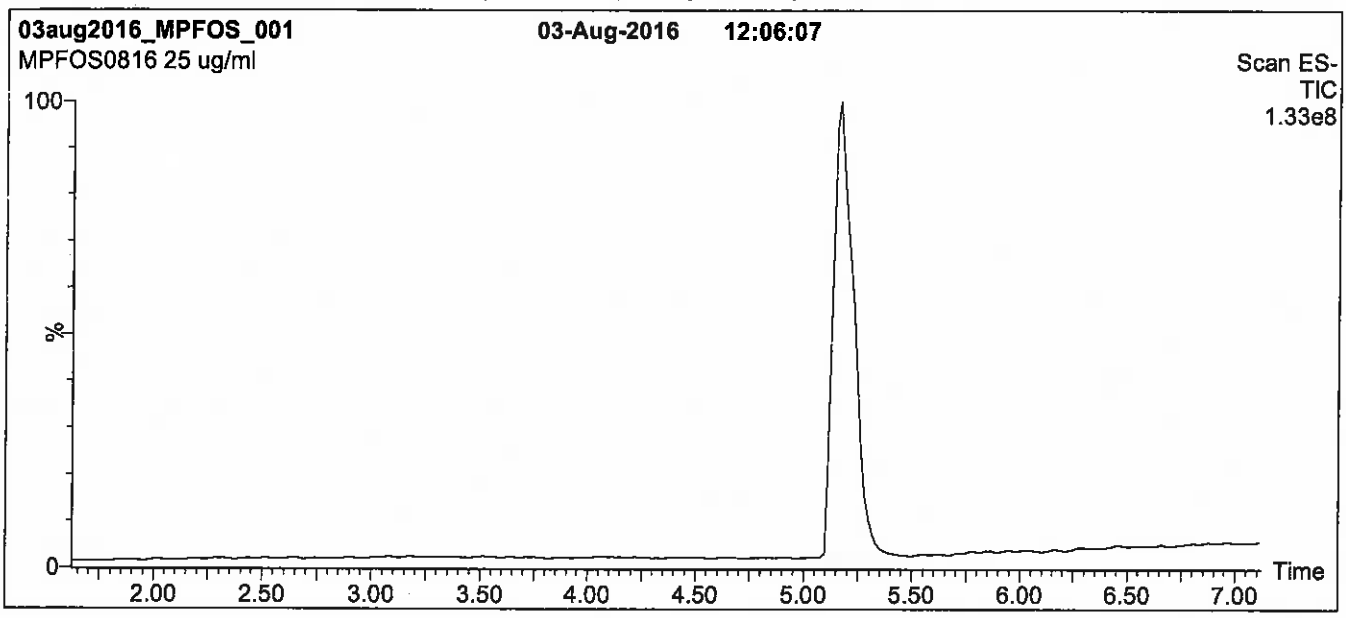
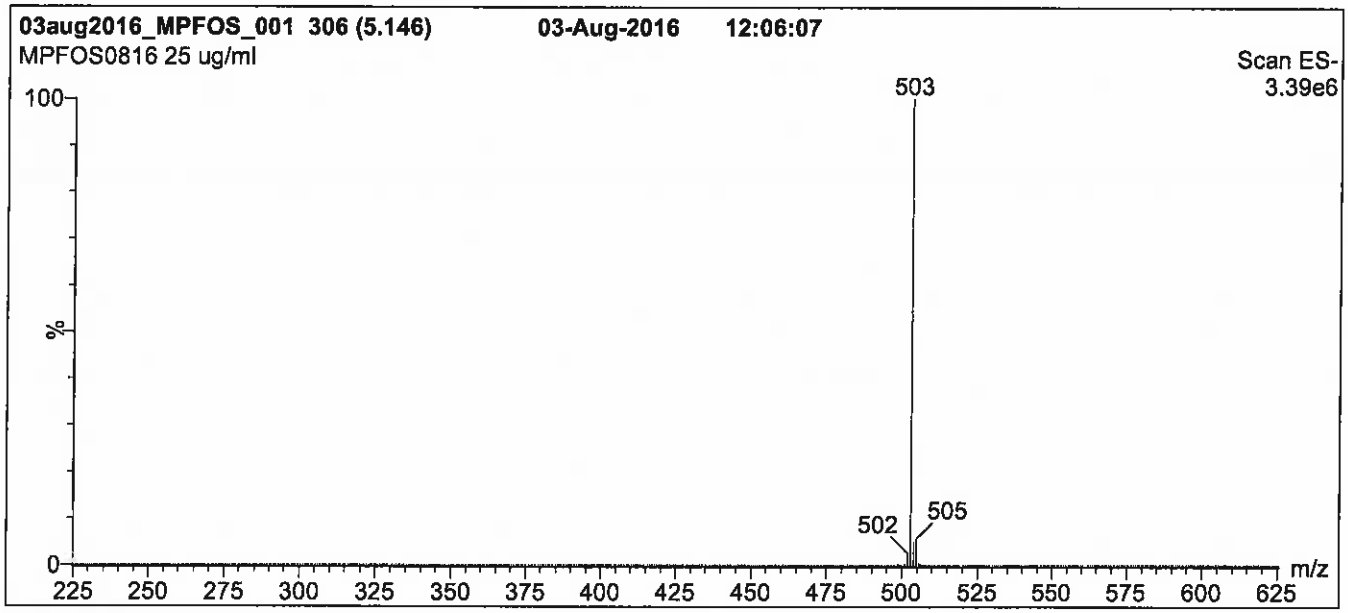
Figure 1: **MPFOS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

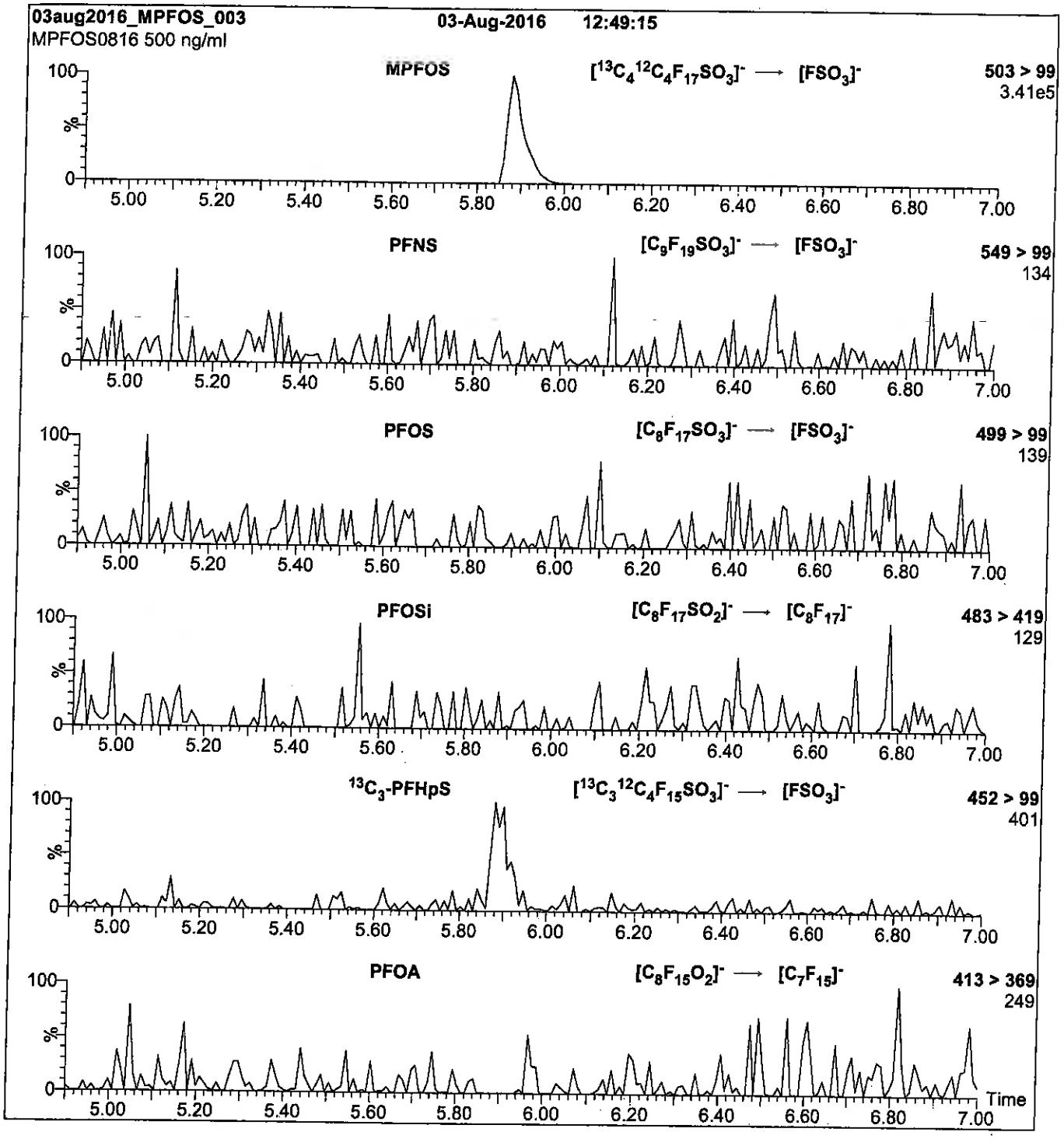
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFUdA_00009

R: SBC 9/22/16

739604
ID: LCMPFUdA_00009
Exp: 02/12/21 Prpd: SBC
13C2-Perfluoroundecanoic

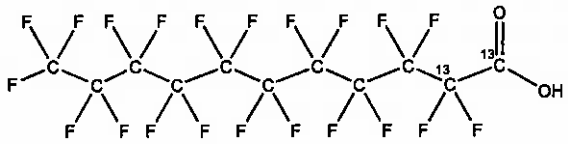
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SBC

PRODUCT CODE: MPFUdA
LOT NUMBER: MPFUdA0216
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_9HF_{21}O_2$	**MOLECULAR WEIGHT:**	566.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-$^{13}C_1$-PFUdA (~1%; see Figure 2), 2-$^{13}C_1$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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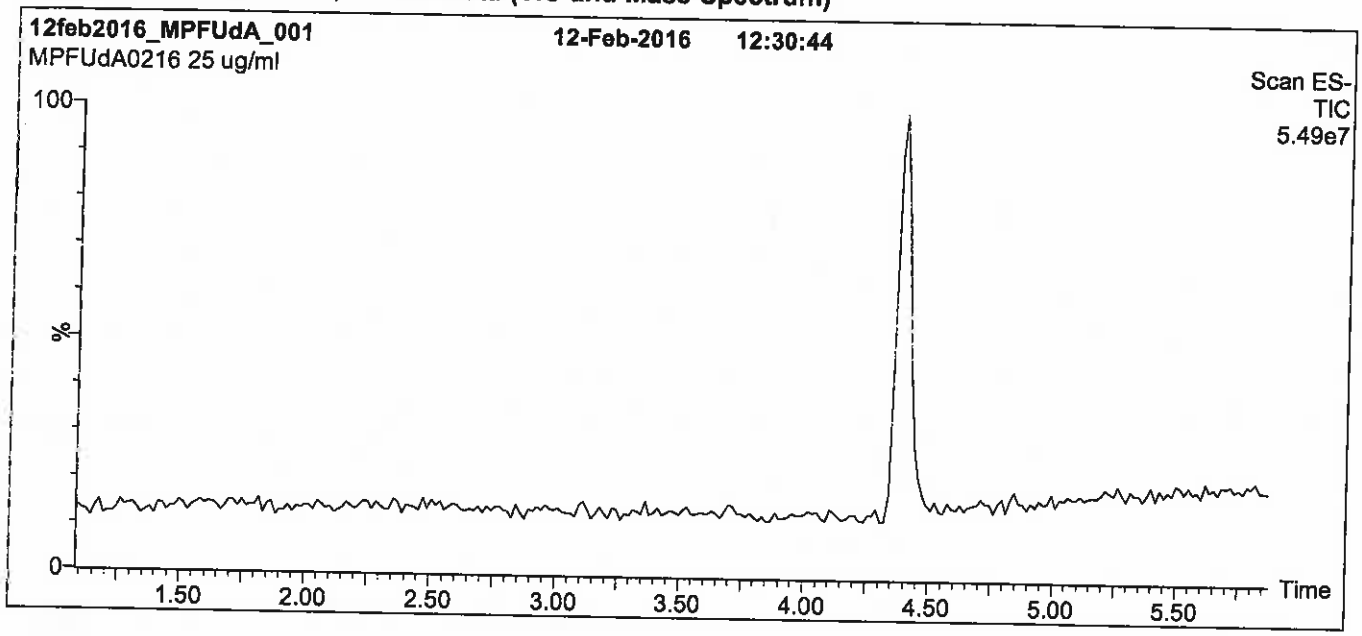
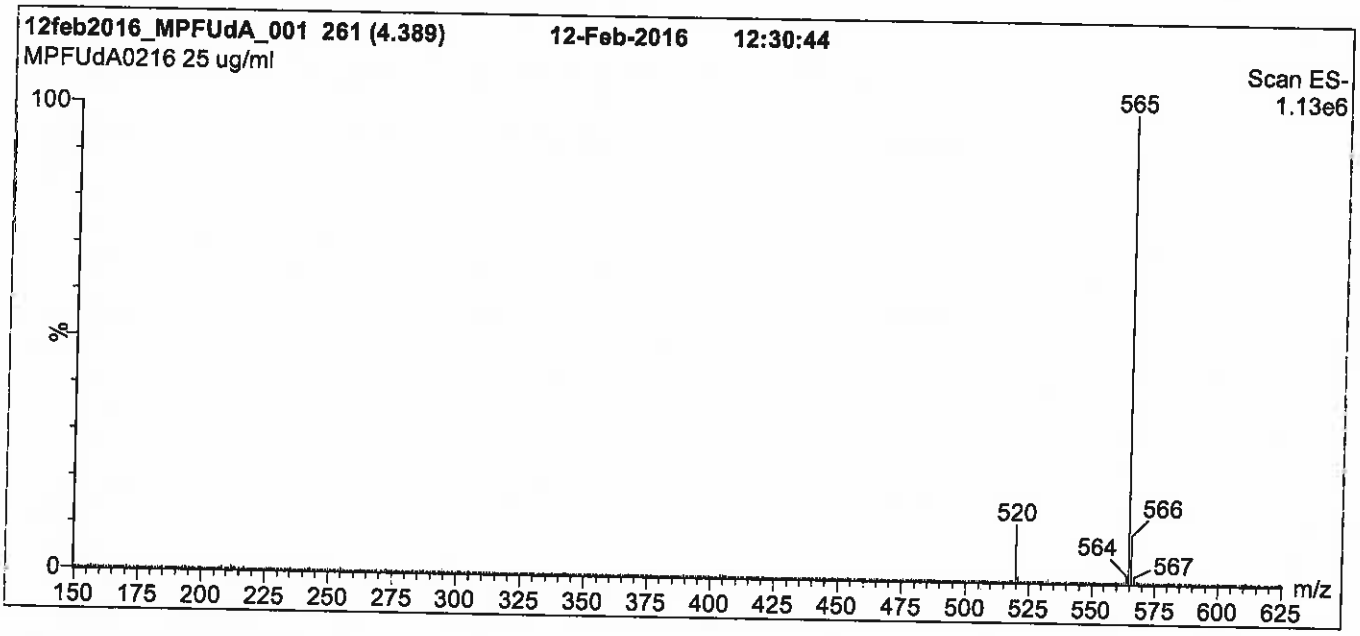
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

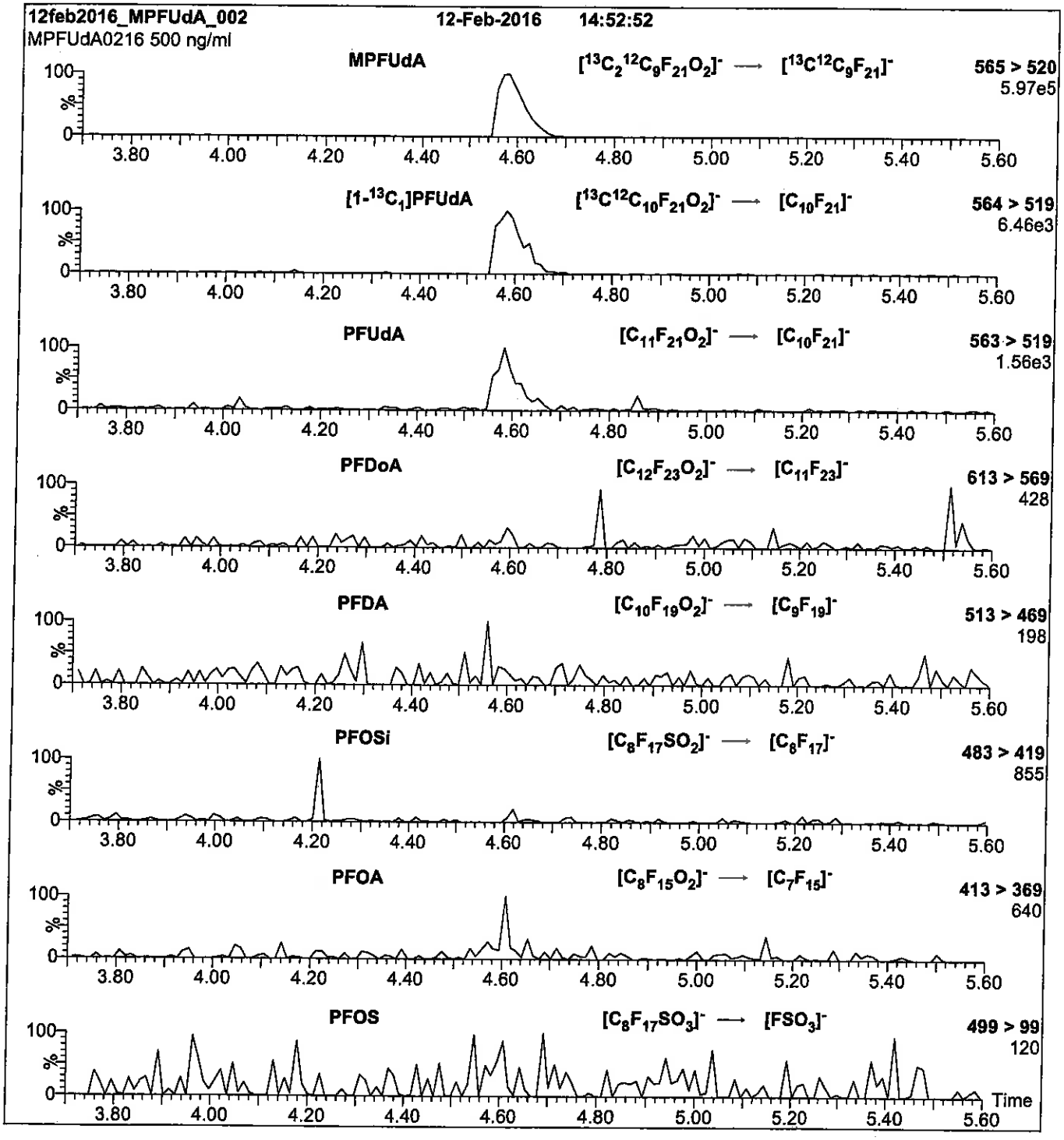
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

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

Reagent

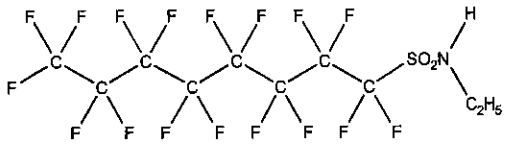
LCN-EtFOSA-M_00002

R: 7/16/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	N-EtFOSA-M	**LOT NUMBER:**	NEtFOSA0714M
COMPOUND:	N-ethylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	4151-50-2



MOLECULAR FORMULA:	$C_{10}H_6F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/14/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/14/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/01/2015 (mm/dd/yyyy)
B.G. Chittim

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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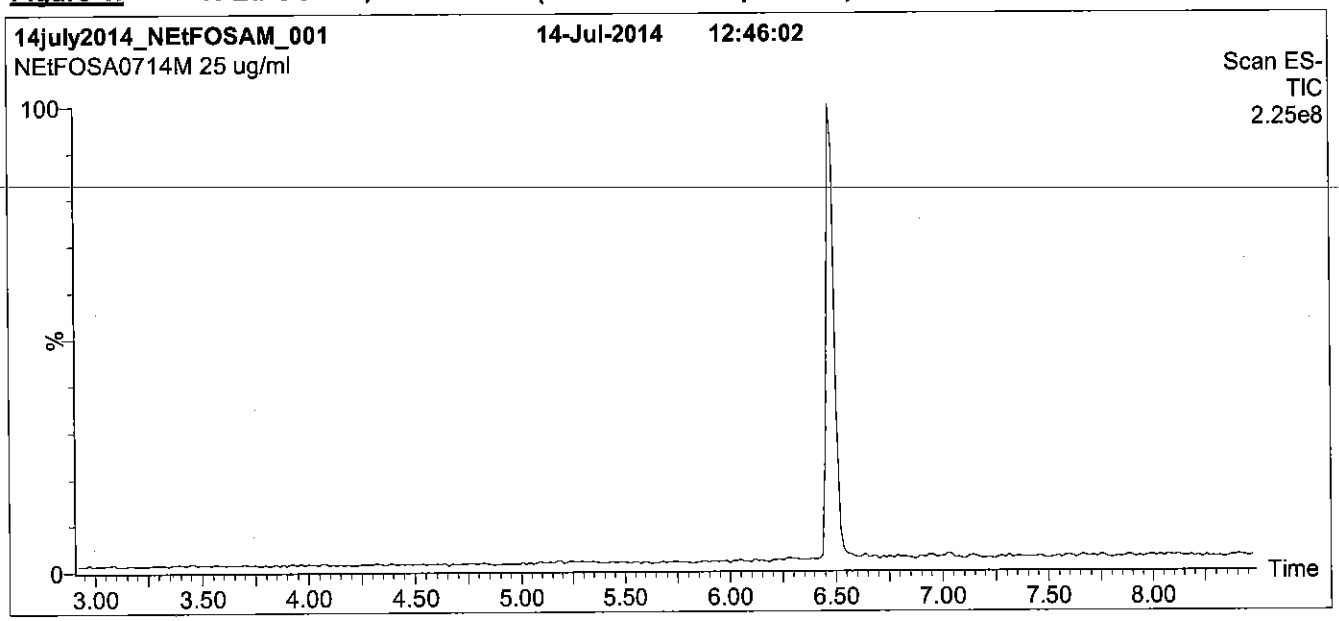
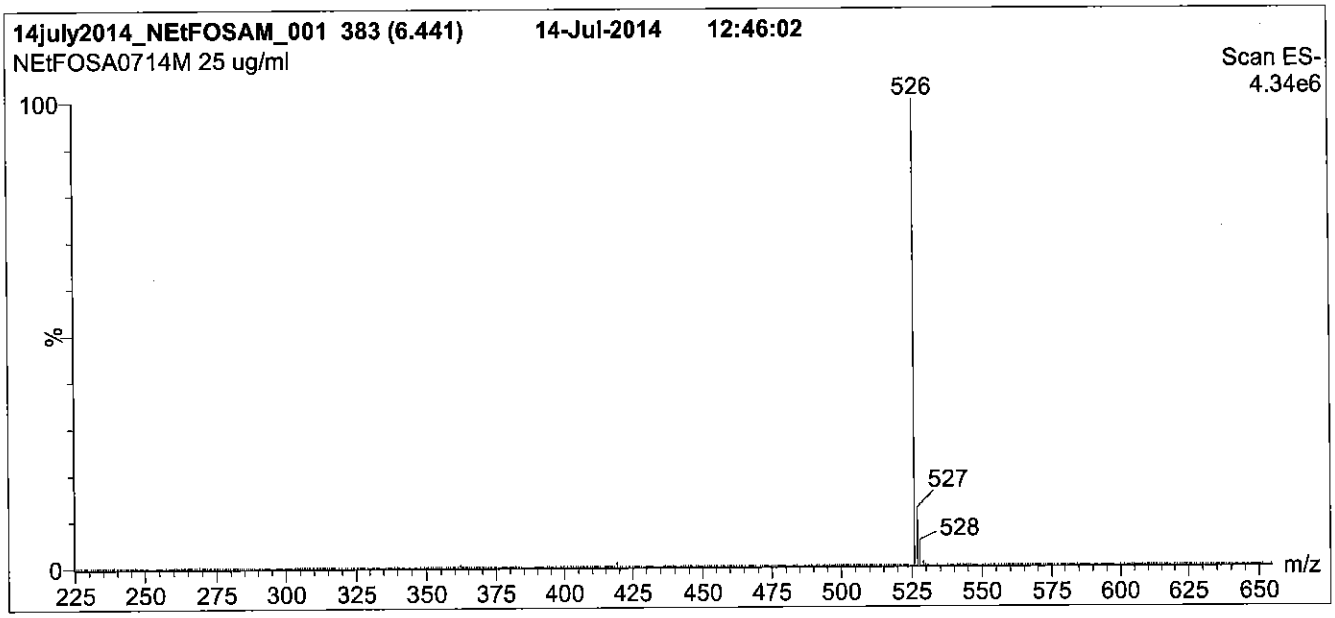
Figure 1: **N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

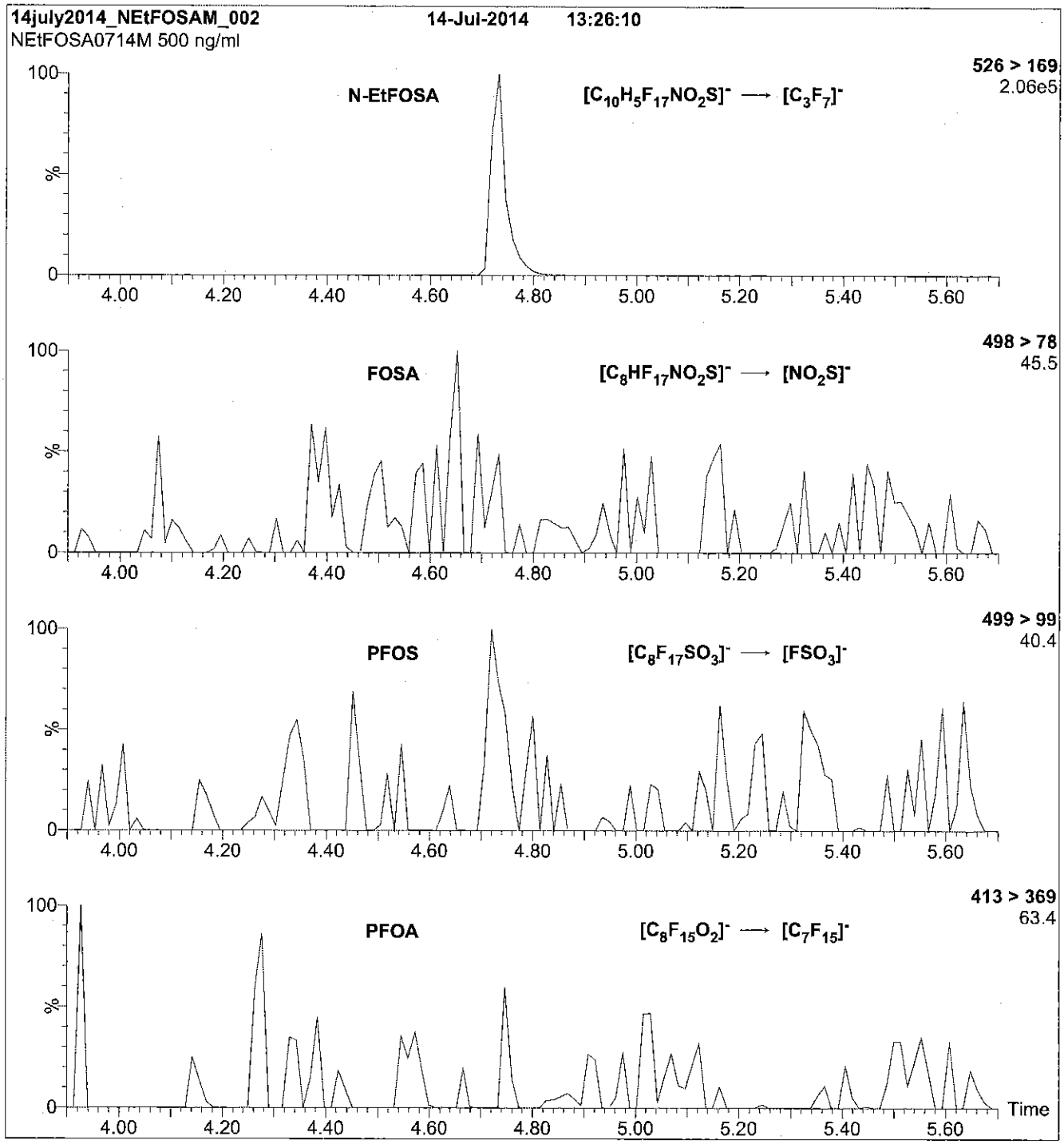
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml N-EtFOSA-M)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCN-EtFOSA-M_00003

R: 8/23/16 SBC

715563
ID: LCN-EtFOSA-M_00003
Exp: 05/24/21 Prpd: SBC
N-EtFOSA-M

WELLINGTON LABORATORIES

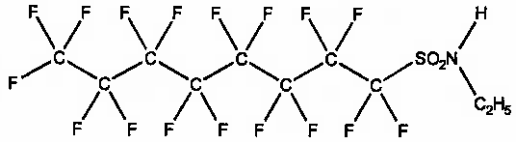
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEtFOSA0516M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:	$C_{10}H_8F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: B.G. Chittim **Date:** 05/27/2016 (mm/dd/yyyy)

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

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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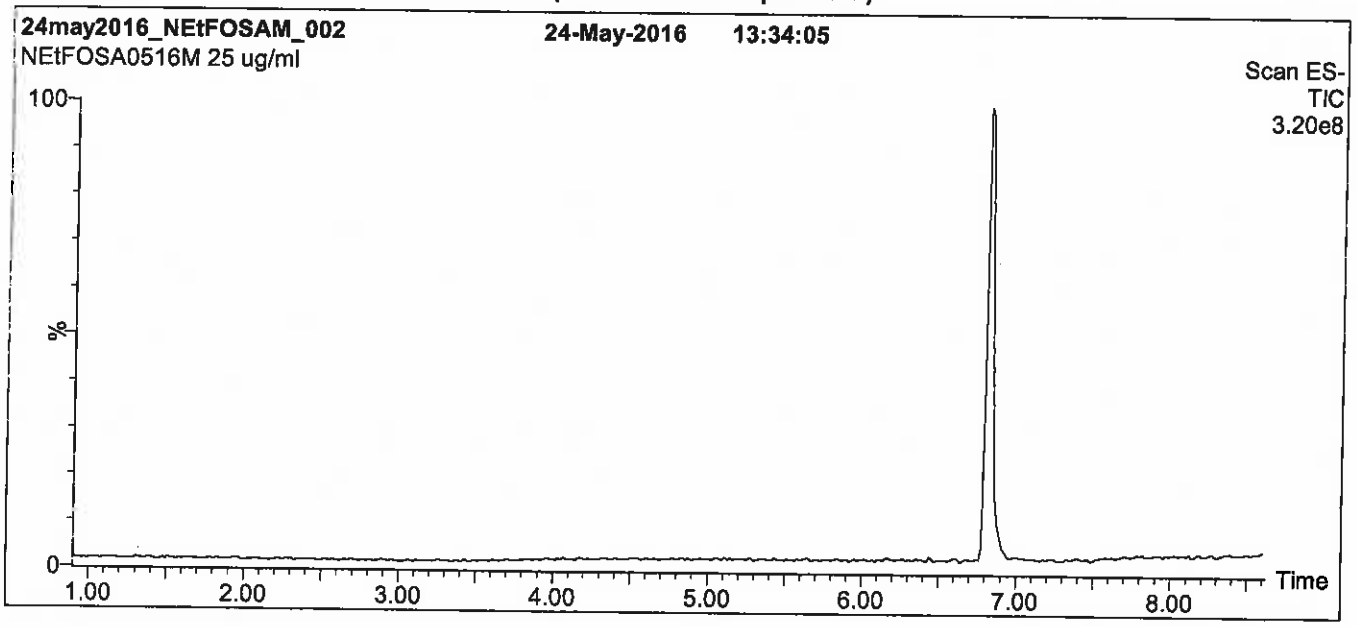

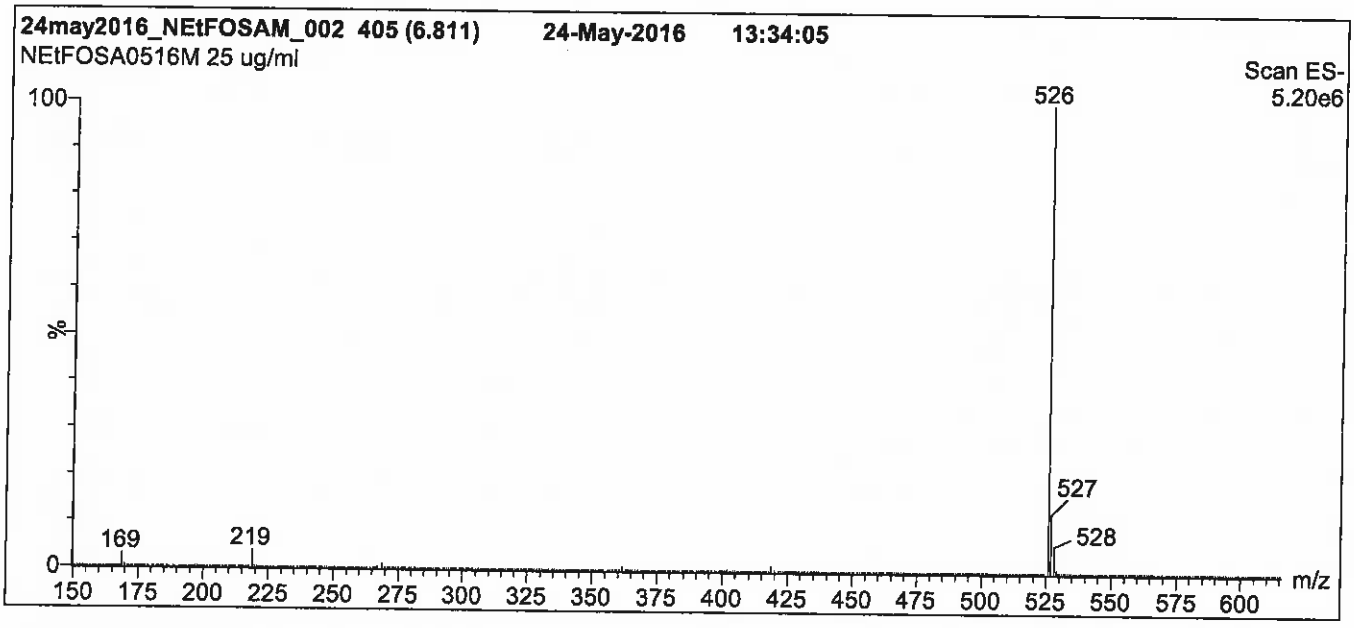

Conditions for Figure 1:

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Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

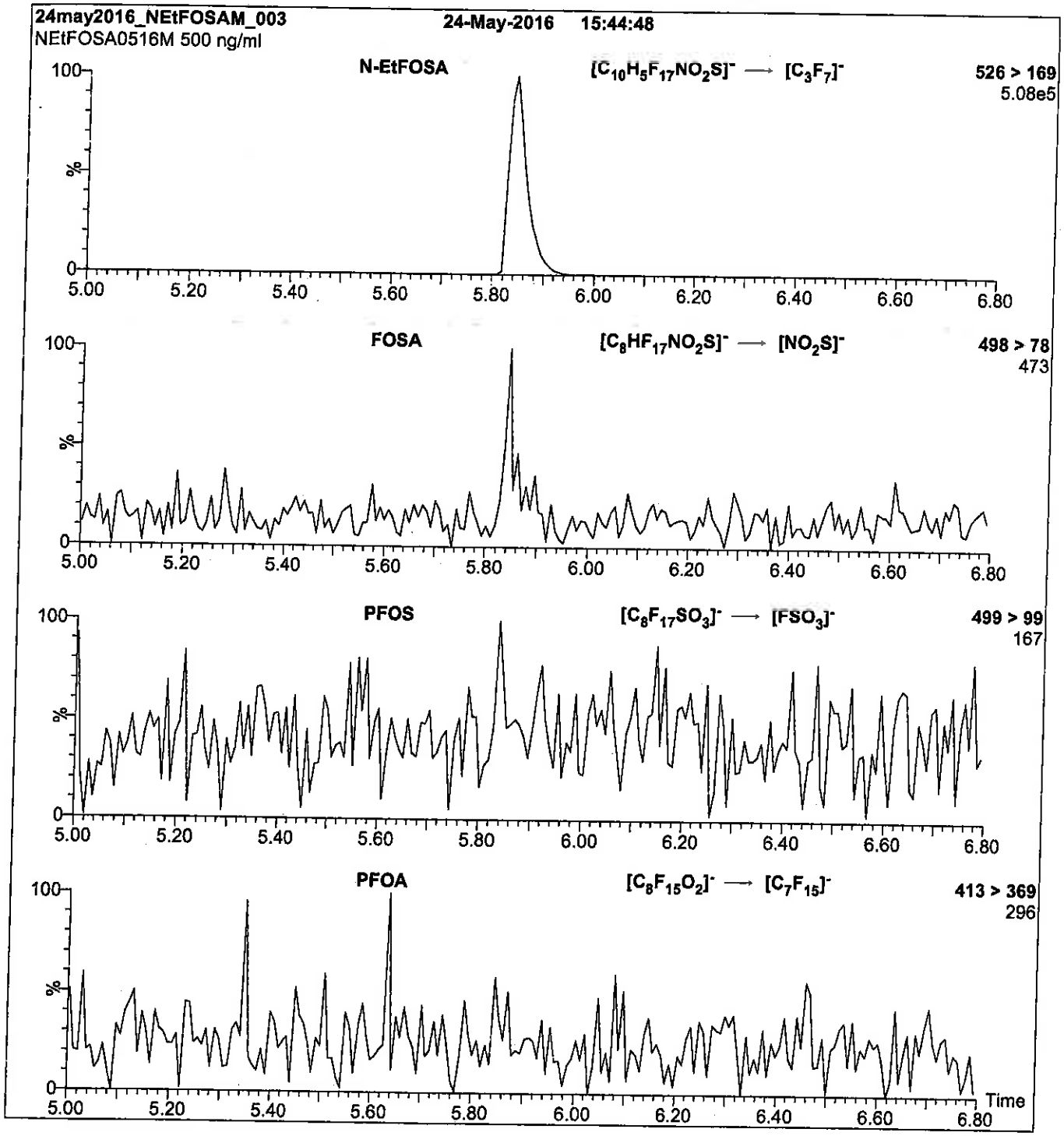
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml N-EtFOSA-M)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-EtFOSAA_00001

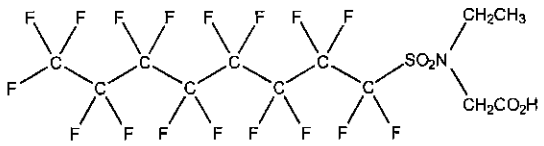
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0113

COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/29/2013

EXPIRY DATE: (mm/dd/yyyy) 01/29/2018

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 04/06/2015 (mm/dd/yyyy)

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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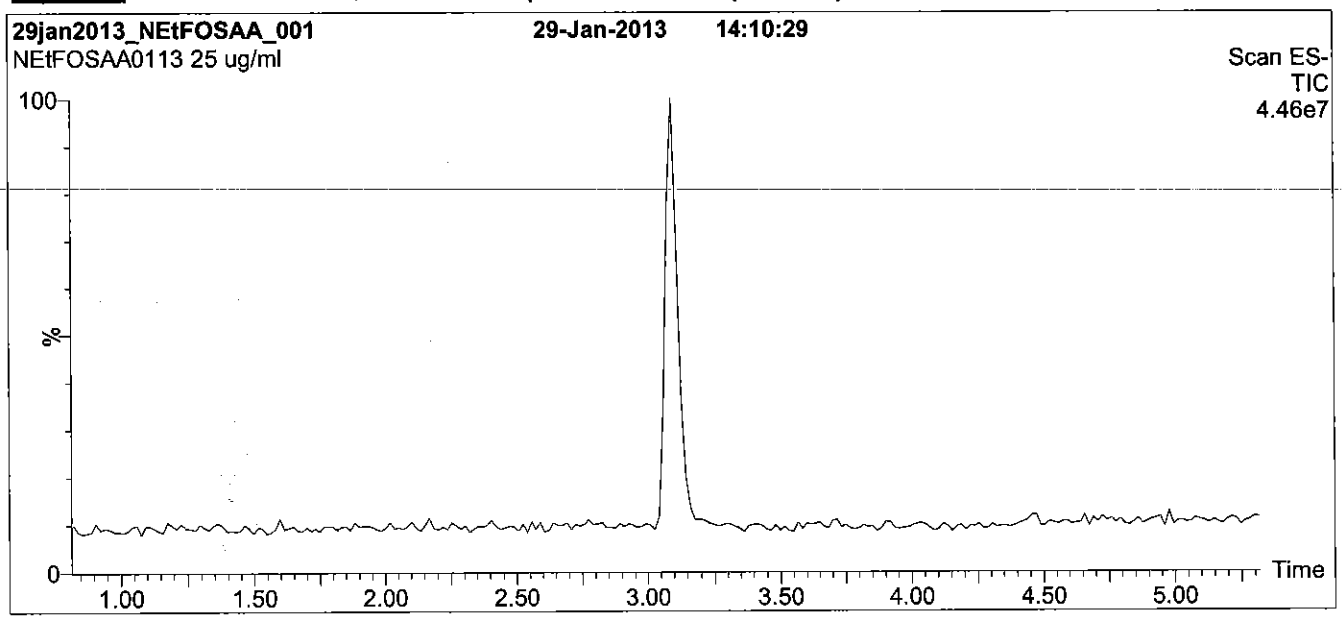
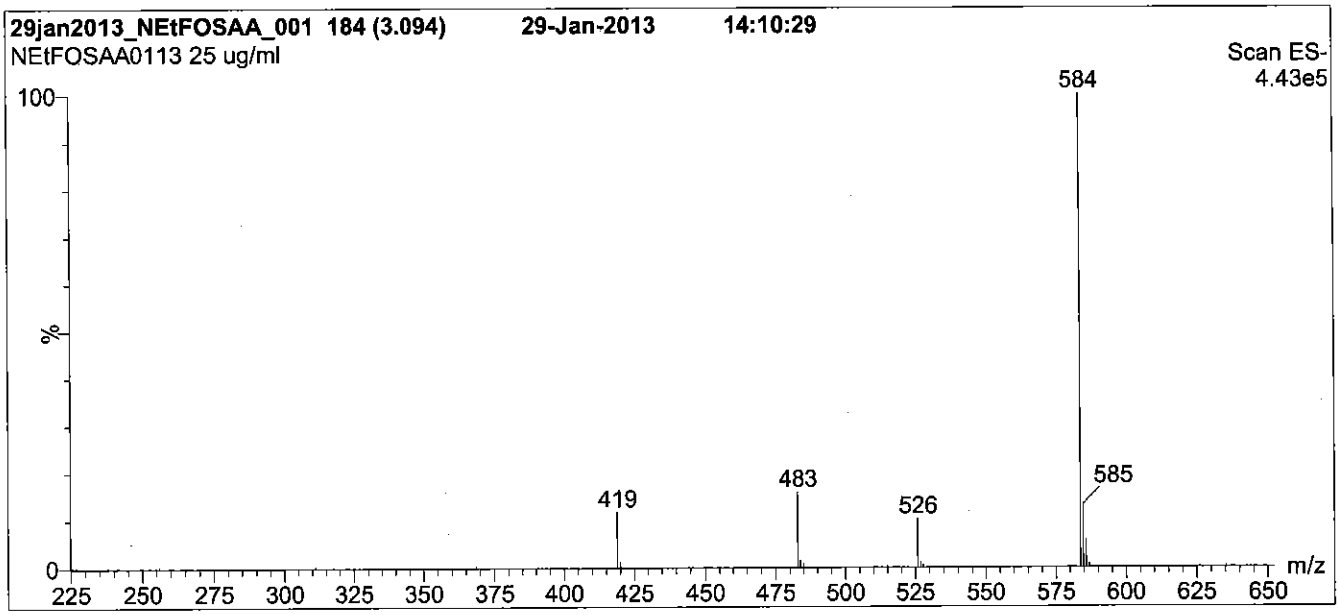
Figure 1: **N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

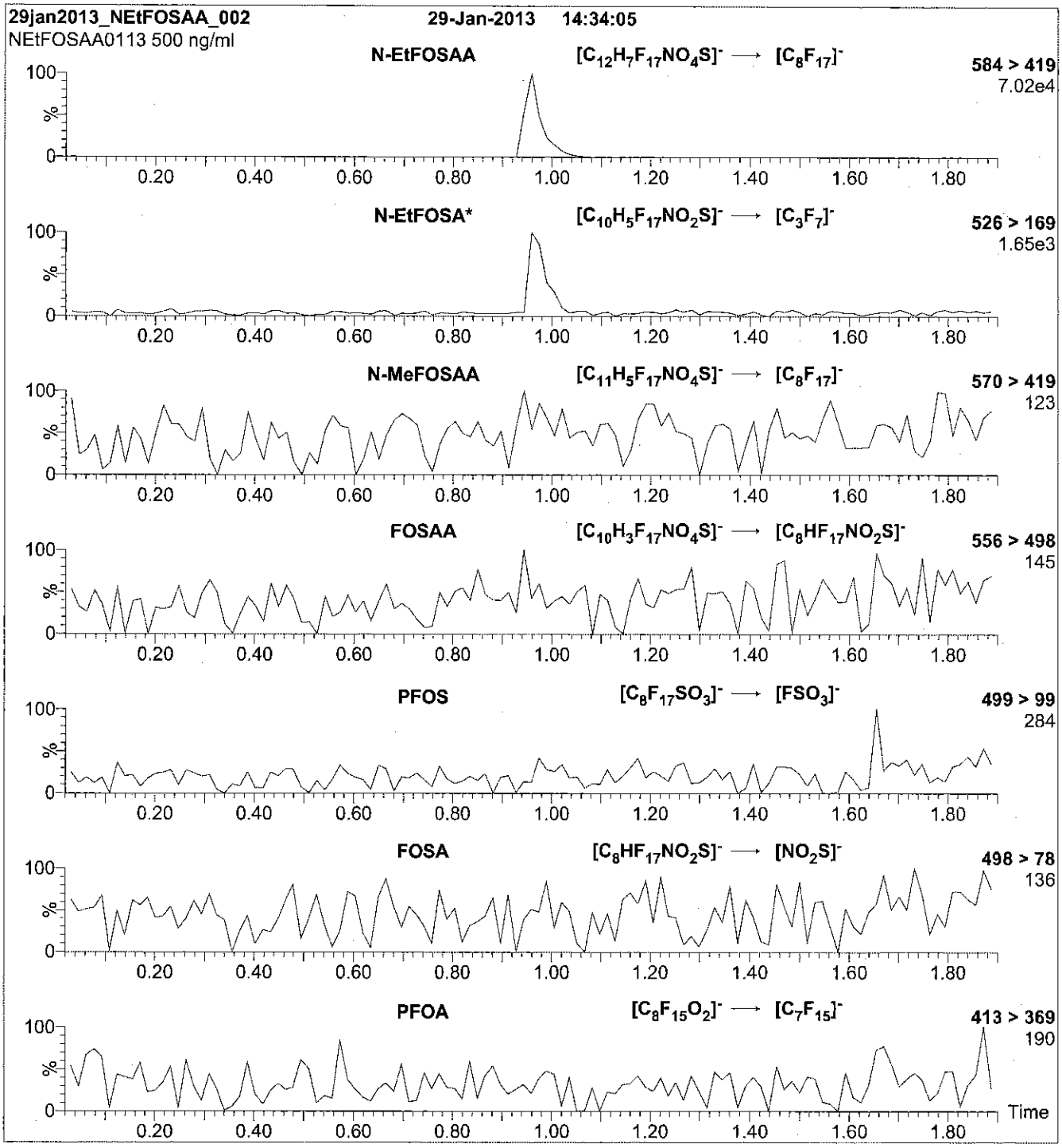
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-EtFOSAA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCN-EtFOSAA_00002

R: 8/23/16 SBE

715561
ID: LCN-EtFOSAA_00002
Exp: 01/20/21 Prpd: SBC
N-EtFOSAA

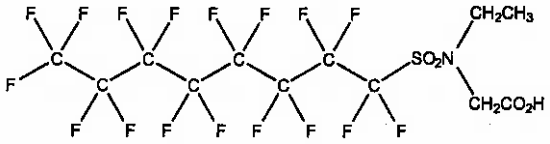
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0116

COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/20/2016

EXPIRY DATE: (mm/dd/yyyy) 01/20/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/21/2016 (mm/dd/yyyy)

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

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

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

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QUALITY MANAGEMENT:

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CALA

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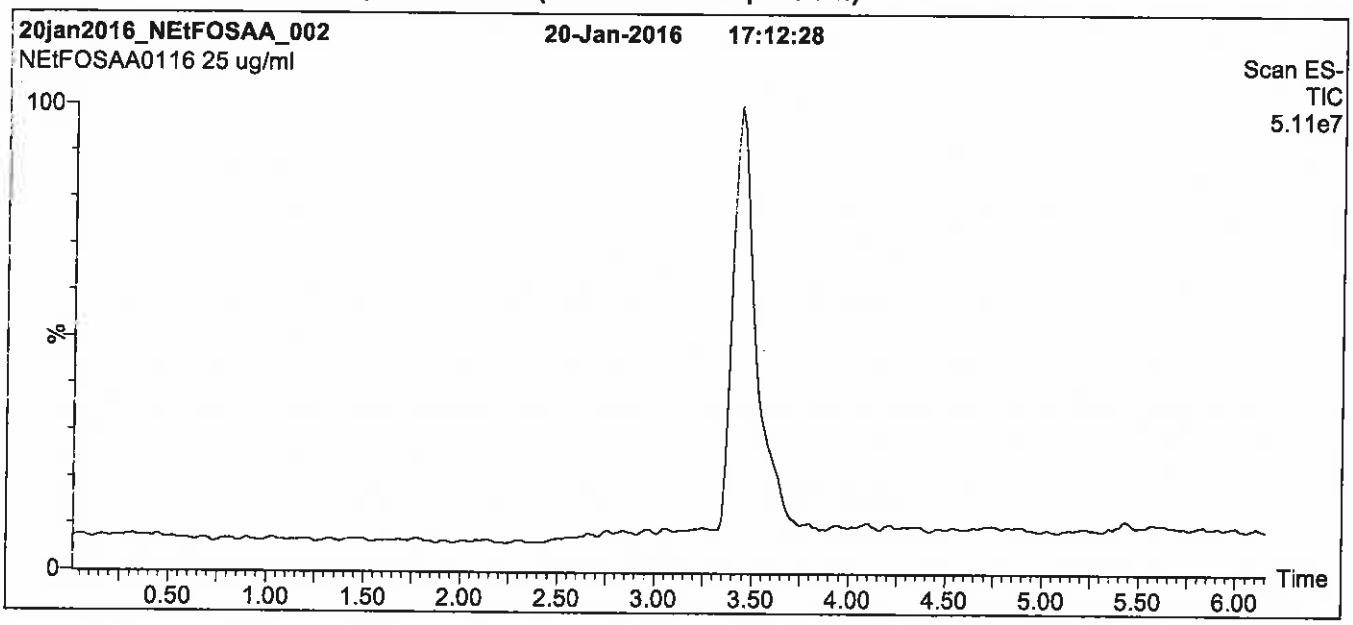

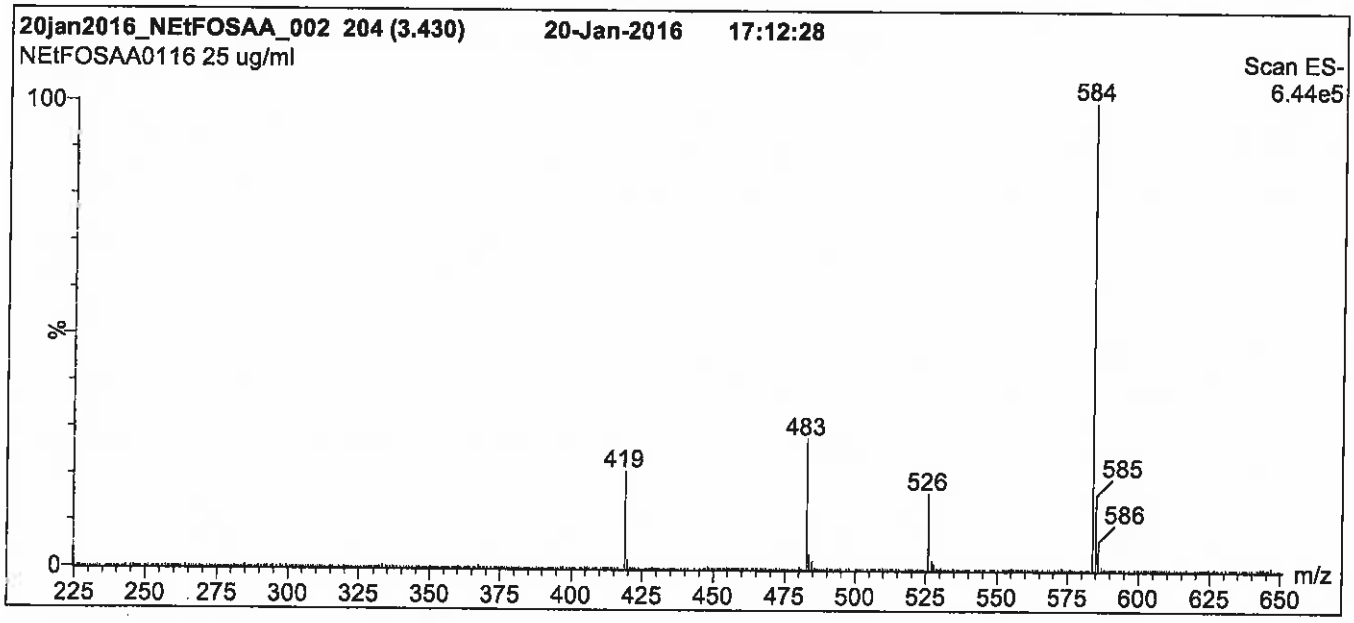

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Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
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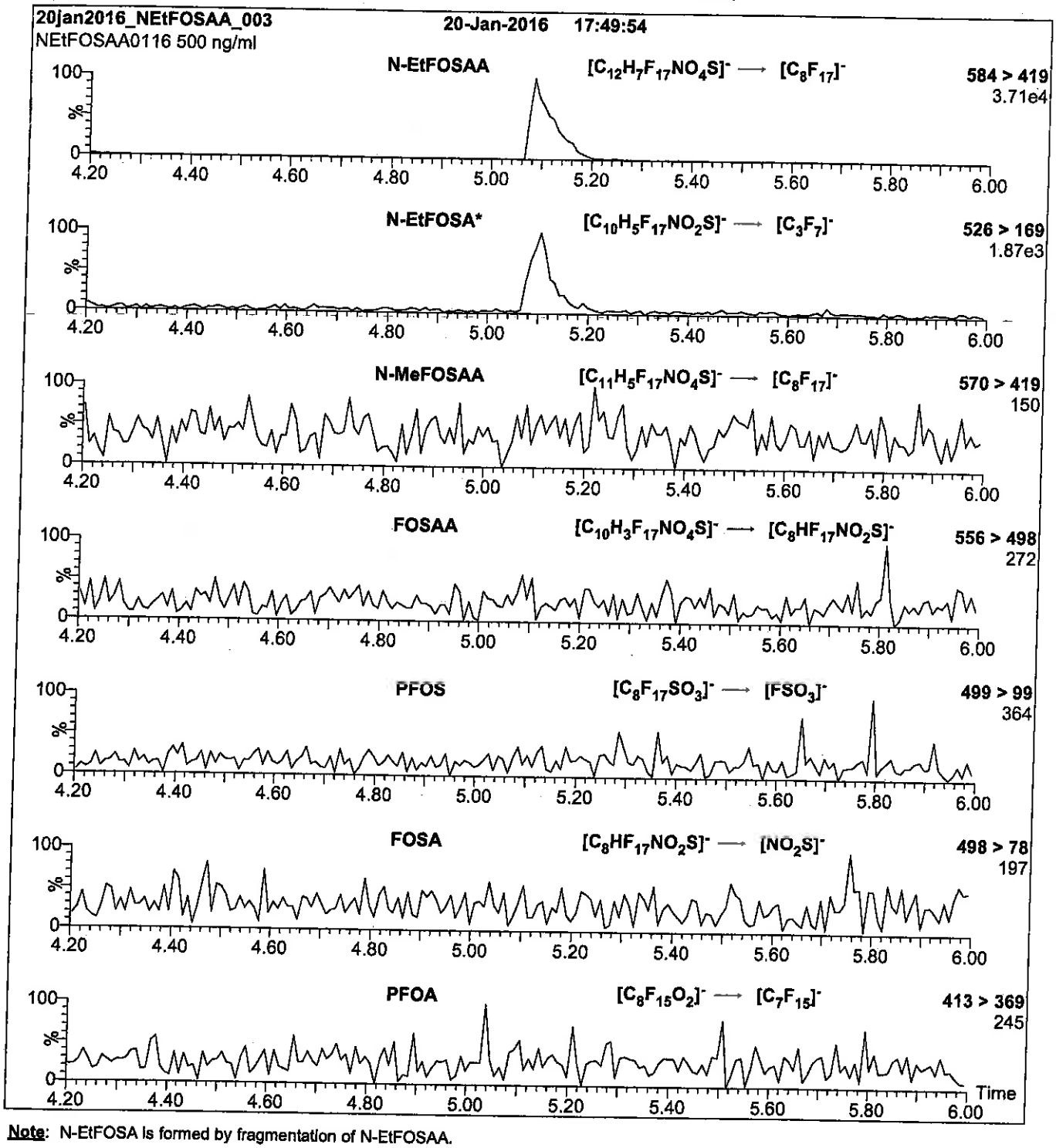


Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-EtFOSAA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCN-MeFOSA-M_00001

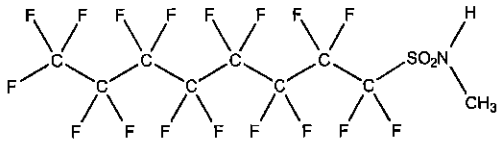
R: 7/16/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide
LOT NUMBER: NMeFOSA0714M

STRUCTURE:
CAS #: 31506-32-8



MOLECULAR FORMULA:	$C_9H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/15/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/15/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/01/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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UNCERTAINTY:

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

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

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CALA Testing Accreditation No. A 1226

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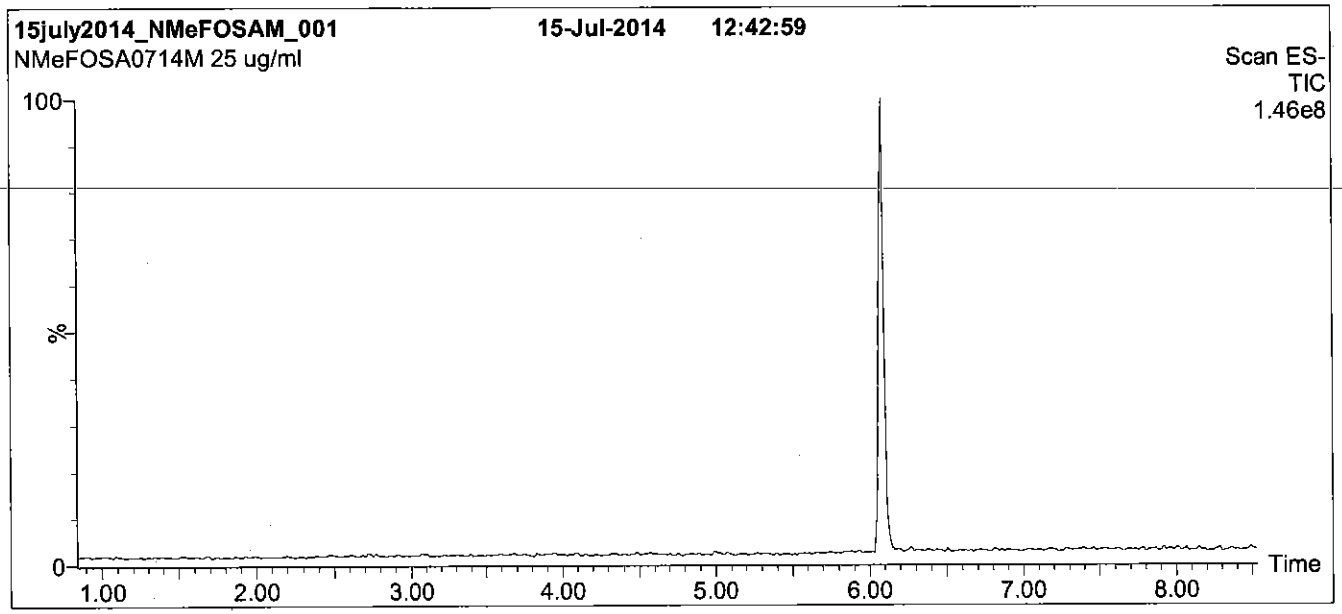
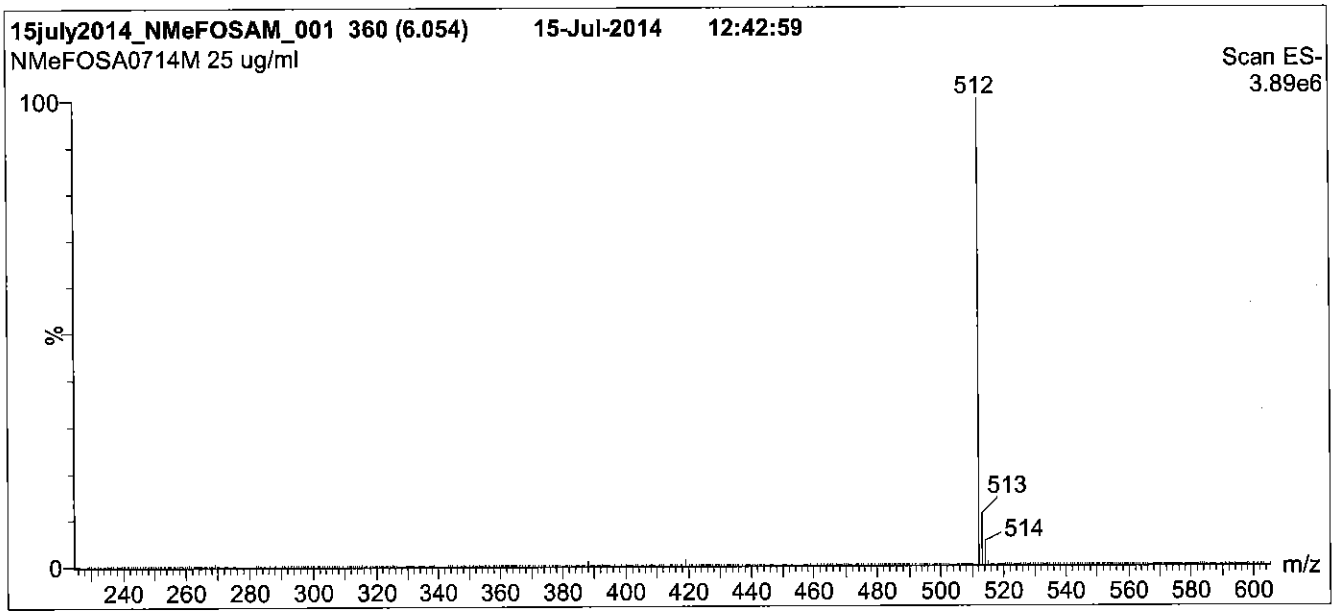
Figure 1: **N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

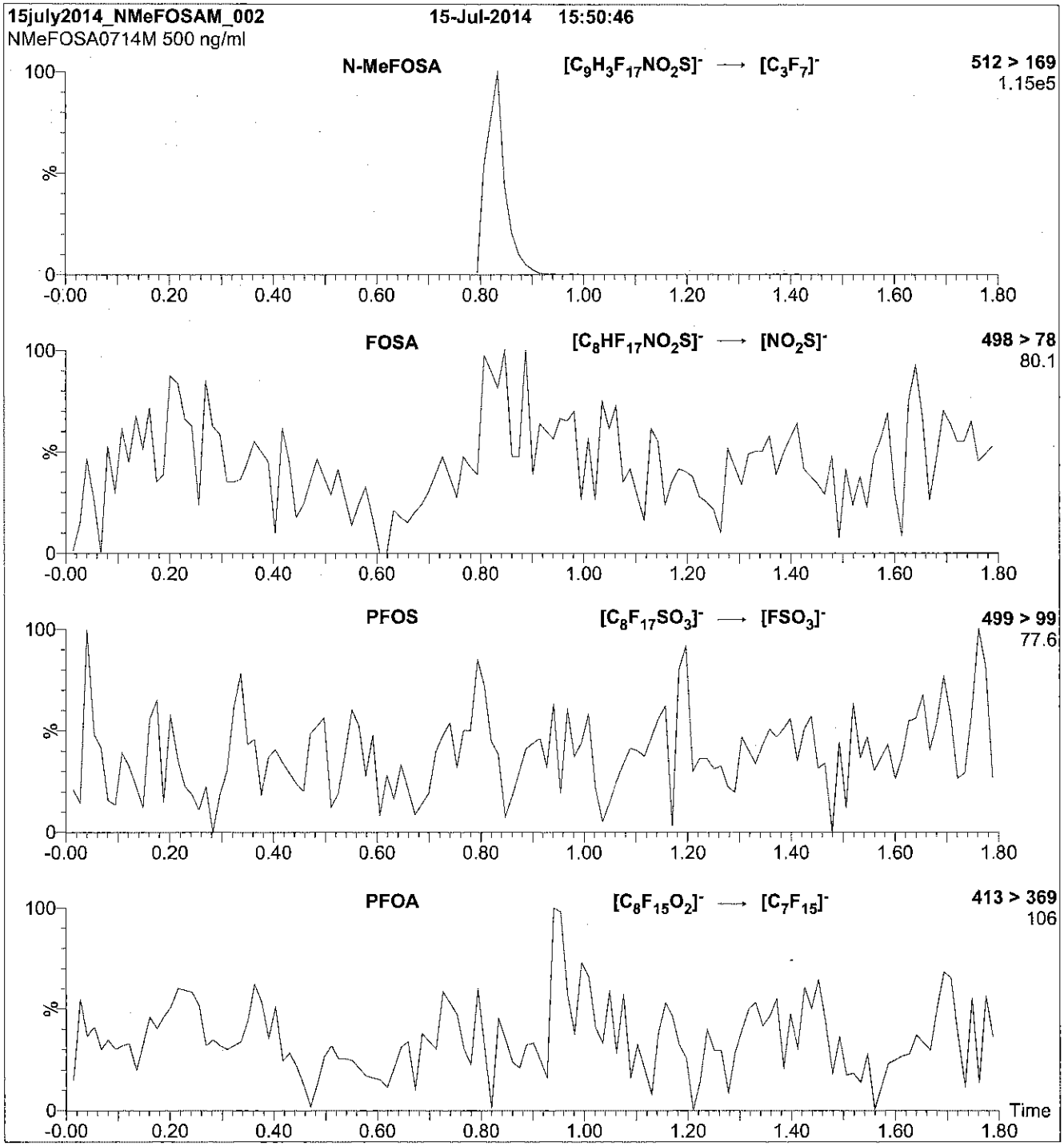
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml N-MeFOSA-M)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-MeFOSA-M_00002

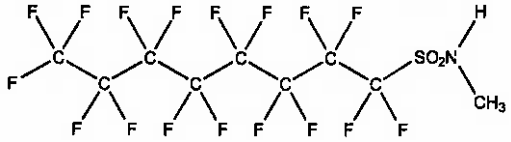
R: 8/23/16 SBC

715564
ID: LCN-MeFOSA-M_00002
Exp: 05/24/21 Prpd: SBC
N-MeFOSA-M

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	N-MeFOSA-M	**LOT NUMBER:**	NMeFOSA0516M
COMPOUND:	N-methylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	31506-32-8



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CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
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CALA

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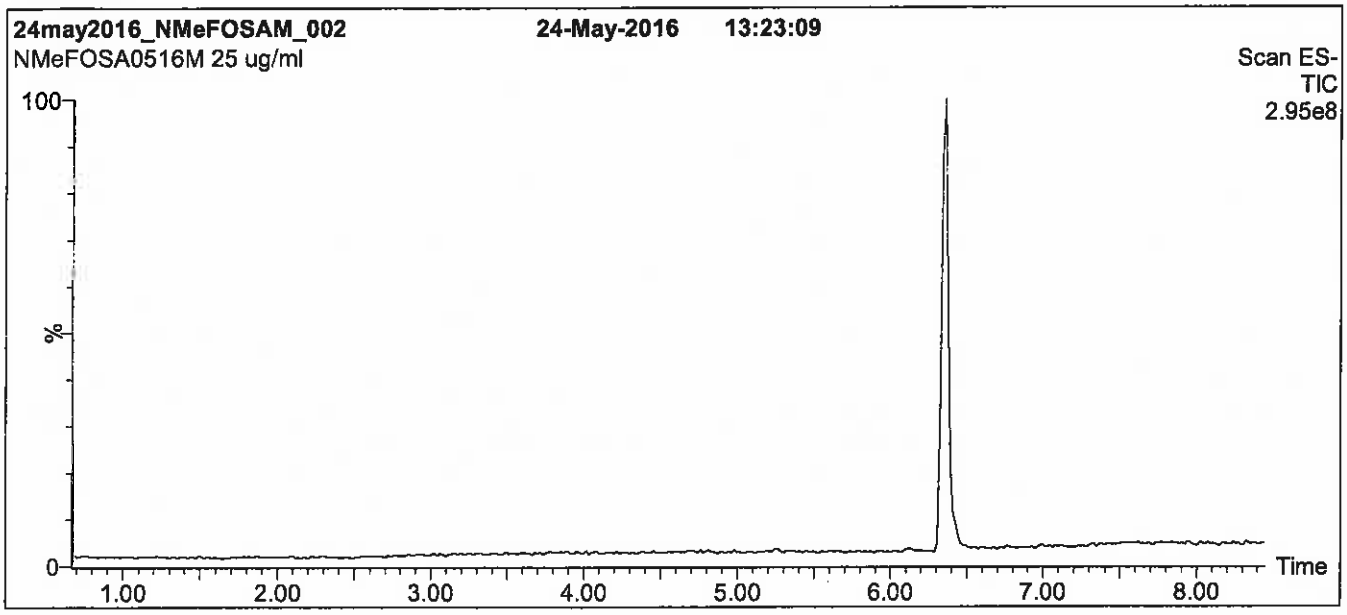

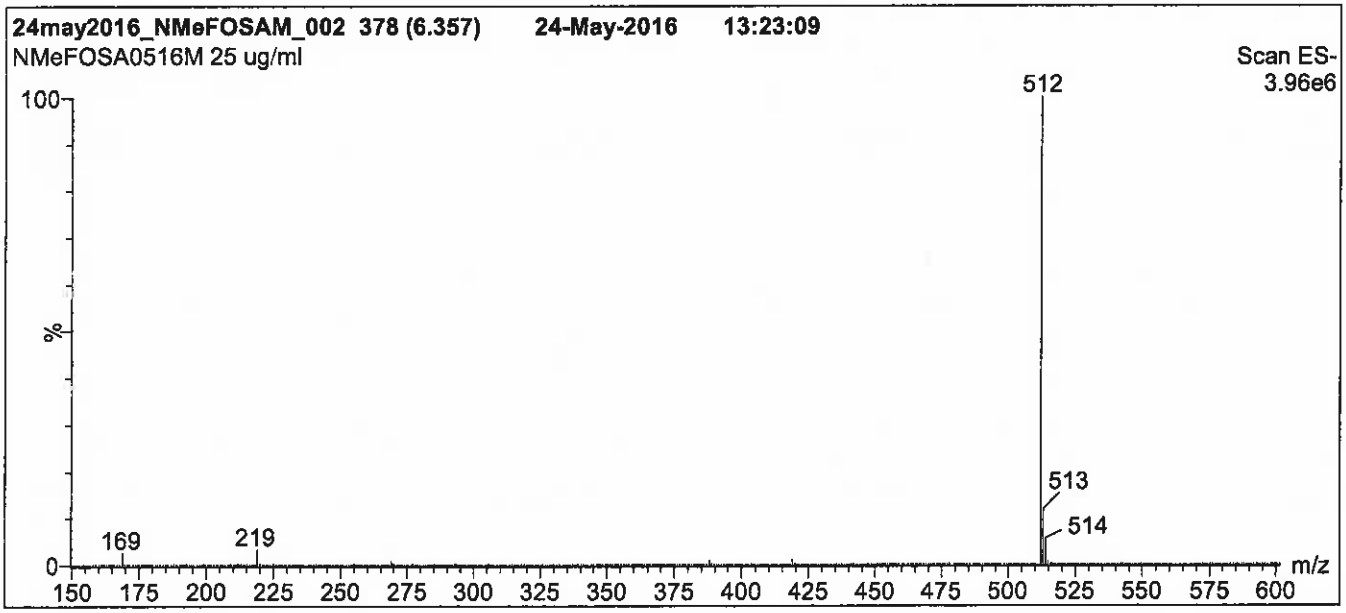

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Time: 10 min

Flow: 300 µl/min

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Source: Electrospray (negative)
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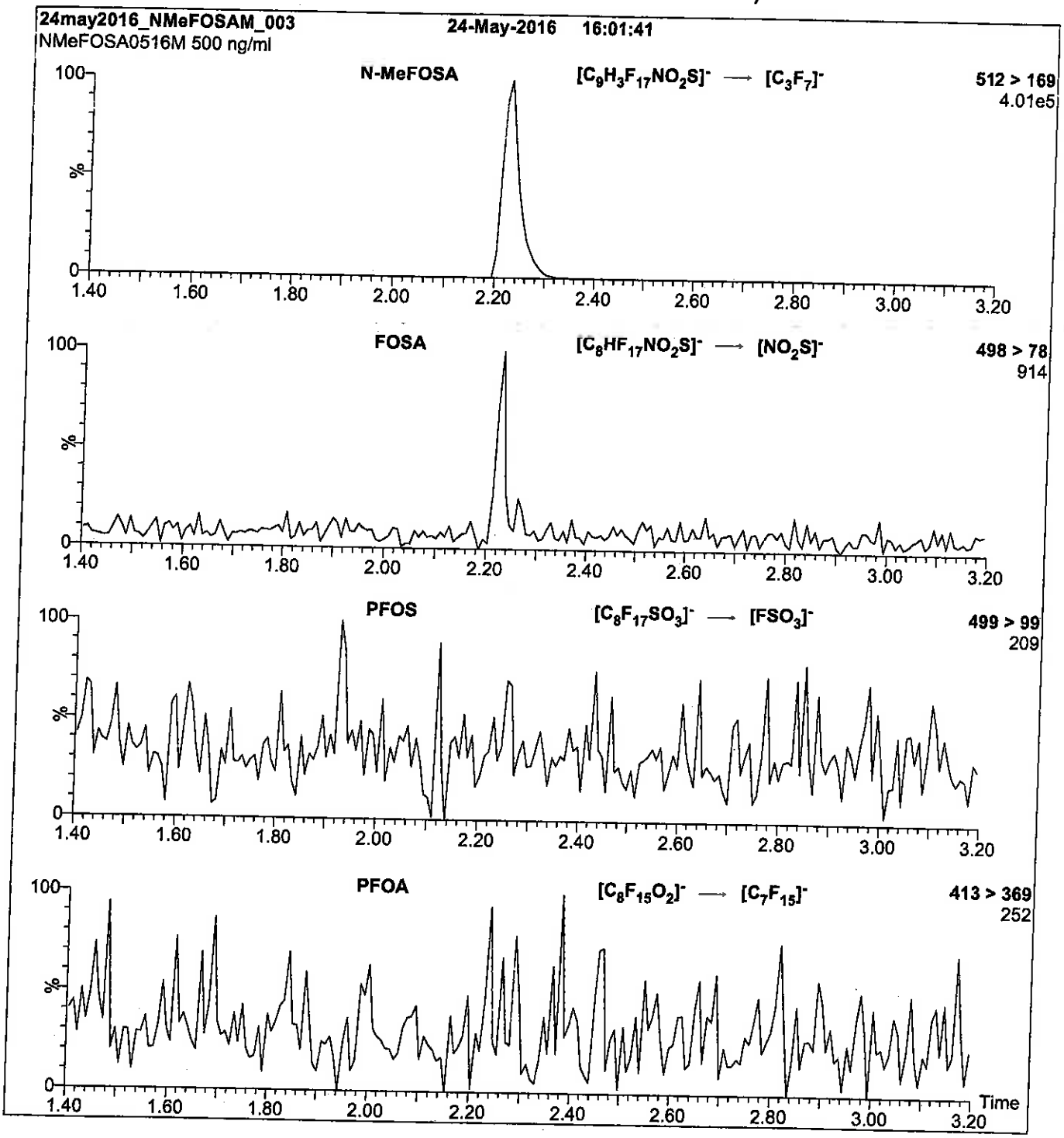


Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml N-MeFOSA-M)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-MeFOSAA_00001

R: 7/10/15 SEU

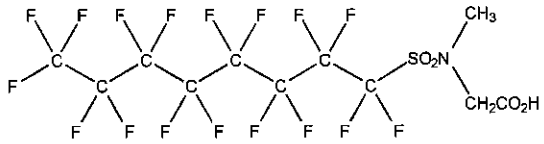
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA1214

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: $C_{11}H_6F_{17}NO_4S$ **MOLECULAR WEIGHT:** 571.21

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 12/09/2014

EXPIRY DATE: (mm/dd/yyyy) 12/09/2019

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/06/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

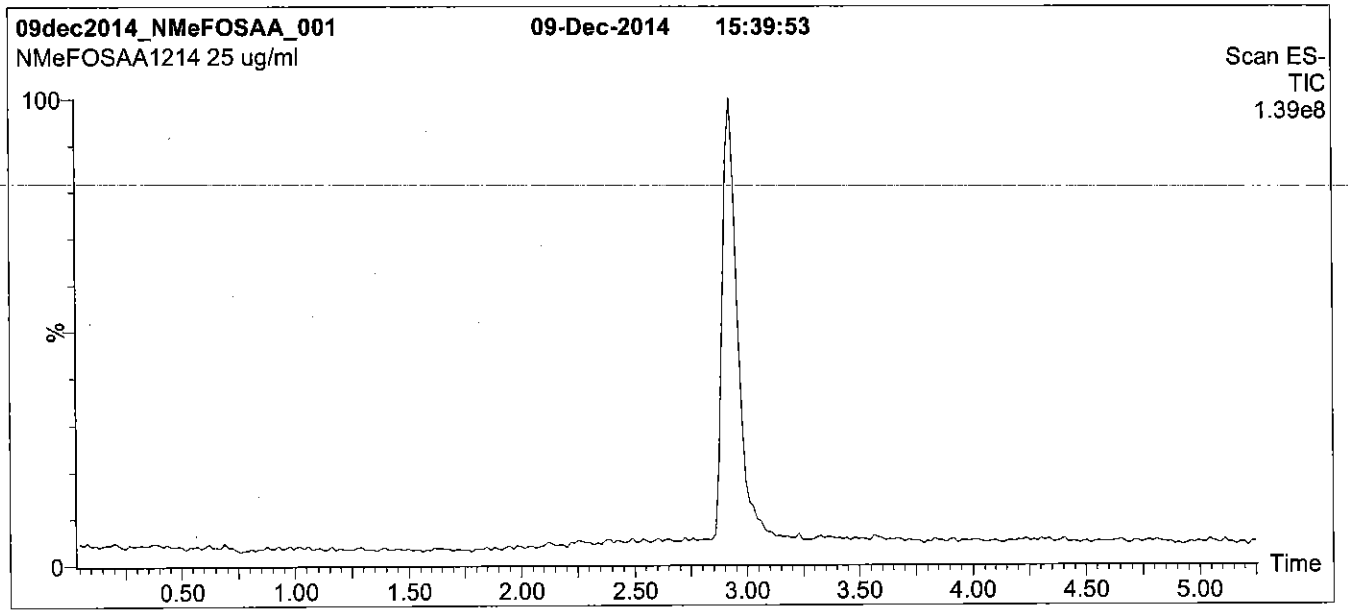
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

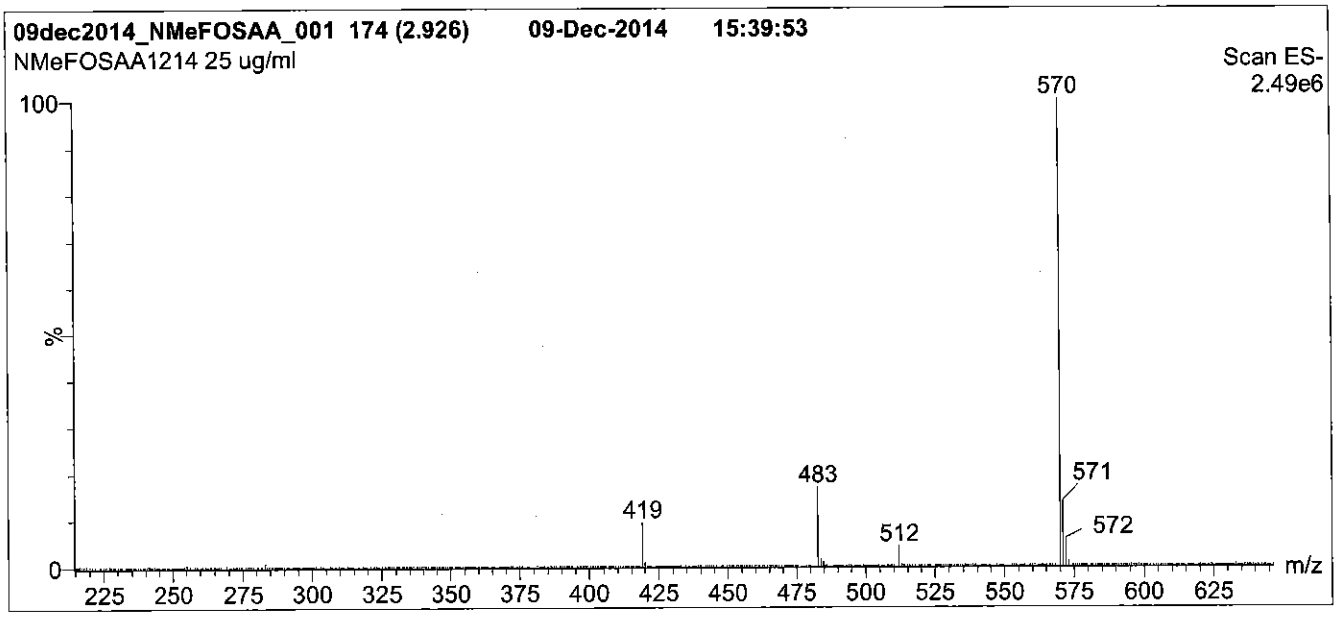
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

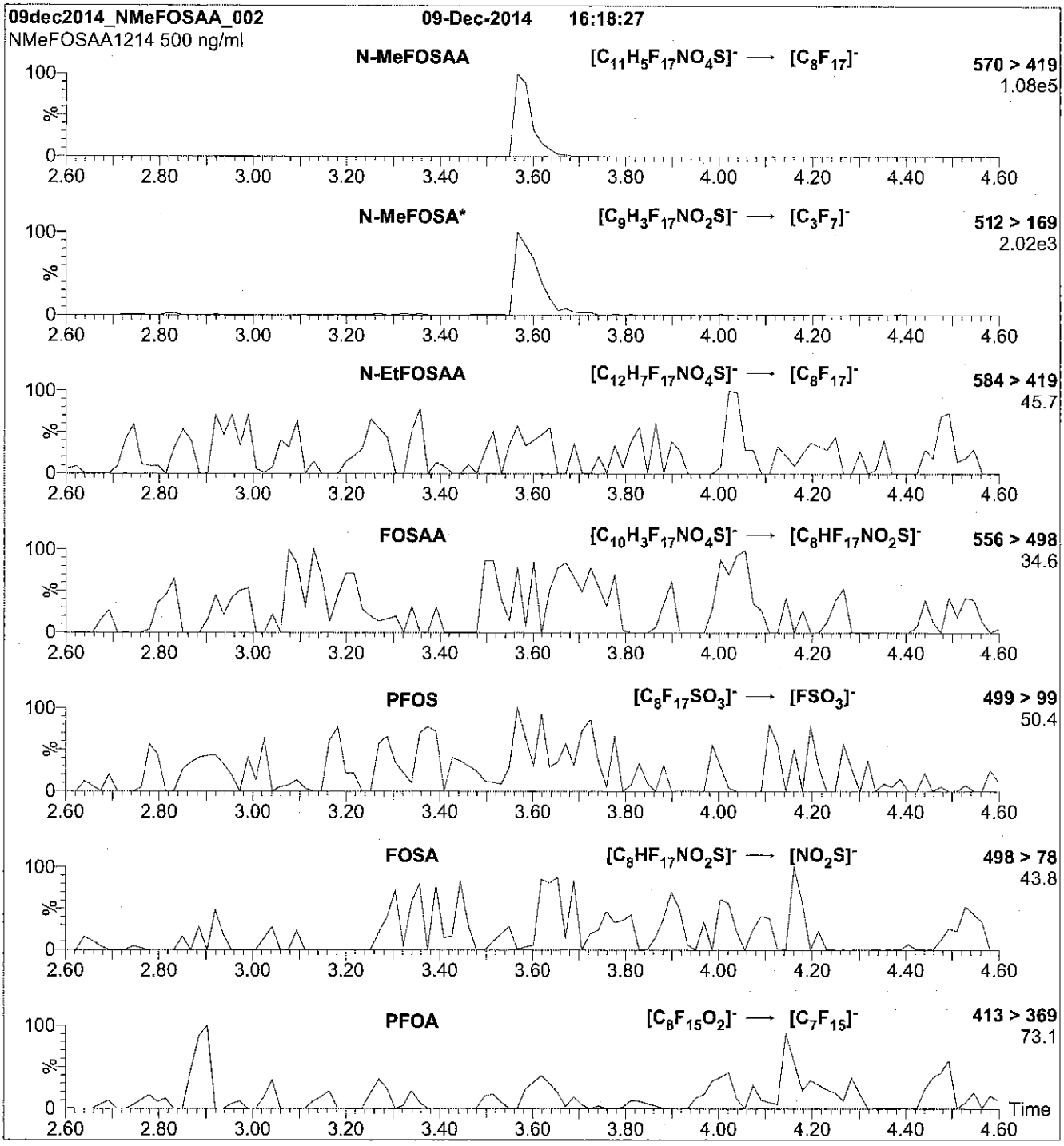
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

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

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



*__Note__: N-MeFOSA is formed by fragmentation of N-MeFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LCN-MeFOSAA_00003

R: 8/23/16 SBC

715562
ID: LCN-MeFOSAA_00003
Exp: 01/20/21 Prpd: SBC
N-MeFOSAA

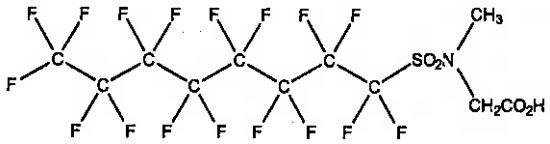
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0116

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: $C_{11}H_6F_{17}NO_4S$ **MOLECULAR WEIGHT:** 571.21

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/20/2016

EXPIRY DATE: (mm/dd/yyyy) 01/20/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/21/2016 (mm/dd/yyyy)

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

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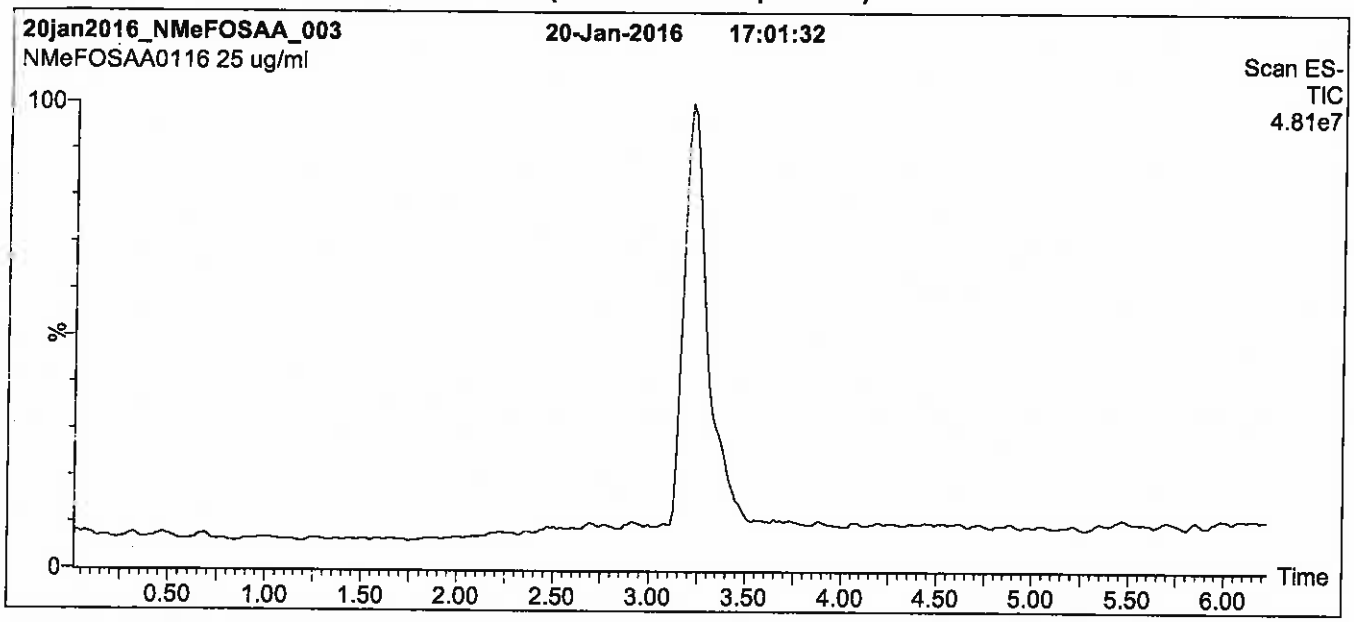
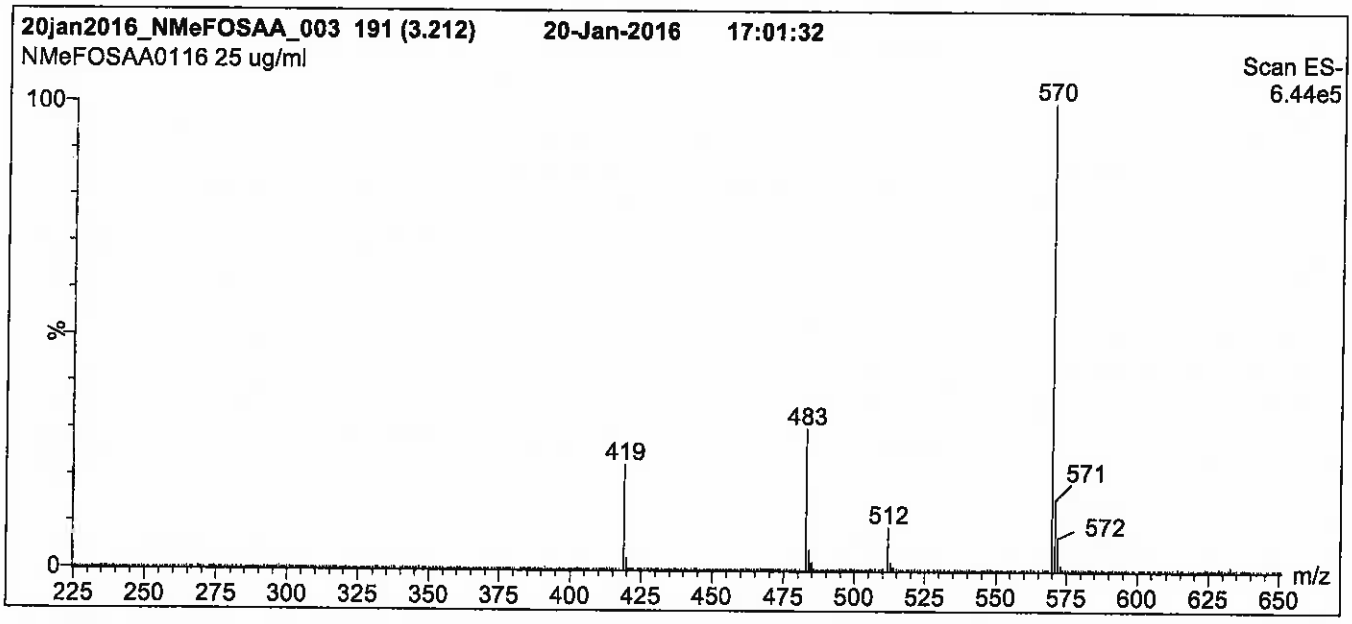
Figure 1: **N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

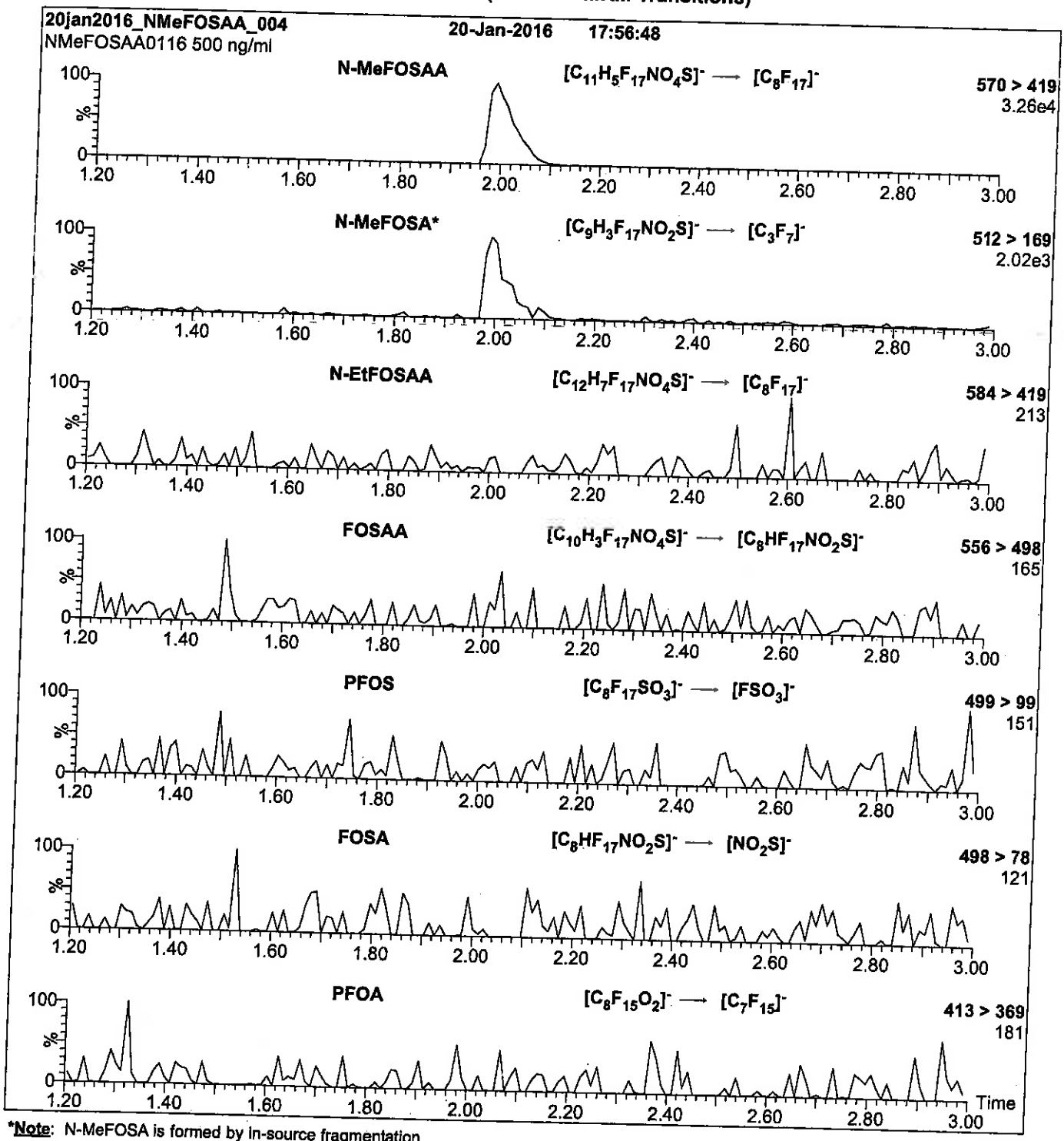
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



***Note**: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFACMXB_00007

P: 12/30/15 CW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXB

Solution/Mixture of Native Perfluoroalkylcarboxylic Acids and Native Perfluoroalkylsulfonates

PRODUCT CODE:	PFAC-MXB
LOT NUMBER:	PFACMXB1115
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	11/04/2015
LAST TESTED: (mm/dd/yyyy)	11/06/2015
EXPIRY DATE: (mm/dd/yyyy)	11/06/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXB is a solution/mixture of thirteen native perfluoroalkylcarboxylic acids (C_4-C_{14}, C_{16}, and C_{18}) and four native perfluoroalkylsulfonates (C_4, C_6, C_8 and C_{10}). The full name, abbreviation and concentration for each of the components are given in Table A.

The individual perfluoroalkylcarboxylic acids and perfluoroalkylsulfonates all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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QUALITY MANAGEMENT:

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

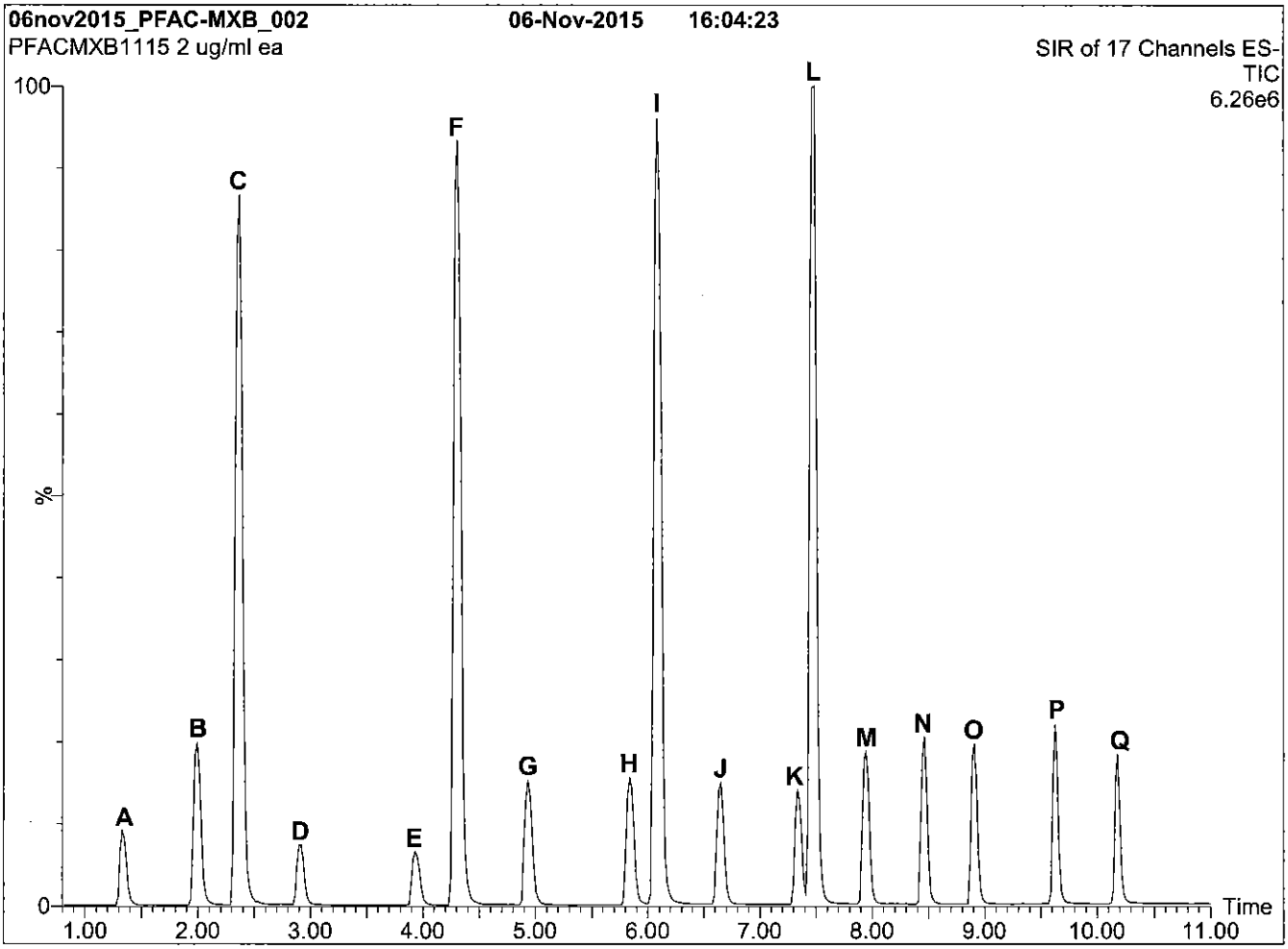
Table A: **PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))**

Name	Abbreviation	Concentration (ng/ml)	Peak Assignment In Figure 1
Perfluoro-n-butanoic acid	PFBA	2000	A
Perfluoro-n-pentanoic acid	PFPeA	2000	B
Perfluoro-n-hexanoic acid	PFHxA	2000	D
Perfluoro-n-heptanoic acid	PFHpA	2000	E
Perfluoro-n-octanoic acid	PFOA	2000	G
Perfluoro-n-nonanoic acid	PFNA	2000	H
Perfluoro-n-decanoic acid	PFDA	2000	J
Perfluoro-n-undecanoic acid	PFUdA	2000	K
Perfluoro-n-dodecanoic acid	PFDoA	2000	M
Perfluoro-n-tridecanoic acid	PFTrDA	2000	N
Perfluoro-n-tetradecanoic acid	PFTeDA	2000	O
Perfluoro-n-hexadecanoic acid	PFHxDA	2000	P
Perfluoro-n-octadecanoic acid	PFODA	2000	Q

Name	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-butanesulfonate	L-PFBS	2000	1770	C
Sodium perfluoro-1-hexanesulfonate	L-PFHxS	2000	1890	F
Sodium perfluoro-1-octanesulfonate	L-PFOS	2000	1910	I
Sodium perfluoro-1-decanesulfonate	L-PFDS	2000	1930	L

Certified By: B.G. Chittim **Date:** 11/11/2015 (mm/dd/yyyy)

Figure 1: **PFAC-MXB; LC/MS Data (Total Ion Current Chromatogram; SIR)**



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% H_2O / 45% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 10 min and hold for 1 min
before returning to initial conditions in 0.5 min.

Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR of 17 Channels

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**

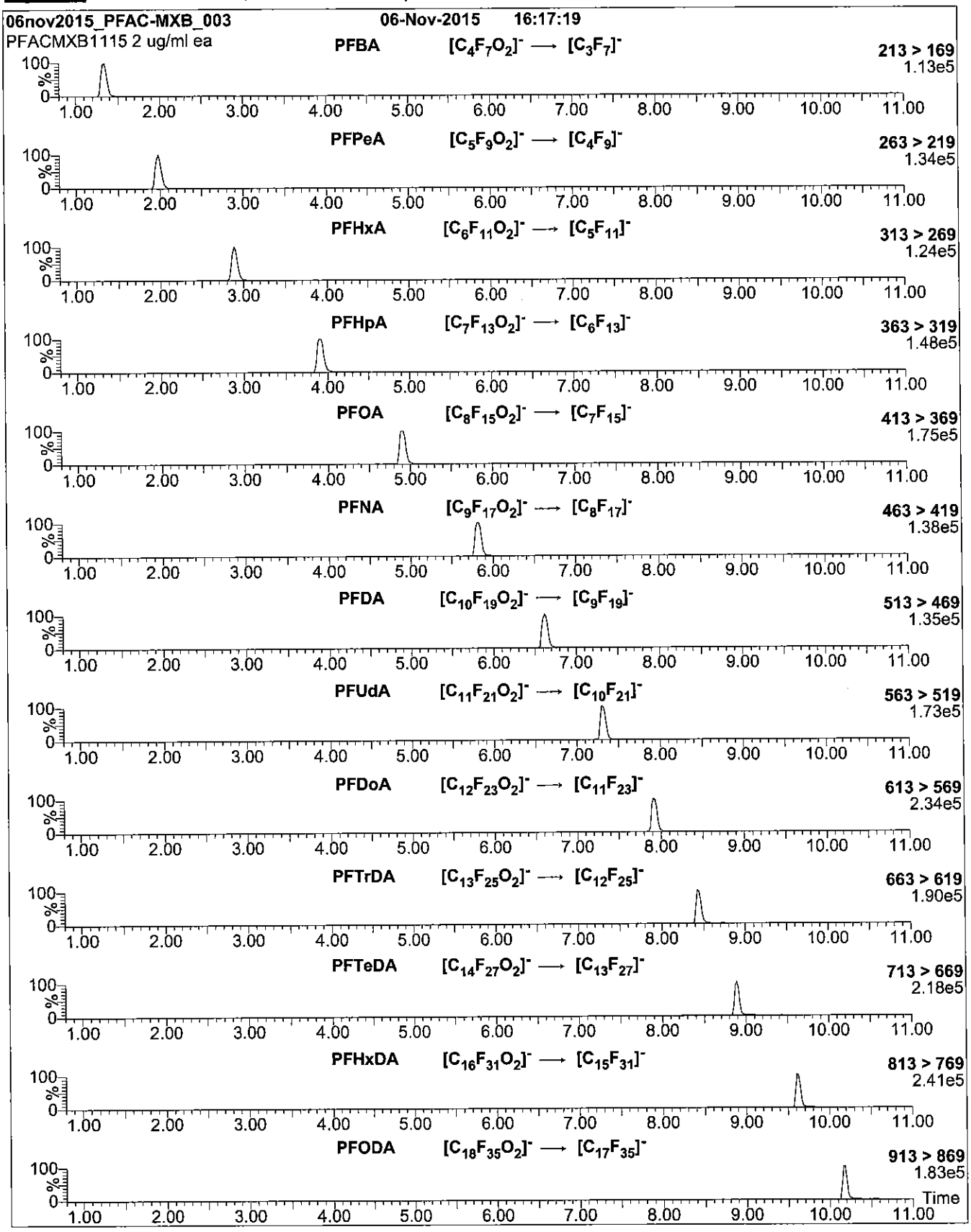
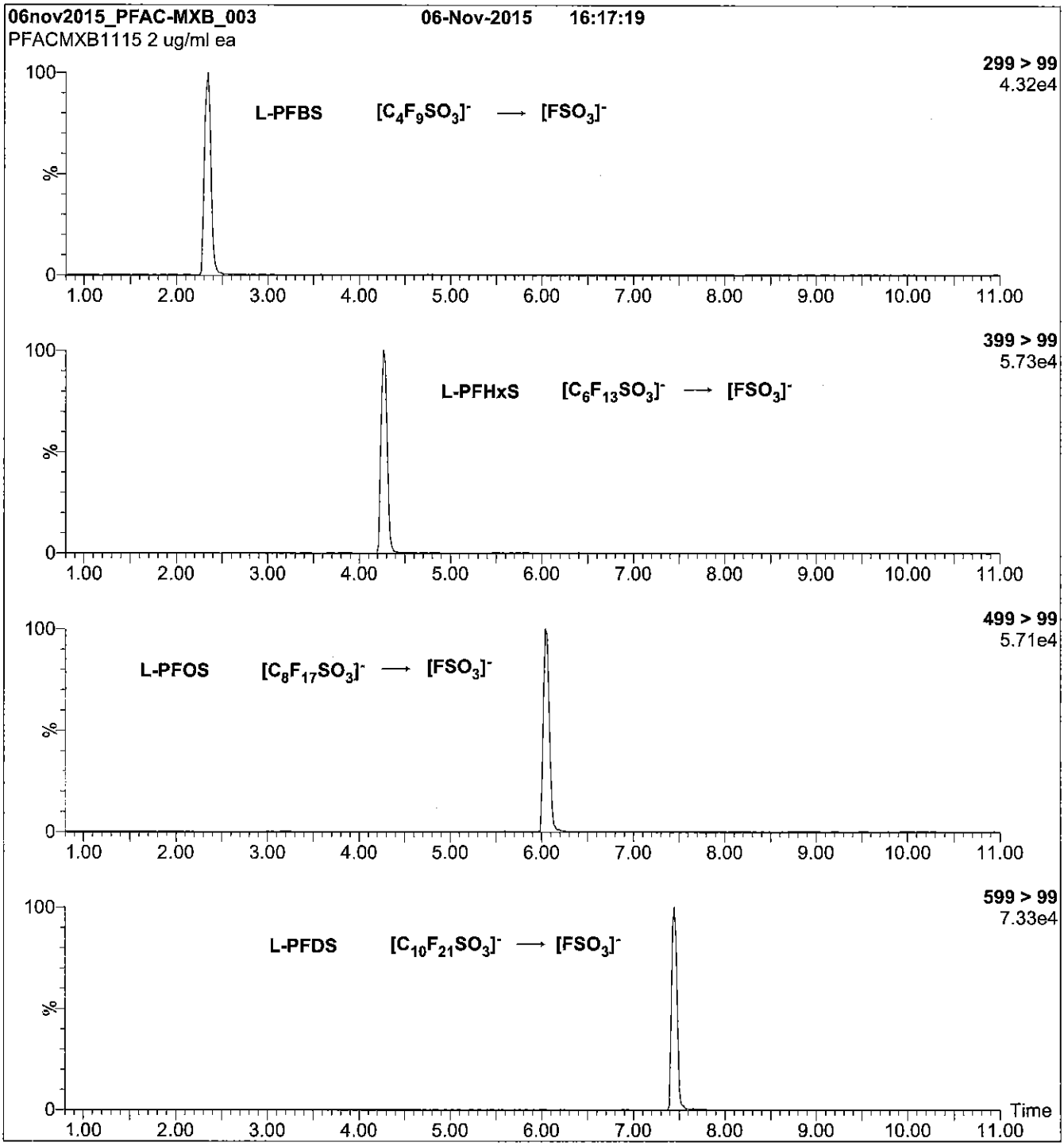


Figure 3: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figures 2 and 3:

Injection: on-column (PFAC-MXB)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters
Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 8-50 (variable)

Reagent

LCPFBA_00005

Scanned 10/16/14

R: SBC 9/13/16

730531
ID: LCPFBA_00005
Exp: 05/27/21 Prpd: SBC
PF-n-butanoic acid

730532
ID: LCPFBA_00006
Exp: 05/27/21 Prpd: SBC
PF-n-butanoic acid

WELLINGTON LABORATORIES

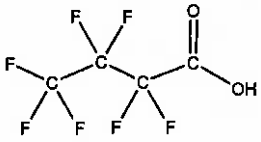
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid

LOT NUMBER: PFBA0516

STRUCTURE:

CAS #: 375-22-4



MOLECULAR FORMULA: $C_4HF_7O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 214.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/27/2016
EXPIRY DATE: (mm/dd/yyyy) 05/27/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/31/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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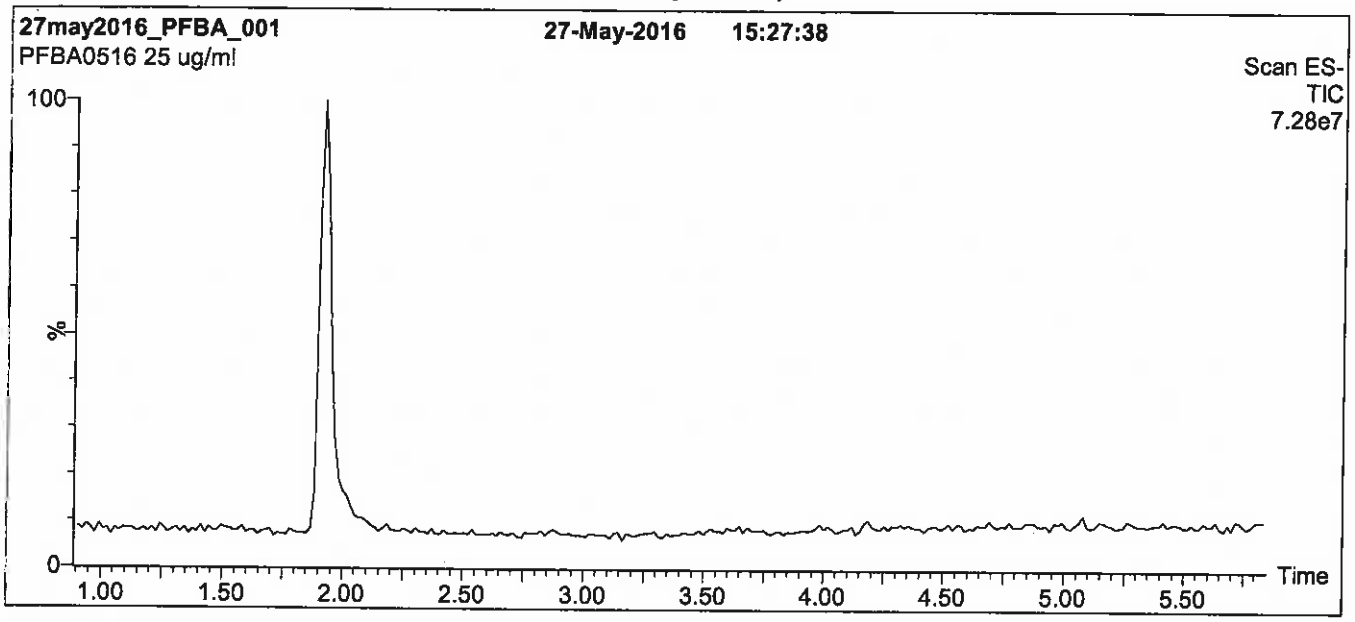
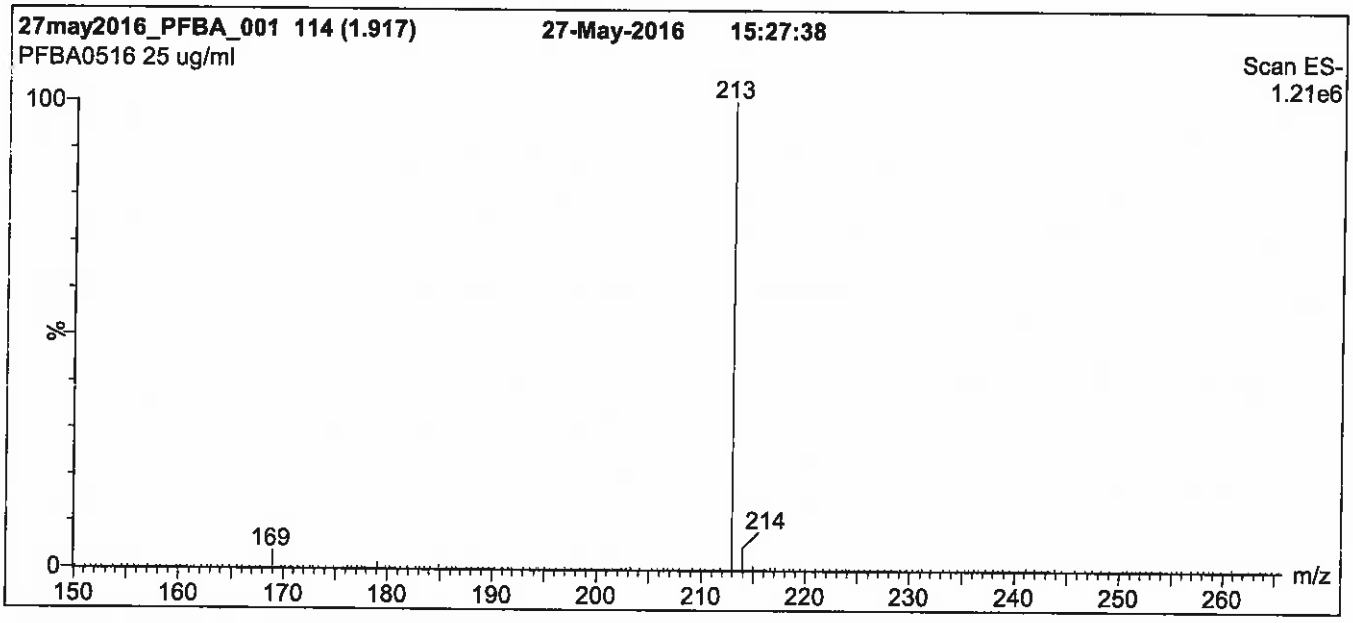
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

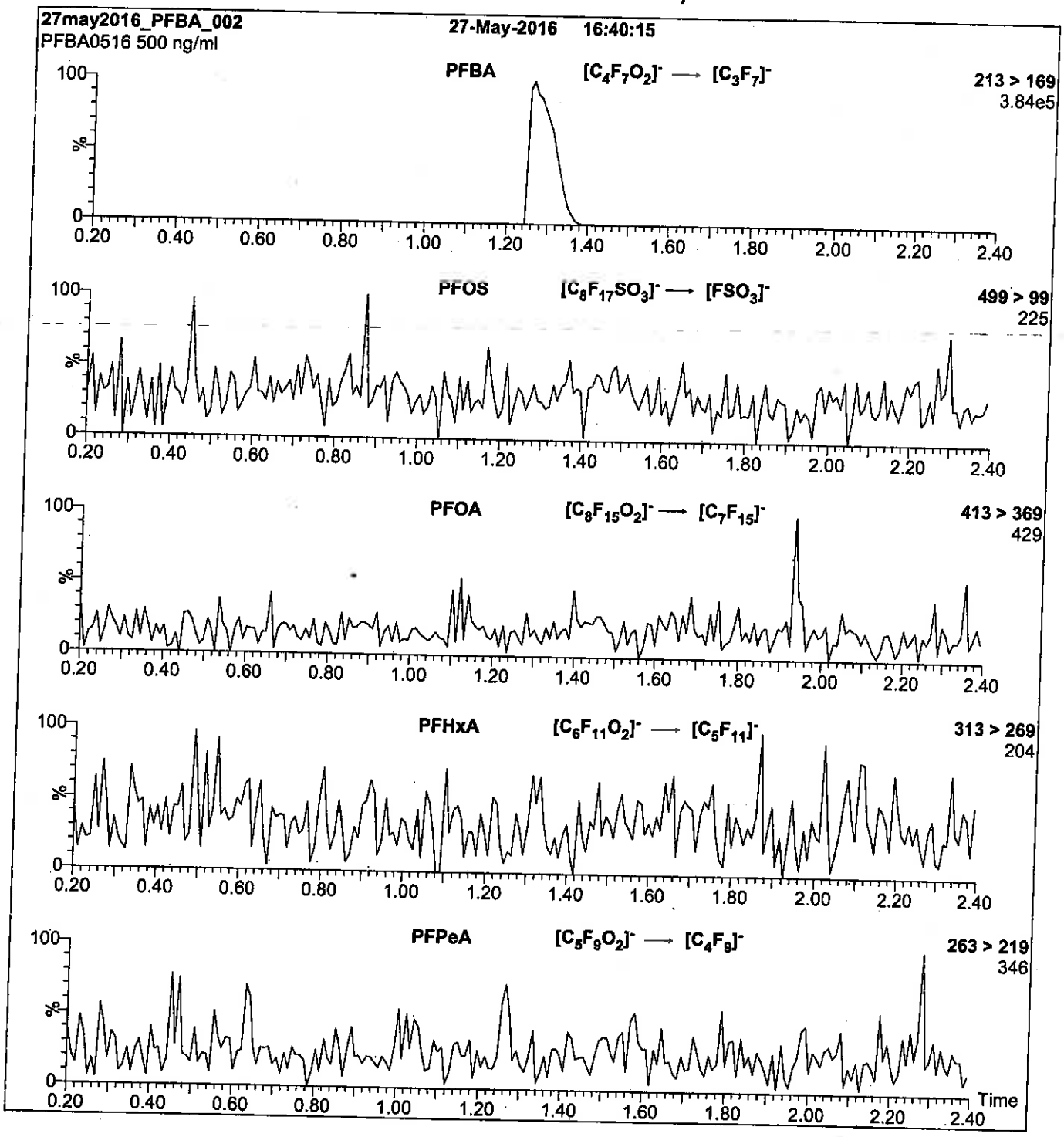
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 10

Reagent

LCPFBS_00005

R: 9/9/16 SBC

728306
ID: LCM2-8:2FTS_00003
Exp: 01/08/21 Prpd: SBC
M2-8:2FTS

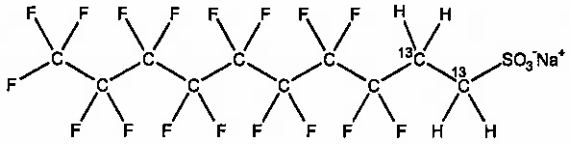
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0116

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	01/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/08/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/18/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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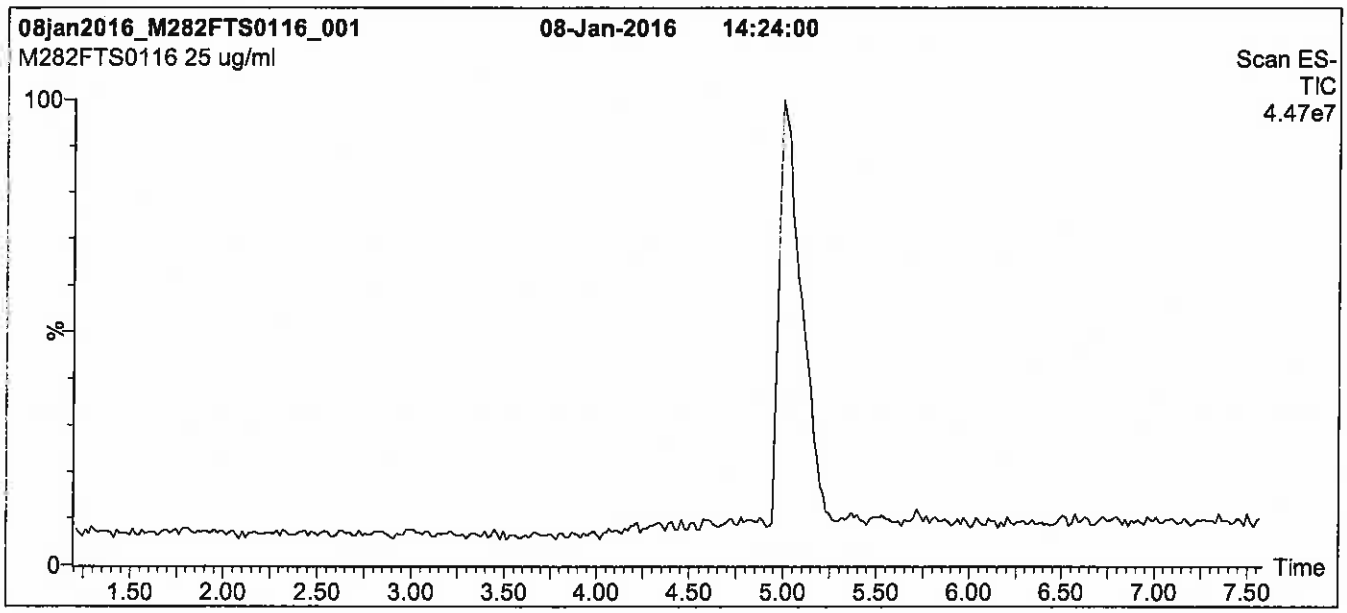
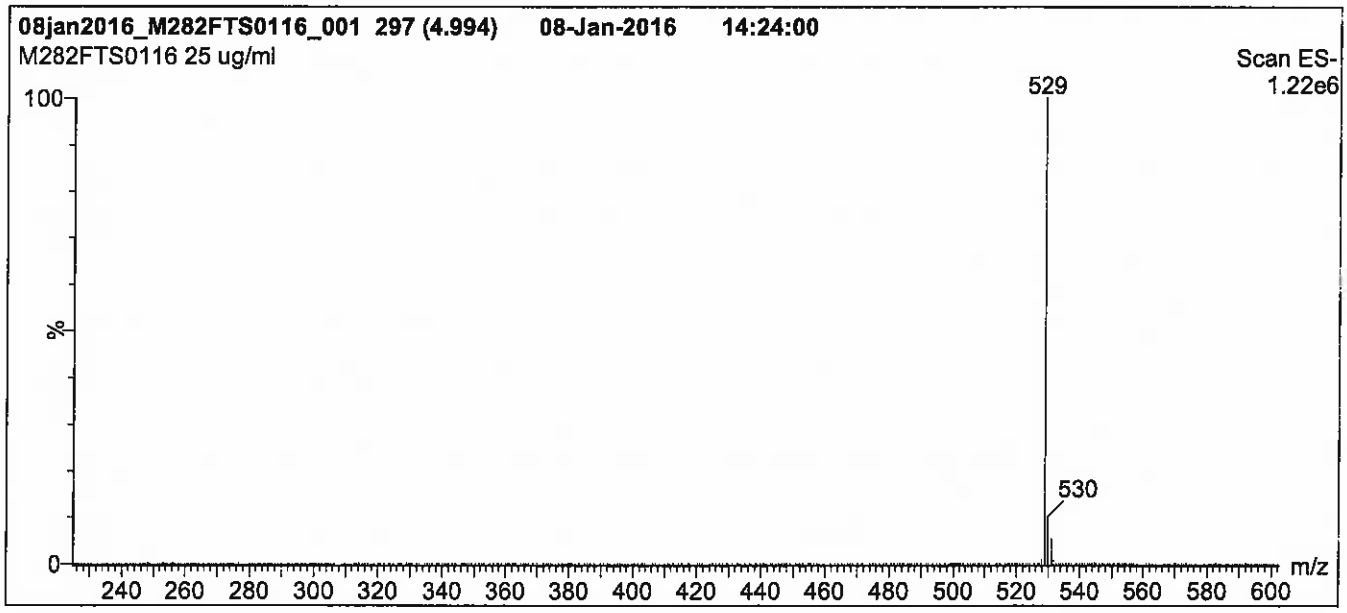
Figure 1: **M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

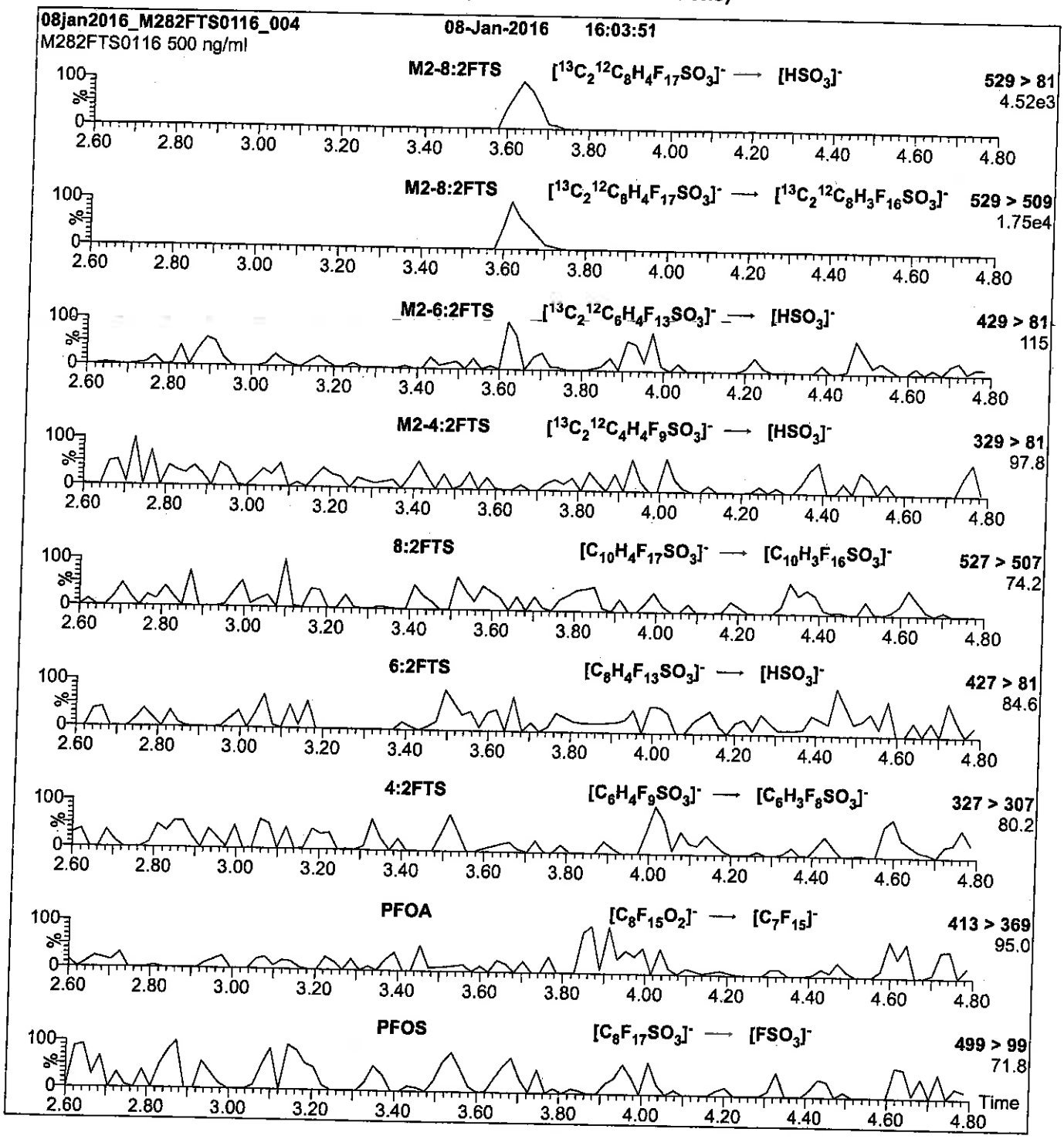
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-8:2FTS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

R: SBC 9/13/16

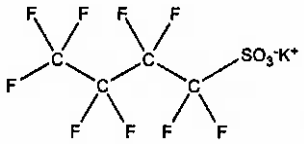
730511
ID: LCPFBS_00005
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa

730512
ID: LCPFBS_00006
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
LOT NUMBER: LPFBS0316
COMPOUND: Potassium perfluoro-1-butanesulfonate
STRUCTURE:
CAS #: 29420-49-3



MOLECULAR FORMULA:	$C_4F_9SO_3K$	**MOLECULAR WEIGHT:**	338.19
CONCENTRATION:	50.0 ± 2.5 µg/ml (K salt) 44.2 ± 2.2 µg/ml (PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	03/15/2016		
EXPIRY DATE: (mm/dd/yyyy)	03/15/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/21/2016 (mm/dd/yyyy)

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

INTENDED USE:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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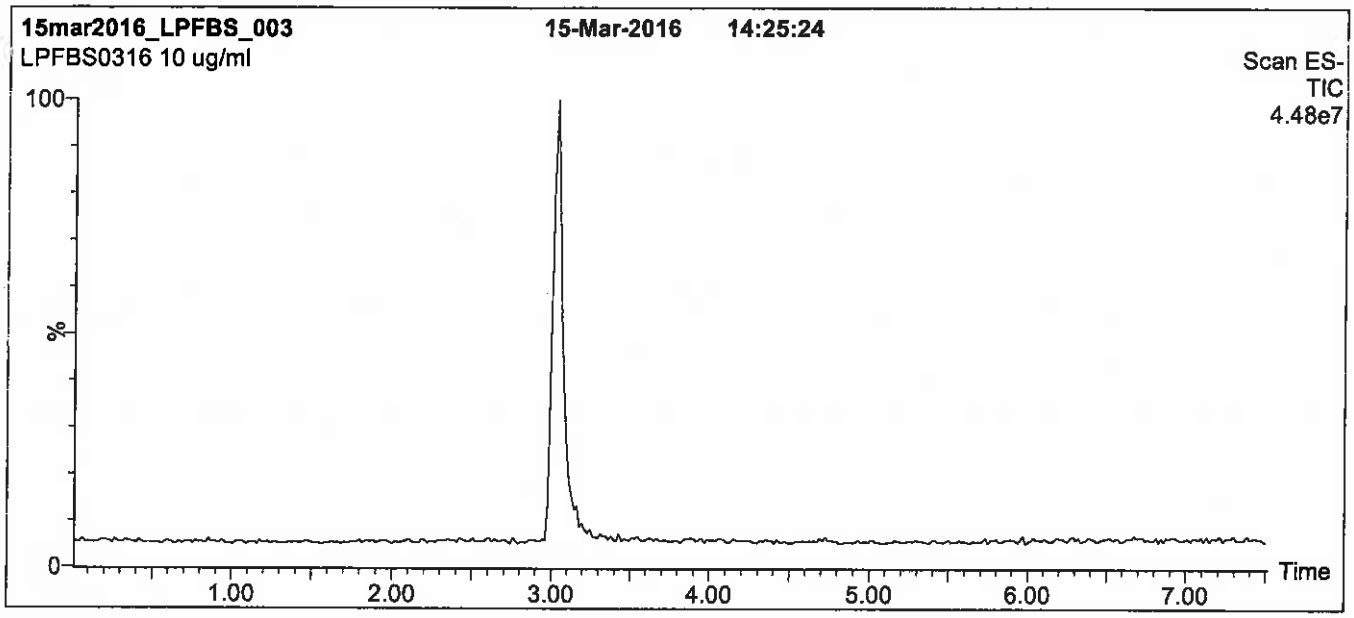
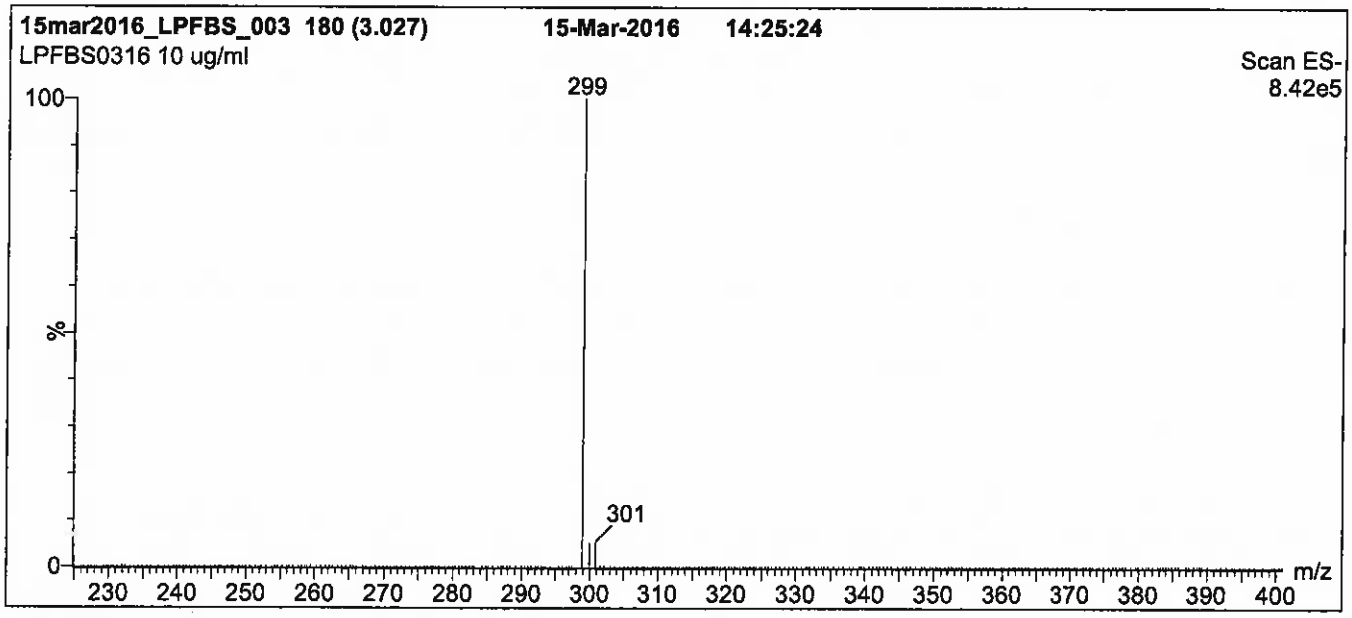
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

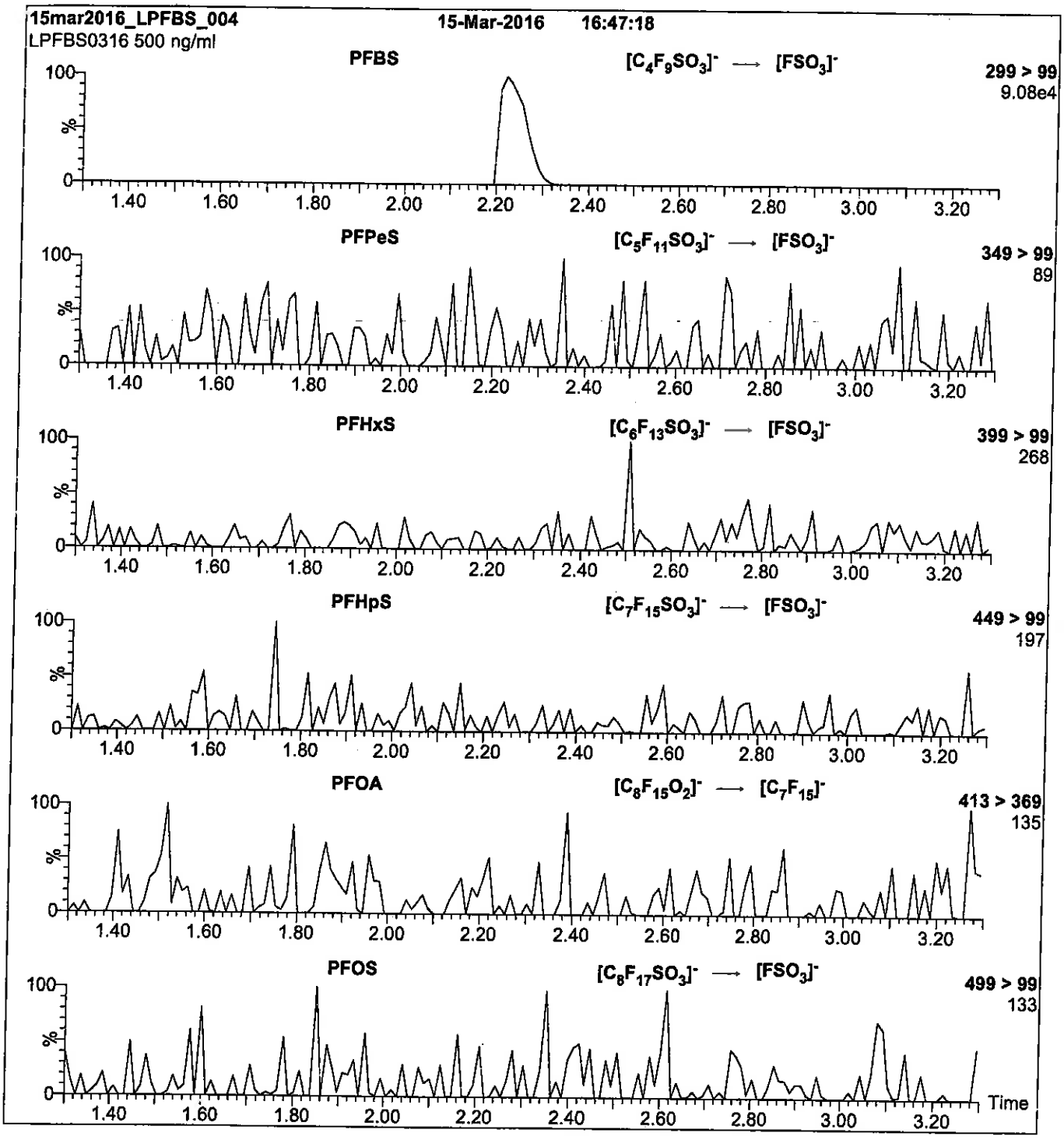
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFBS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 25

Reagent

LCPFDA_00005

R: 7/16/16 CBW

671576
ID: LCPFDA_00005
Exp: 07/02/20 Prpd: CBW
PF-n-decanoic acid

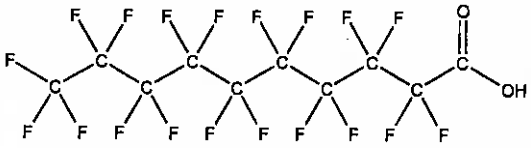
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDA
COMPOUND: Perfluoro-n-decanoic acid
LOT NUMBER: PFDA0615

STRUCTURE:

CAS #: 335-76-2



MOLECULAR FORMULA: $C_{10}HF_{19}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 514.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/02/2015
EXPIRY DATE: (mm/dd/yyyy) 07/02/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.6% PFNA and ~ 0.3% PFOA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/24/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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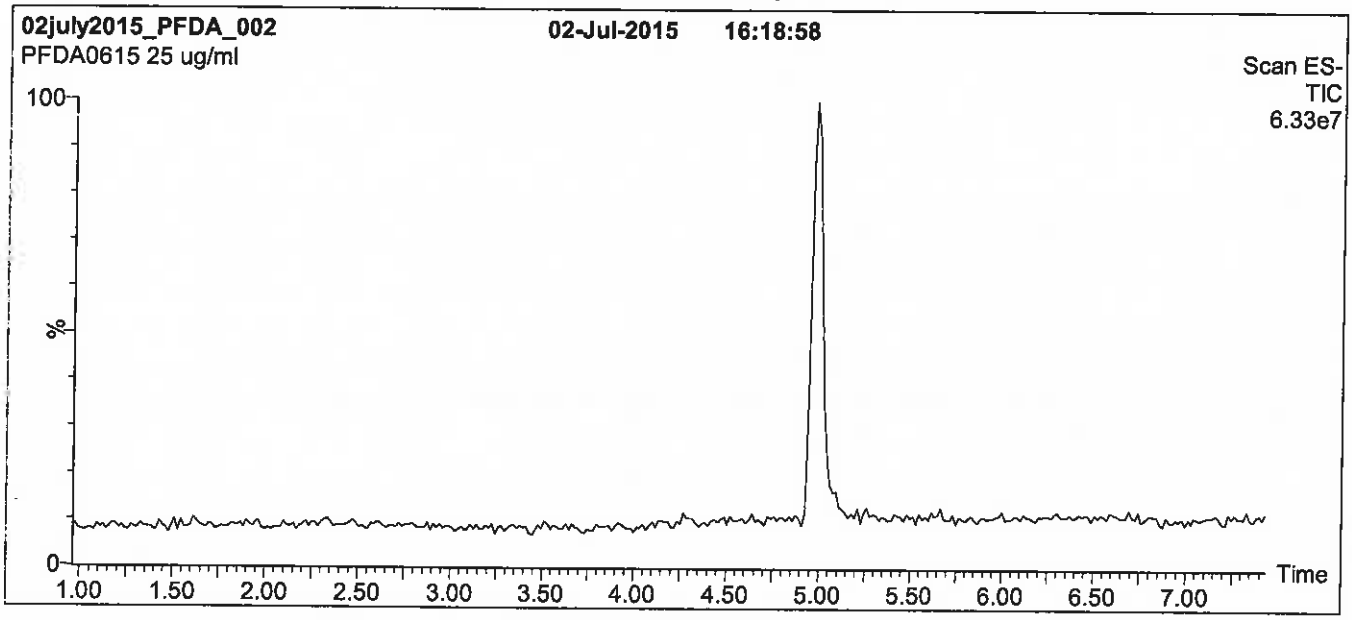
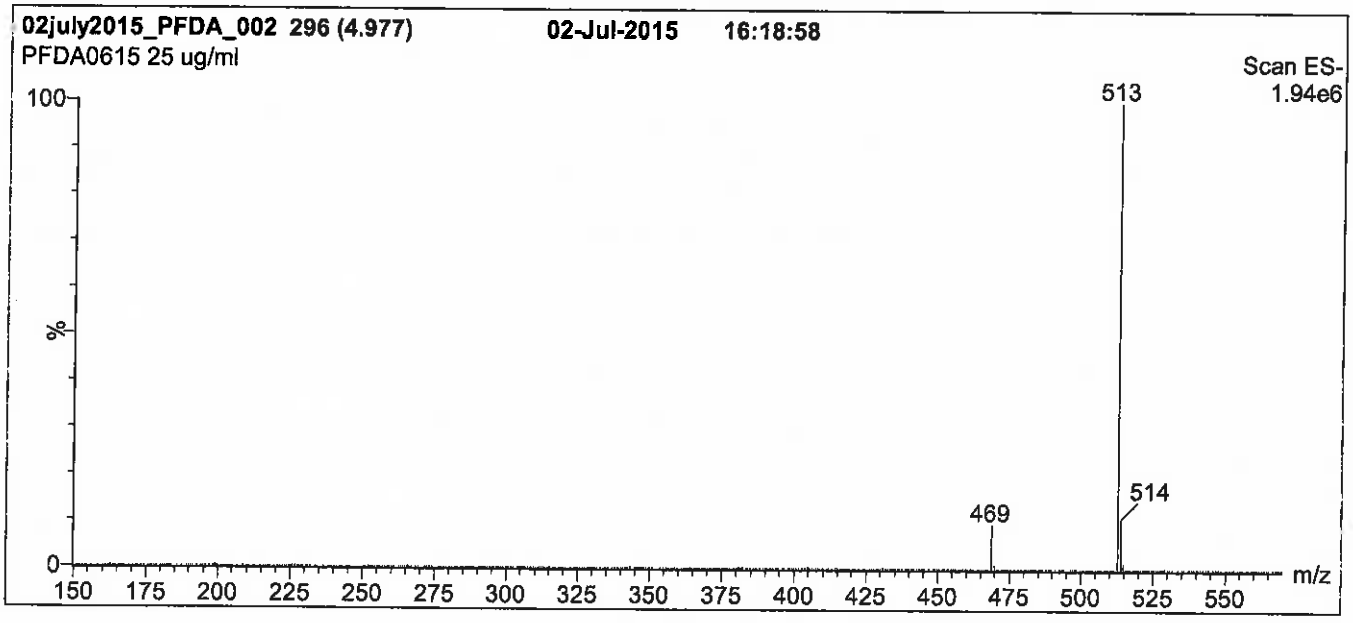
Figure 1: **PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

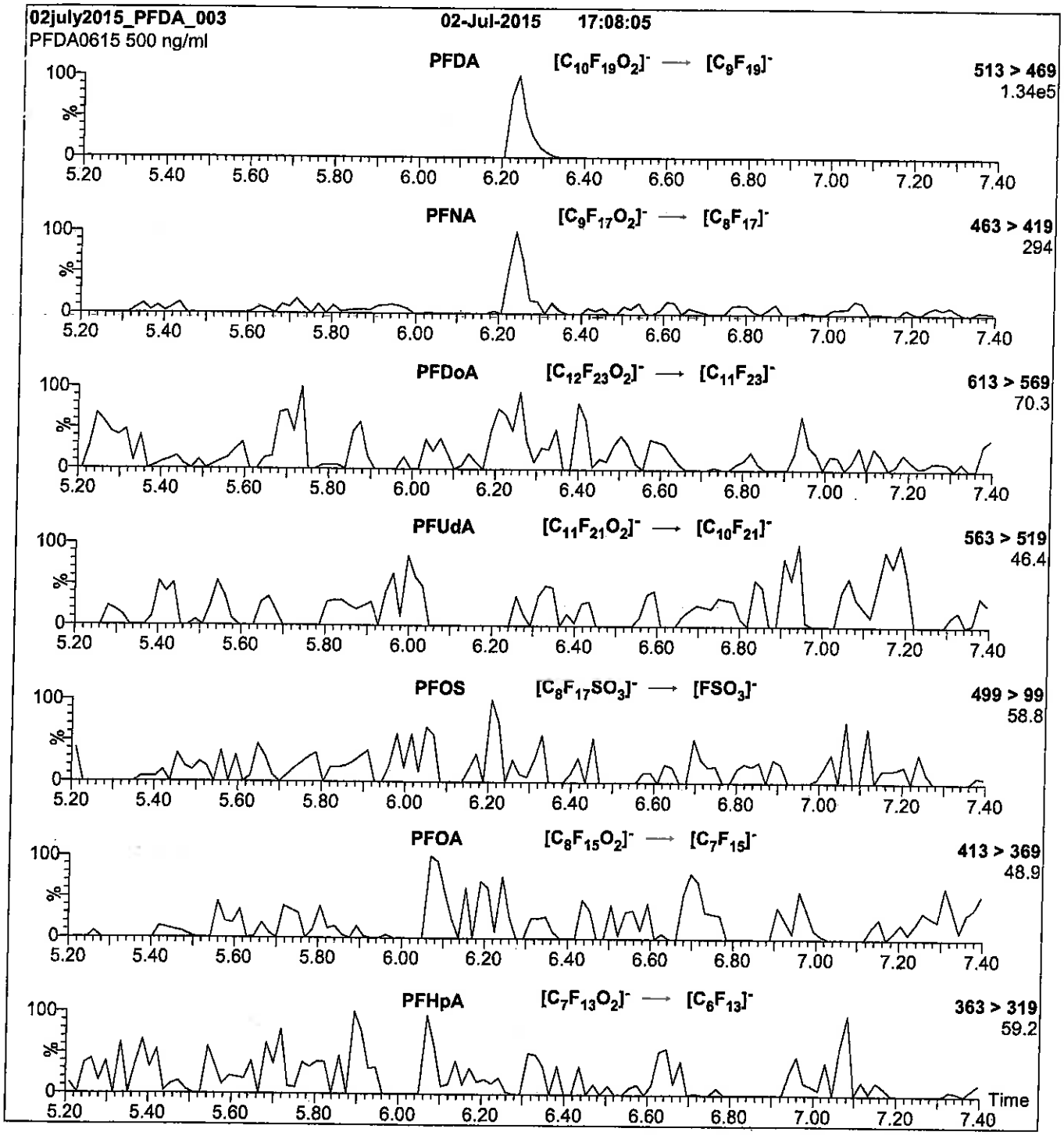
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00005

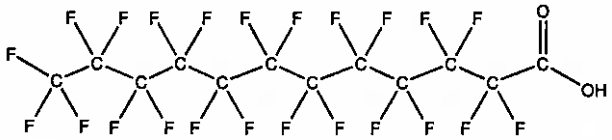
R: 7/6/16 cw

671601
ID: LCPFDoA_00005
Exp: 01/30/20 Prpd: CBW
PF-n-dodecanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFDoA	**LOT NUMBER:**	PFDoA0115
COMPOUND:	Perfluoro-n-dodecanoic acid		
STRUCTURE:		**CAS #:**	307-55-1



MOLECULAR FORMULA:	$C_{12}HF_{23}O_2$	**MOLECULAR WEIGHT:**	614.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/30/2015		
EXPIRY DATE: (mm/dd/yyyy)	01/30/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/25/2015 (mm/dd/yyyy)

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

INTENDED USE:

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CALA

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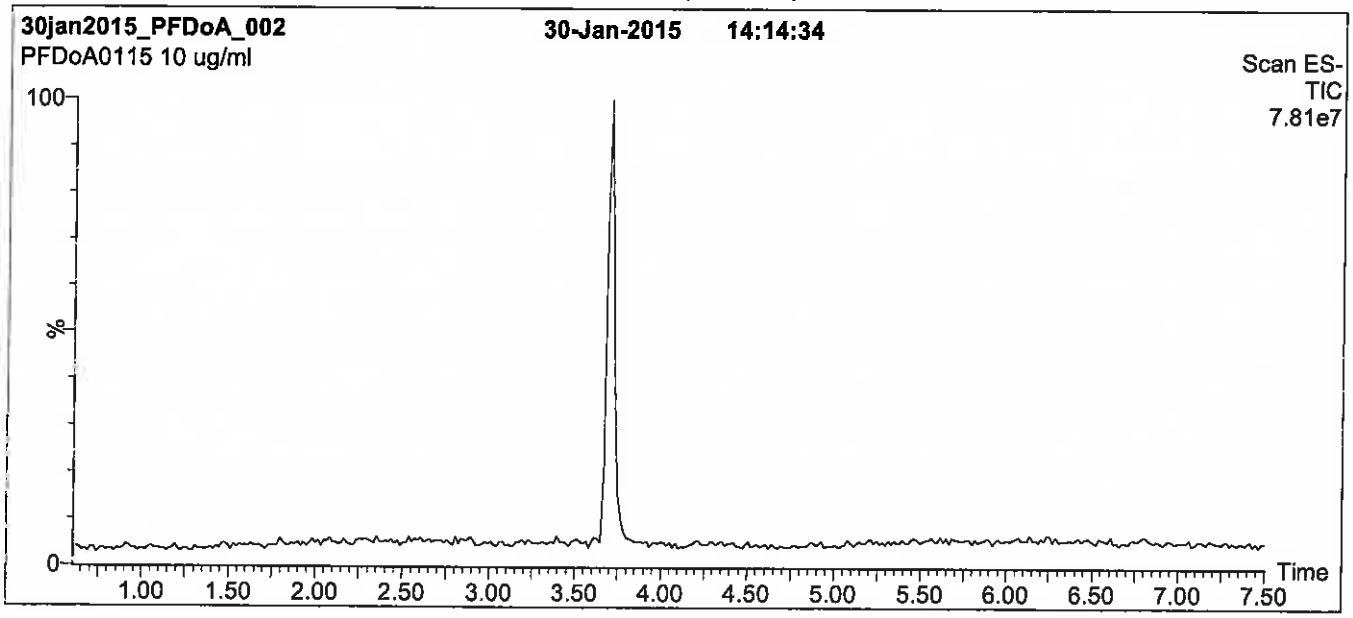
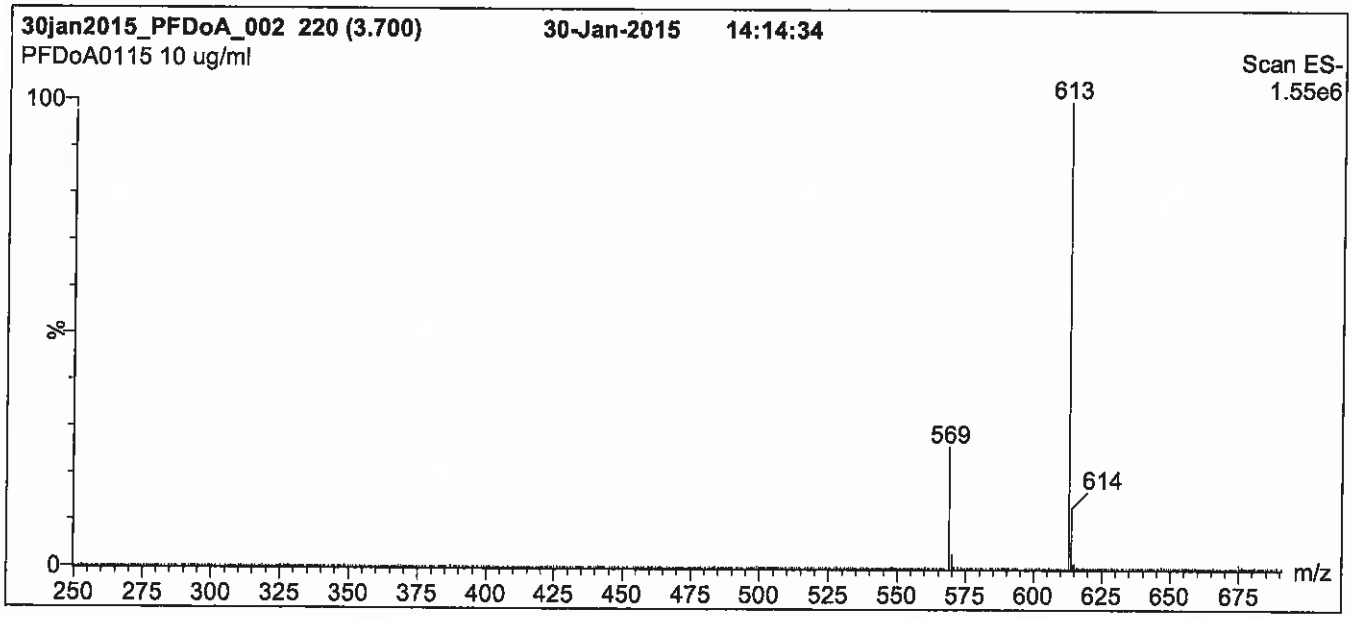




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

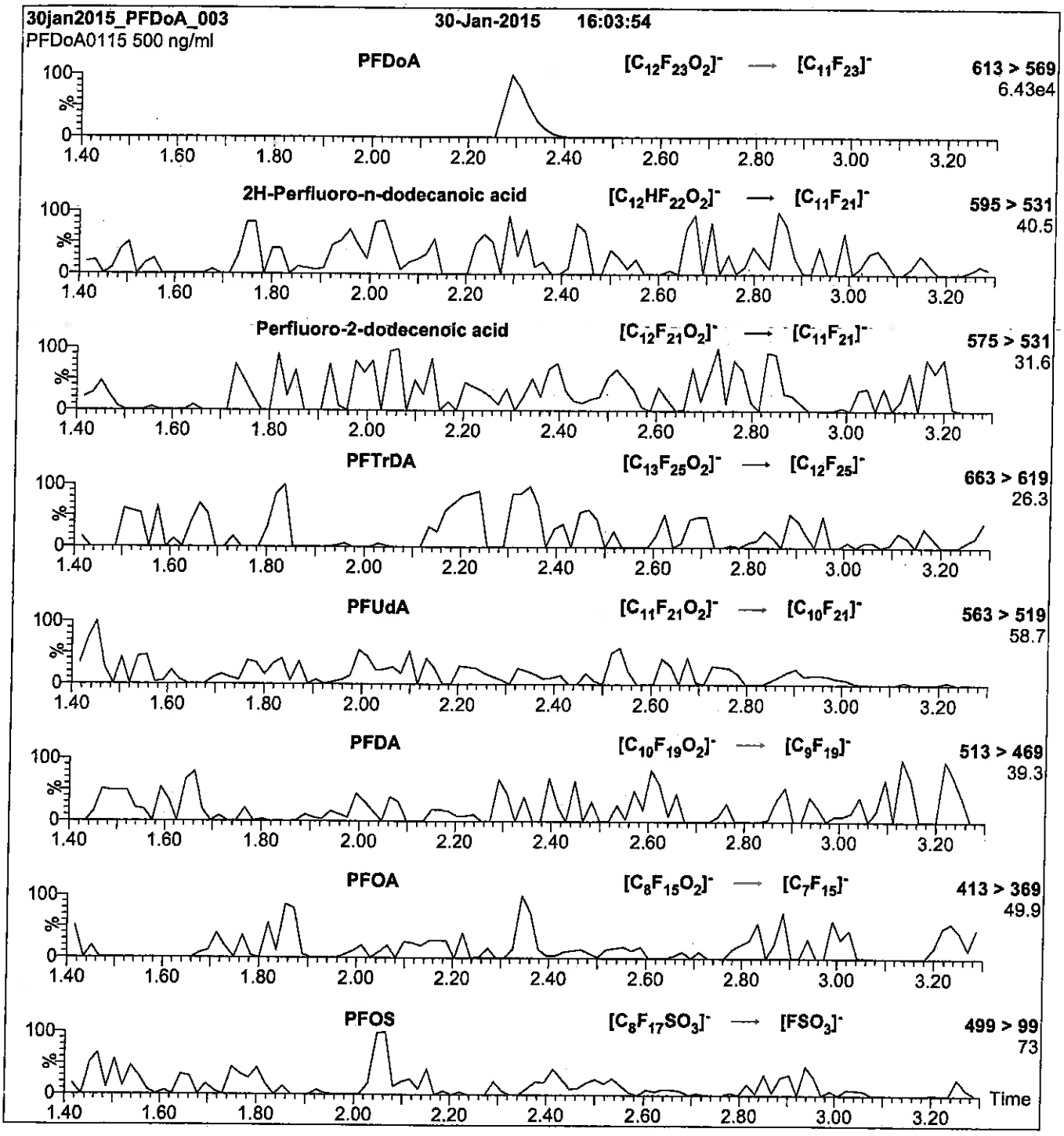
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFDoA)	**MS Parameters**	
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.28e-3 Collision Energy (eV) = 13	
Flow:	300 µl/min		

Reagent

LCPFHpA_00005

609699
ID: LCPFHpA_00005
Exp: 01/22/21 Prpd: CBW
PF-n-heptanoic acid

R: 4/7/16 CBW

WELLINGTON LABORATORIES

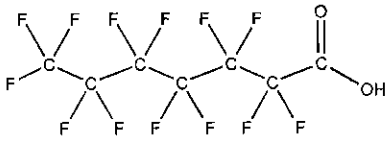
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/22/2016
EXPIRY DATE: (mm/dd/yyyy) 01/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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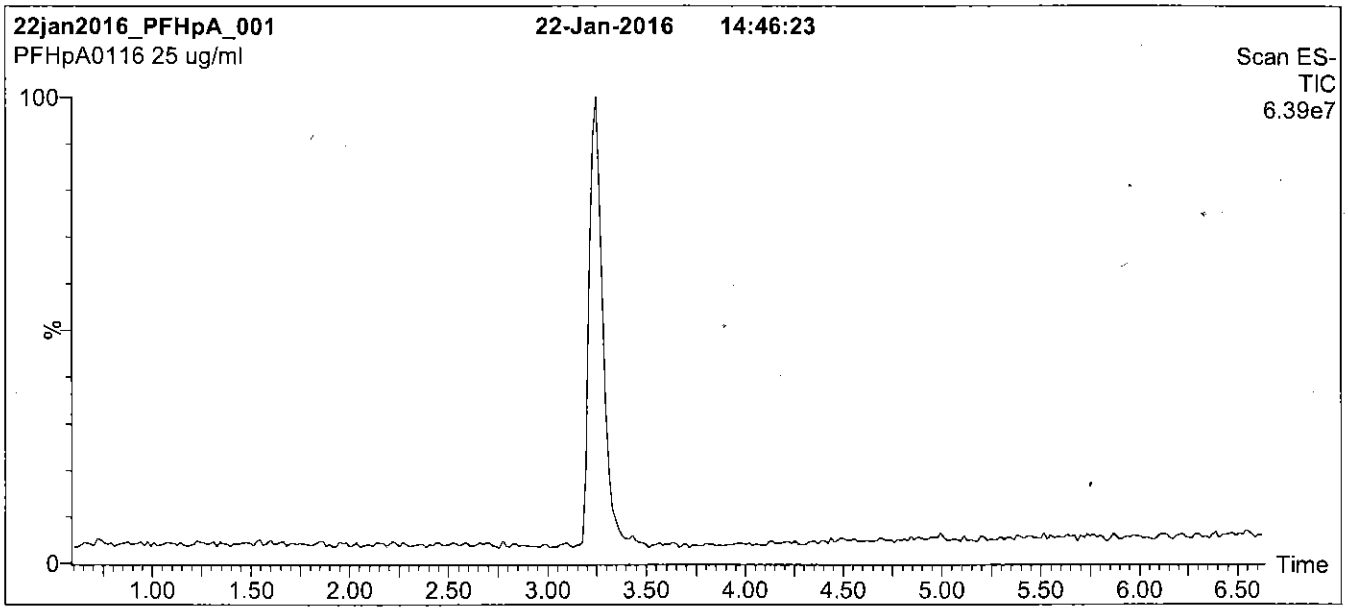
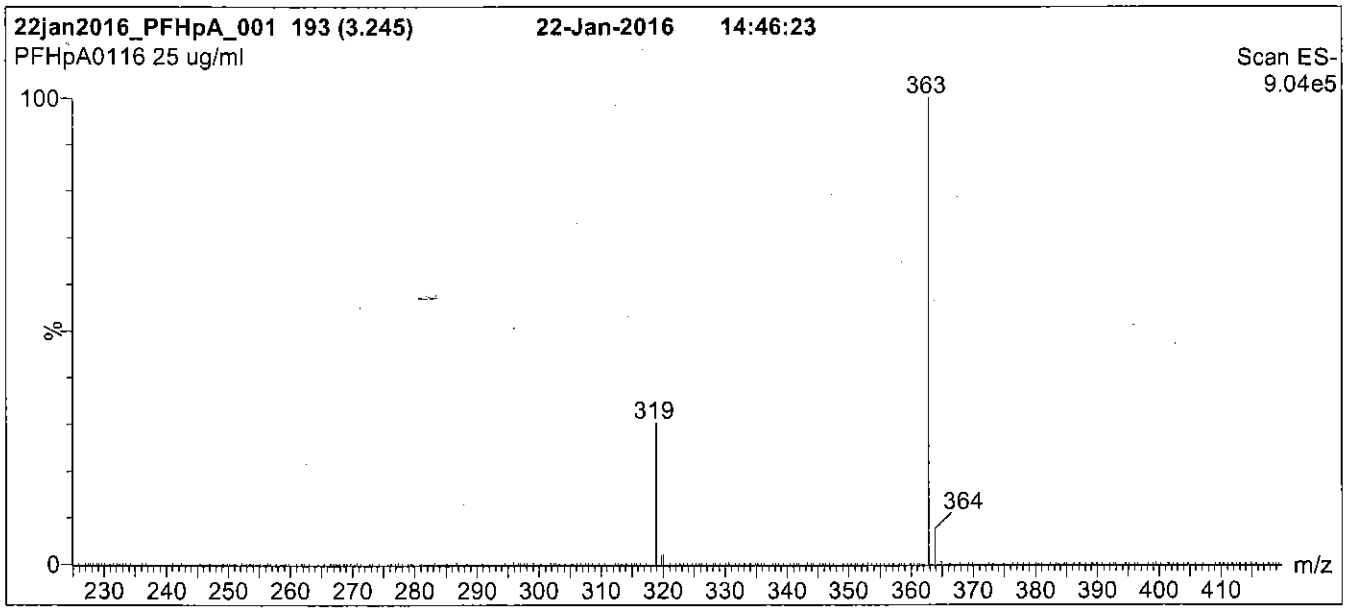




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

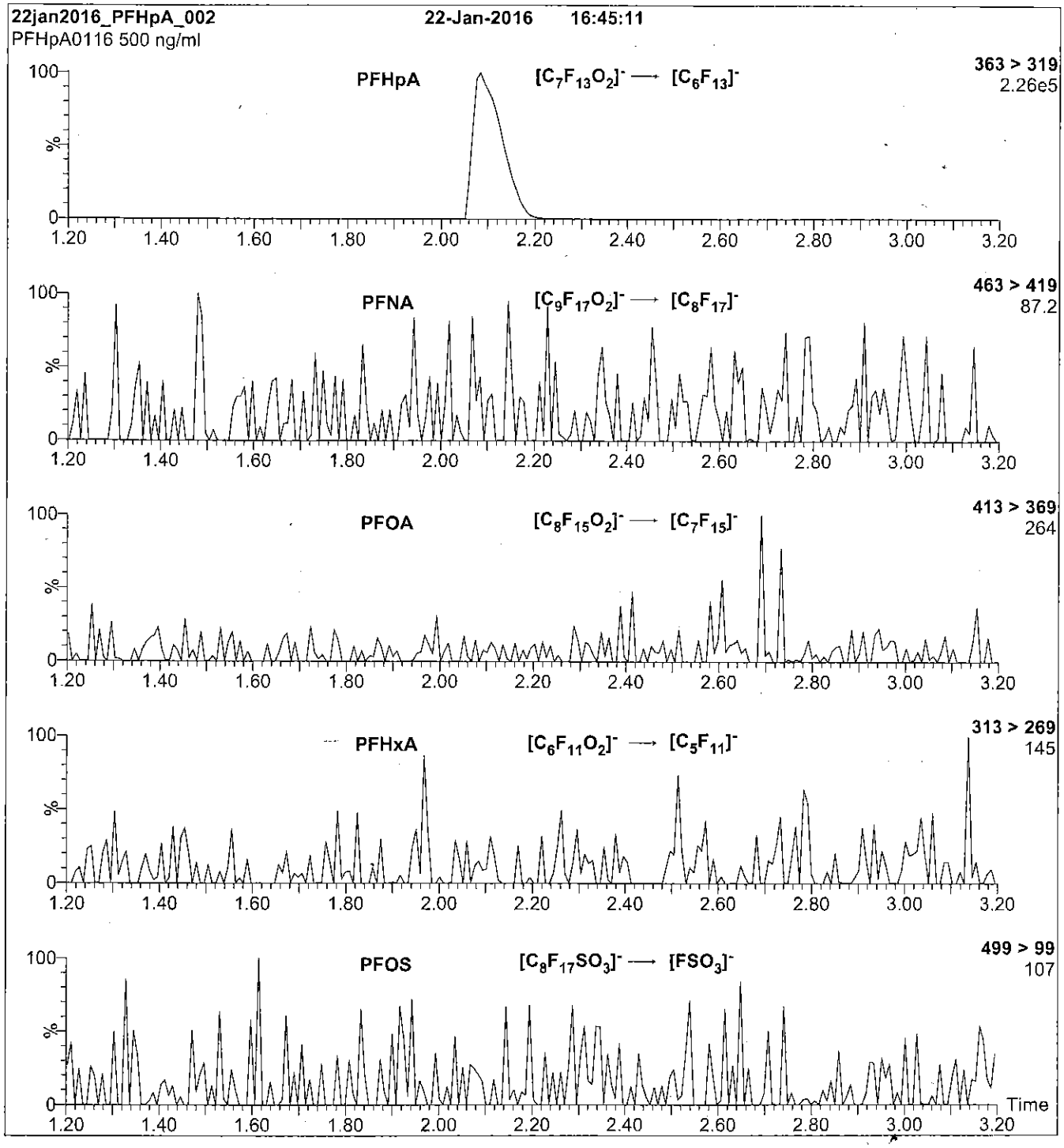
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

LCPFHpA_00006

Scanned 10/4/16 SM R: SBC 9/13/16

730517
ID: LCPFHpA_00006
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid

730518
ID: LCPFHpA_00007
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid

WELLINGTON LABORATORIES

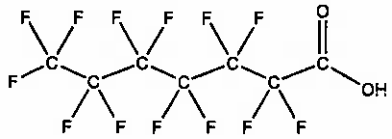
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



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CALA

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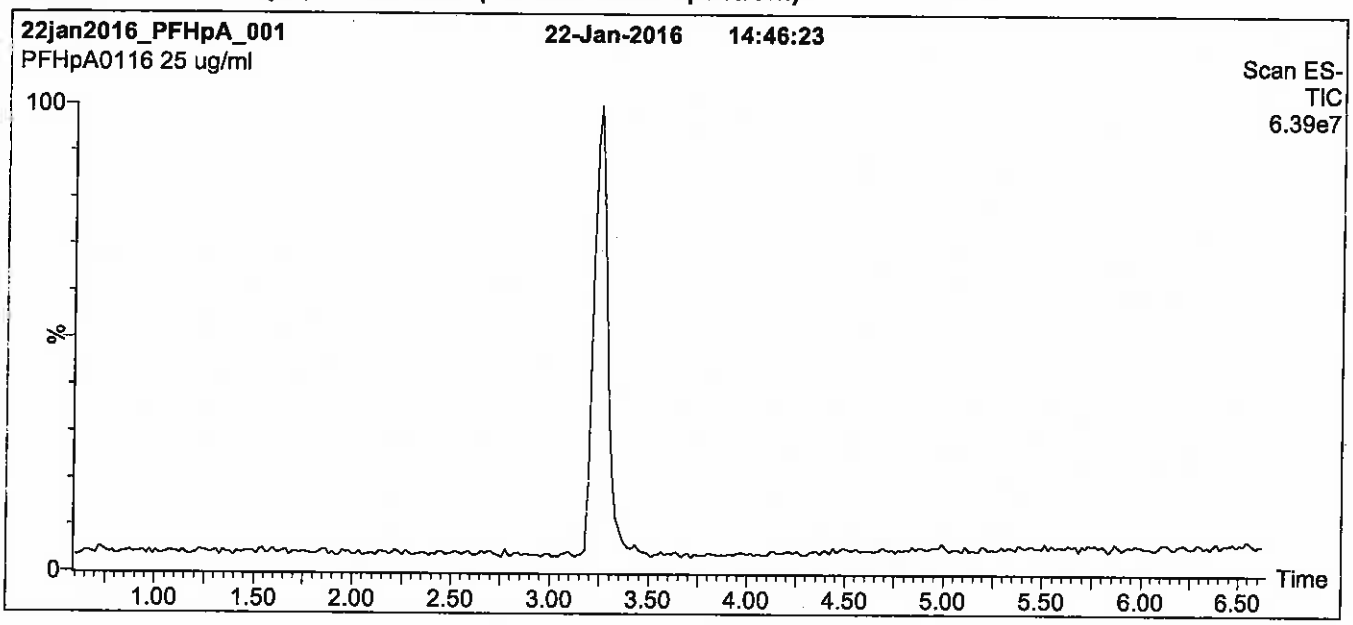
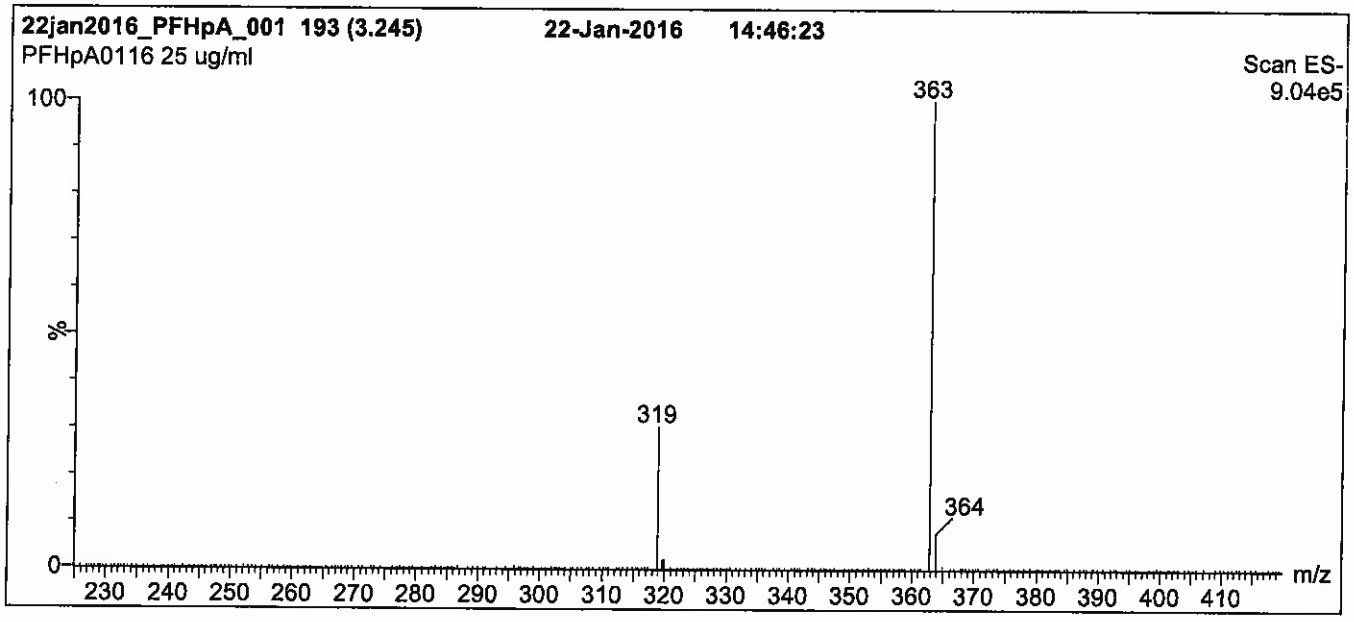
Figure 1: **PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

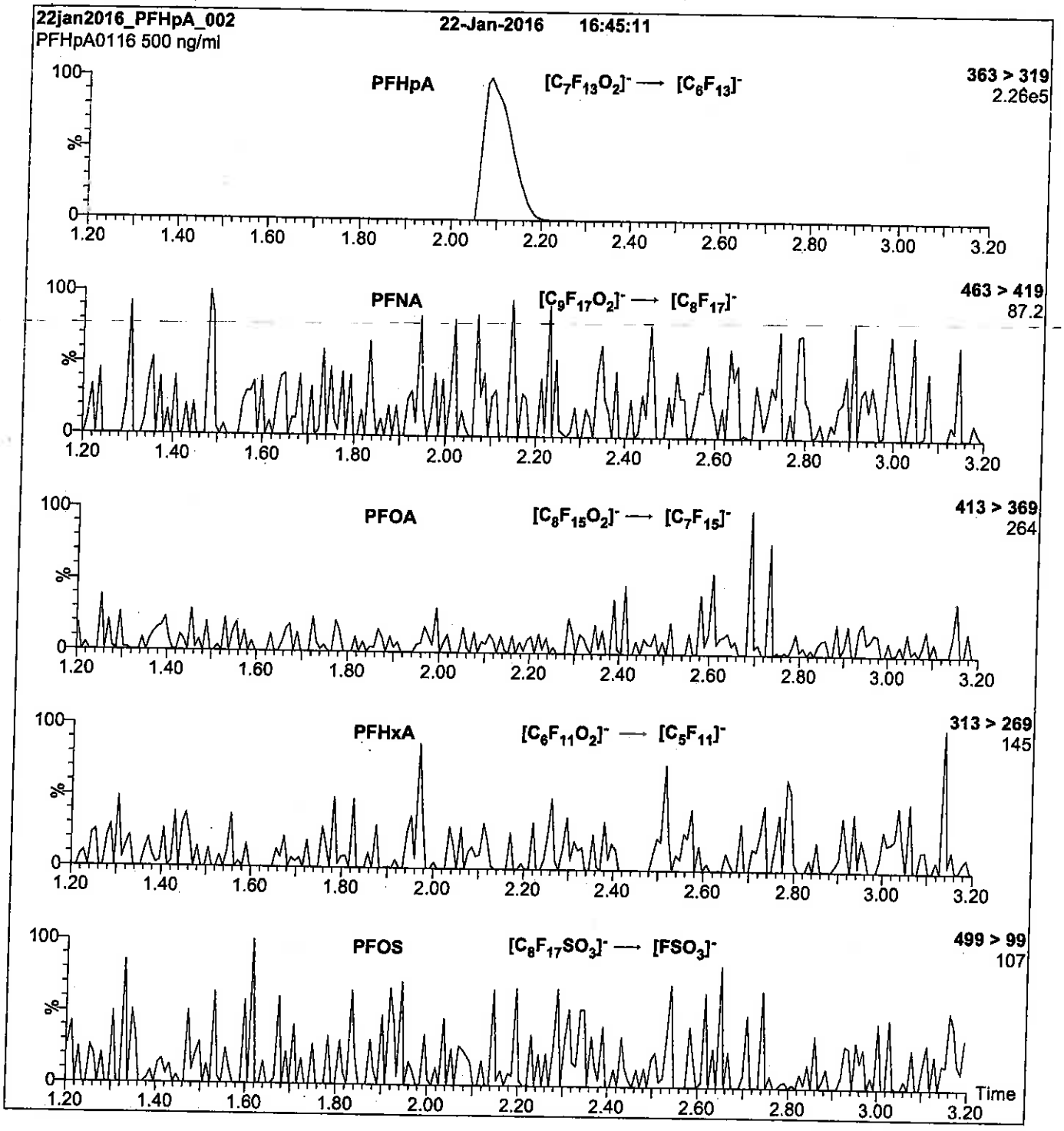
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

LCPFHpS_00009

Scanned 10/14/16 SR R: SBC 9/13/16

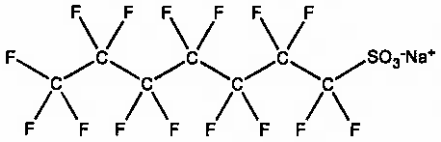
730635
ID: LCPFHpS_00009
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL

730639
ID: LCPFHpS_00010
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate
LOT NUMBER: LPFHpS1115
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.6 ± 2.4 µg/ml (PFHpS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/06/2015		
EXPIRY DATE: (mm/dd/yyyy)	11/06/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.1% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.2% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 11/09/2015 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED

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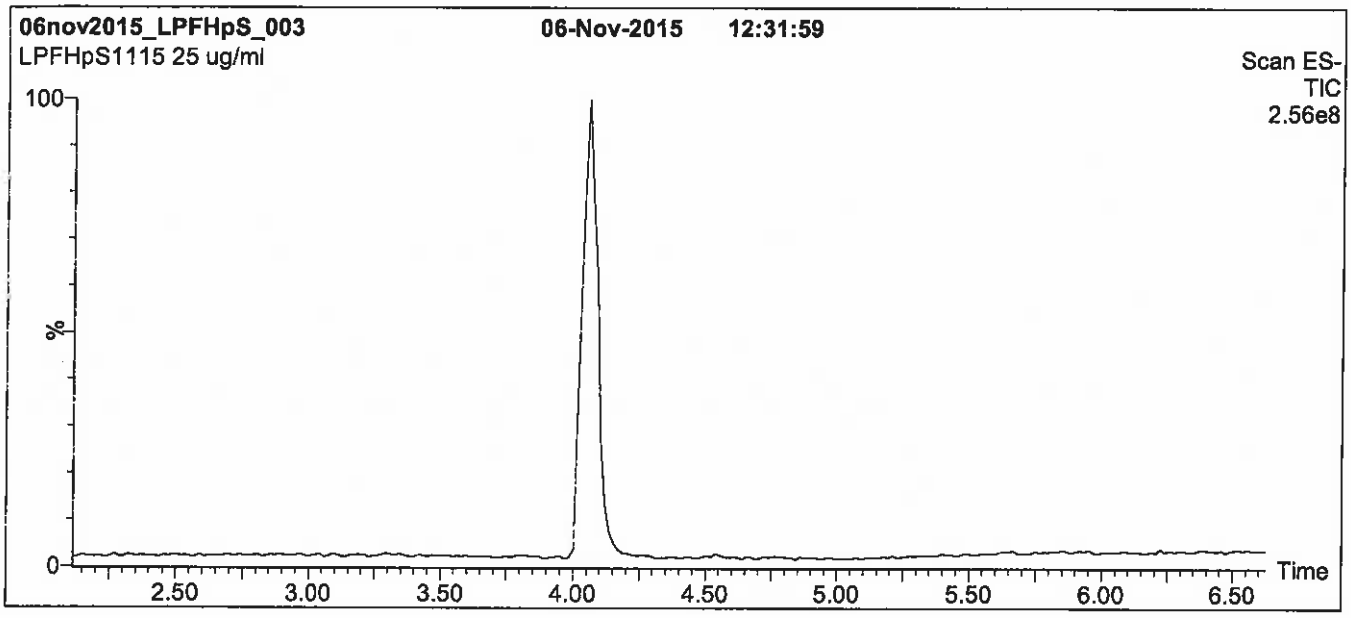

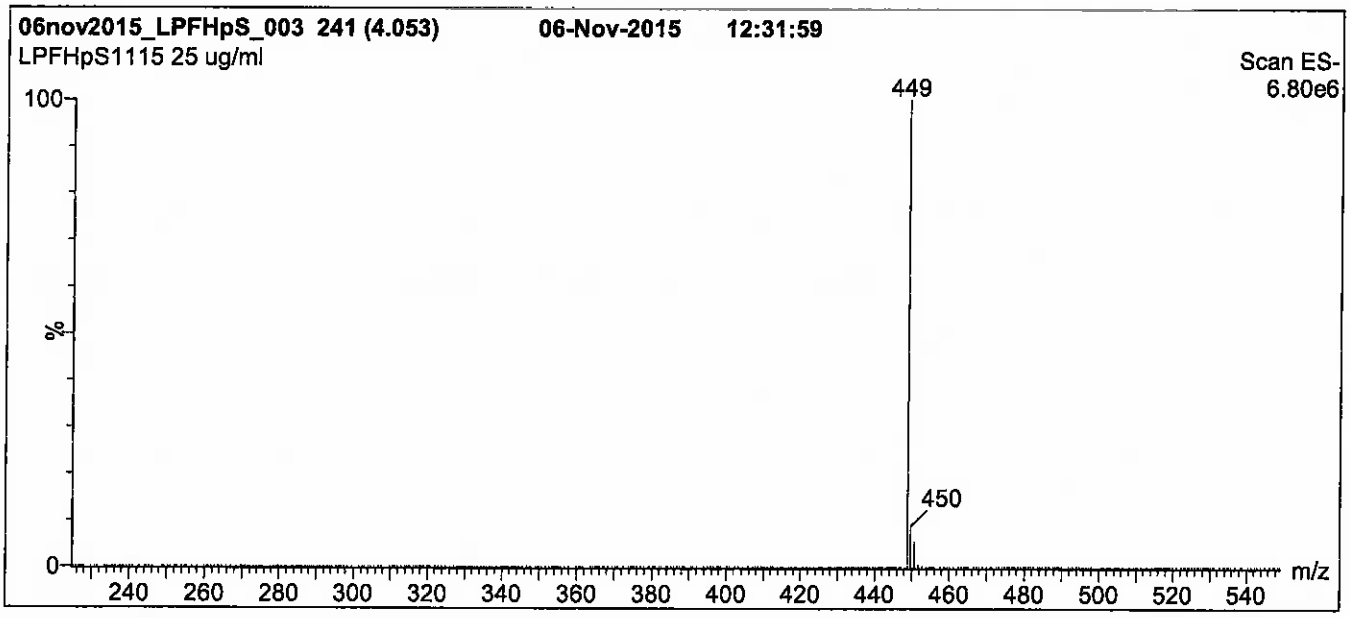

Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
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Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold
for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

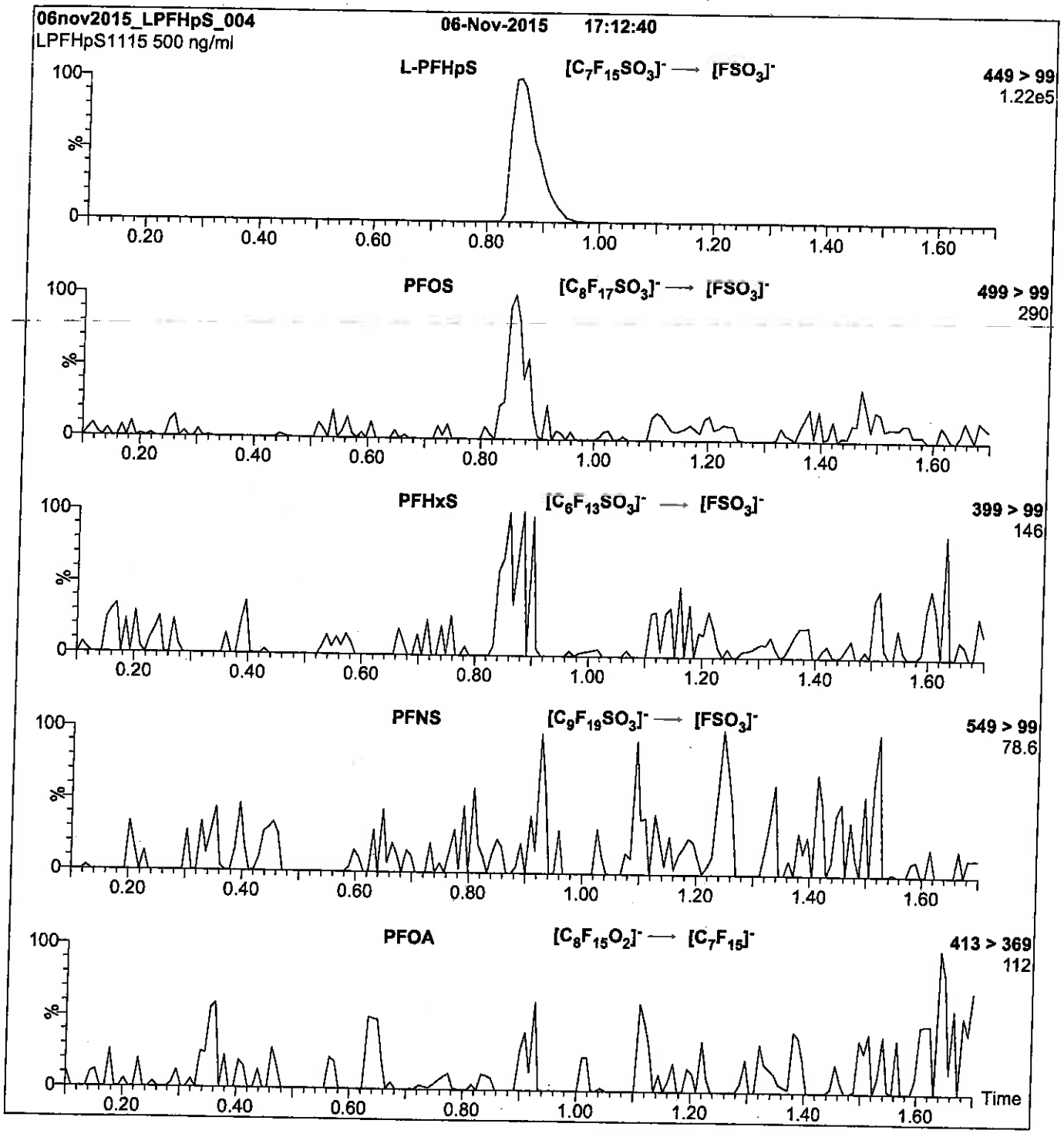
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFHpS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 35

Reagent

LCPFHxA_00004

609702
ID: LCPFHxA_00004
Exp: 12/22/20 Prpd: CBW
PF-n-hexanoic acid

R: 4/7/16 CBW

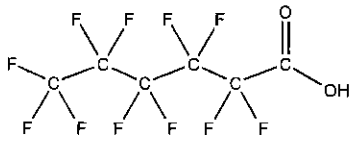
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA
LOT NUMBER: PFHxA1215
COMPOUND: Perfluoro-n-hexanoic acid

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: $C_6HF_{11}O_2$
MOLECULAR WEIGHT: 314.05
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/23/2015 (mm/dd/yyyy)

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

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CALA Testing

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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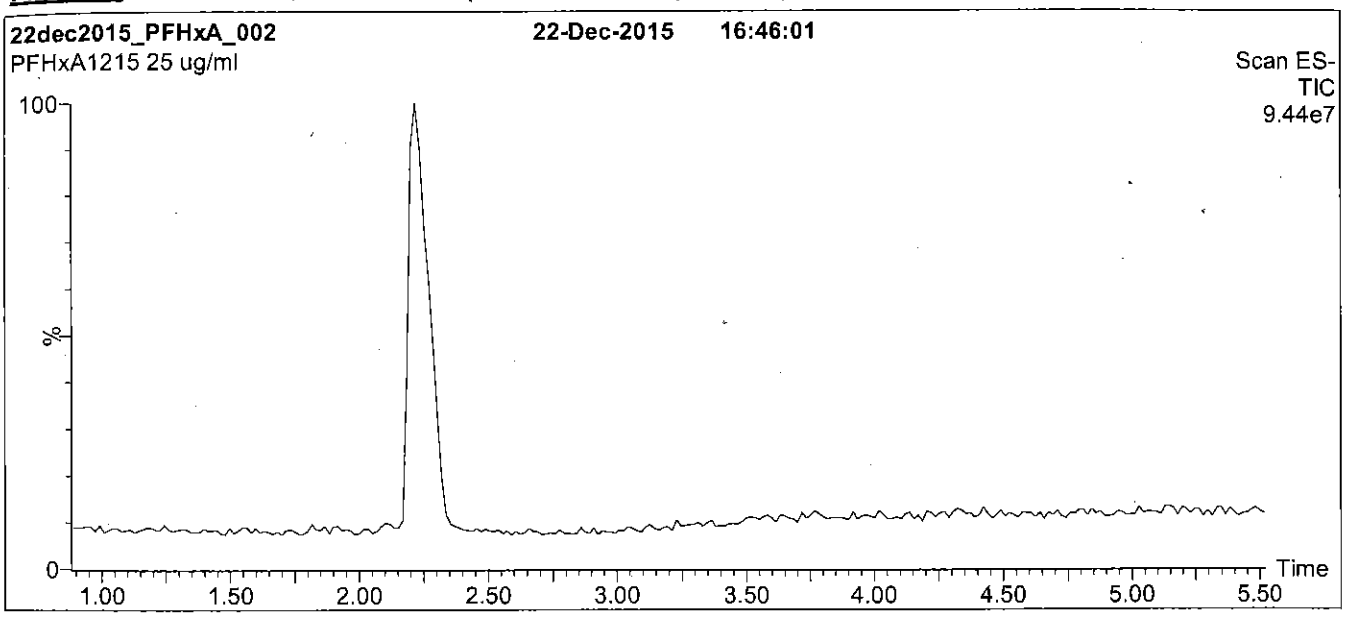
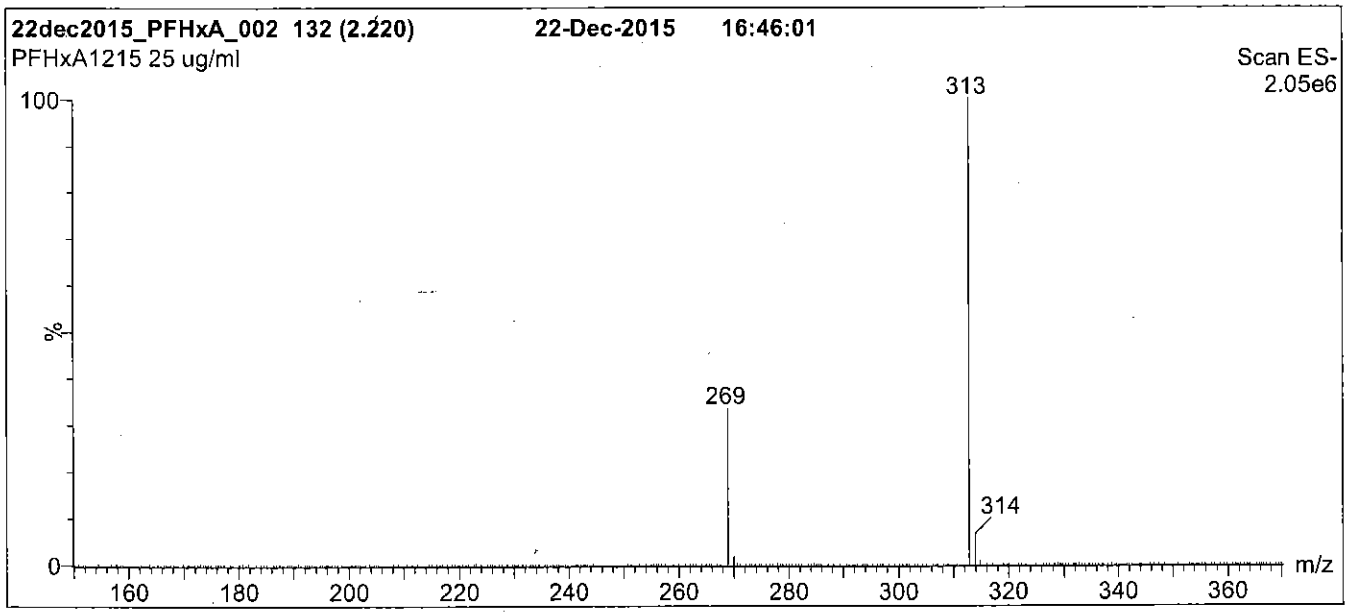
Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

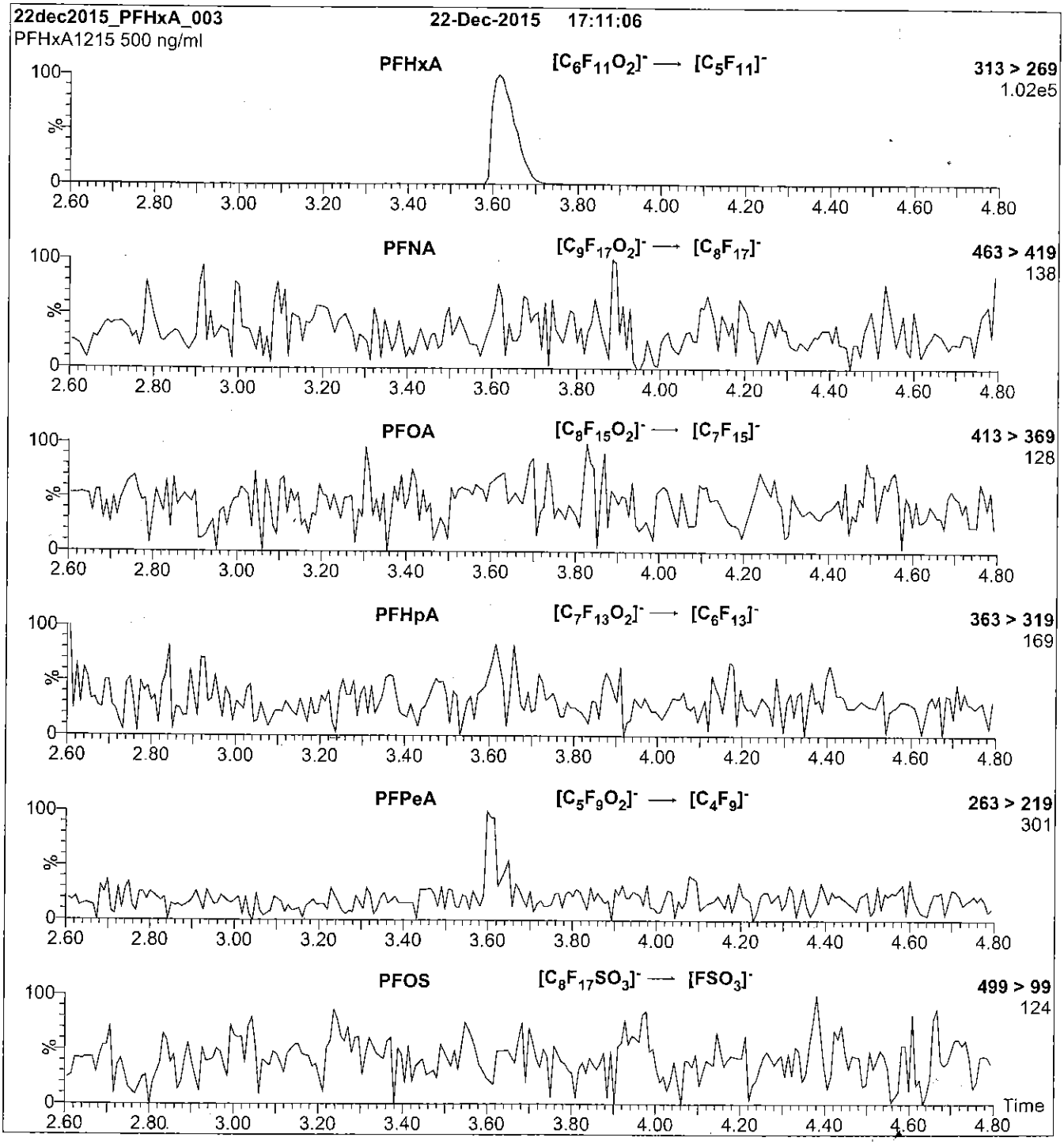
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFHxA_00005

R: SBC 9/13/16

730551
ID: LCPFHxA_00005
Exp: 12/22/20 Prpd: SBC
PF-n-hexanoic acid

730552
ID: LCPFHxA_00006
Exp: 12/22/20 Prpd: SBC
PF-n-hexanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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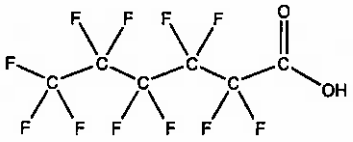
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA1215

STRUCTURE:

CAS #: 307-24-4



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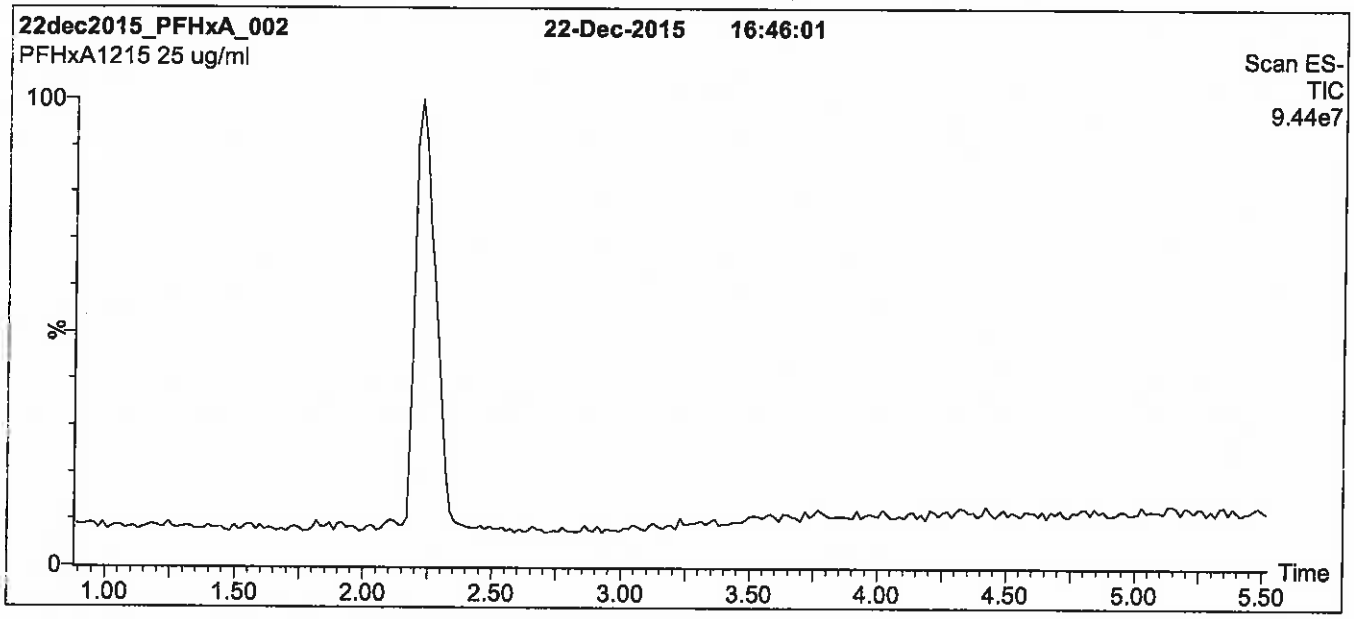

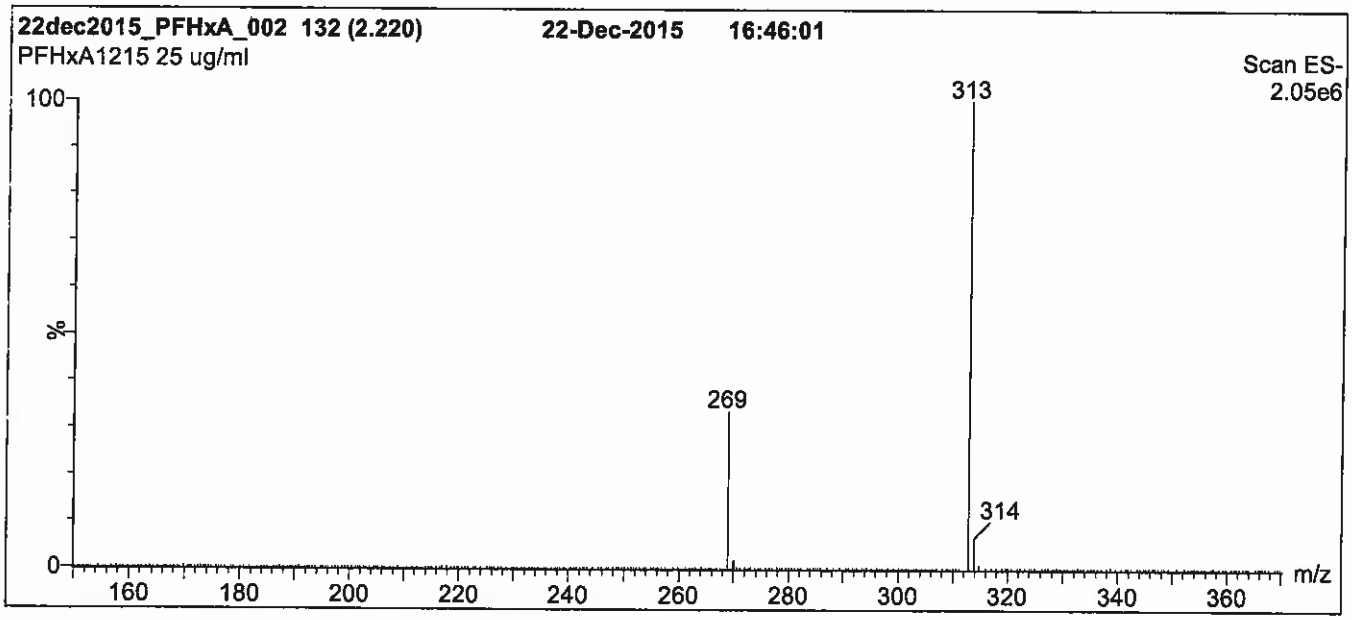

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Cone Voltage (V) = 15.00
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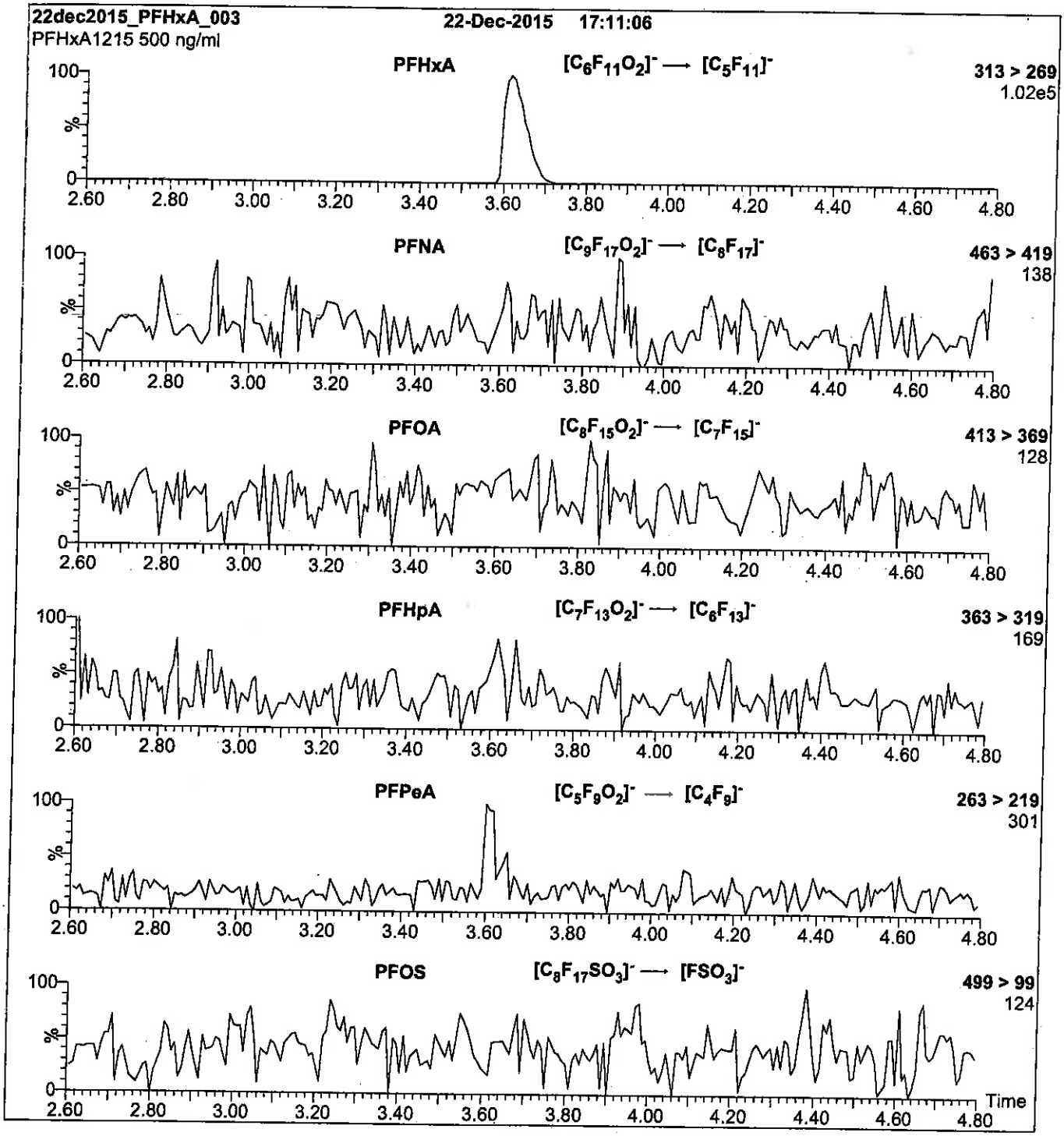
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFHxDA_00006

R: SBC 9/13/16

Scanned 10/14/16 SK

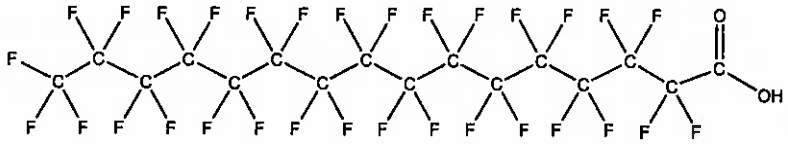
730630
ID: LCPFHxDA_00006
Exp: 05/25/21 Prpd: SBC
PFHxDA stock 50ug/mL

730631
ID: LCPFHxDA_00007
Exp: 05/25/21 Prpd: SBC
PFHxDA stock 50ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFHxDA	**LOT NUMBER:**	PFHxDA0516
COMPOUND:	Perfluoro-n-hexadecanoic acid		
STRUCTURE:		**CAS #:**	67905-19-5



MOLECULAR FORMULA:	$C_{16}HF_{31}O_2$	**MOLECULAR WEIGHT:**	814.13
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/25/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/25/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.4% of PFODA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/27/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

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

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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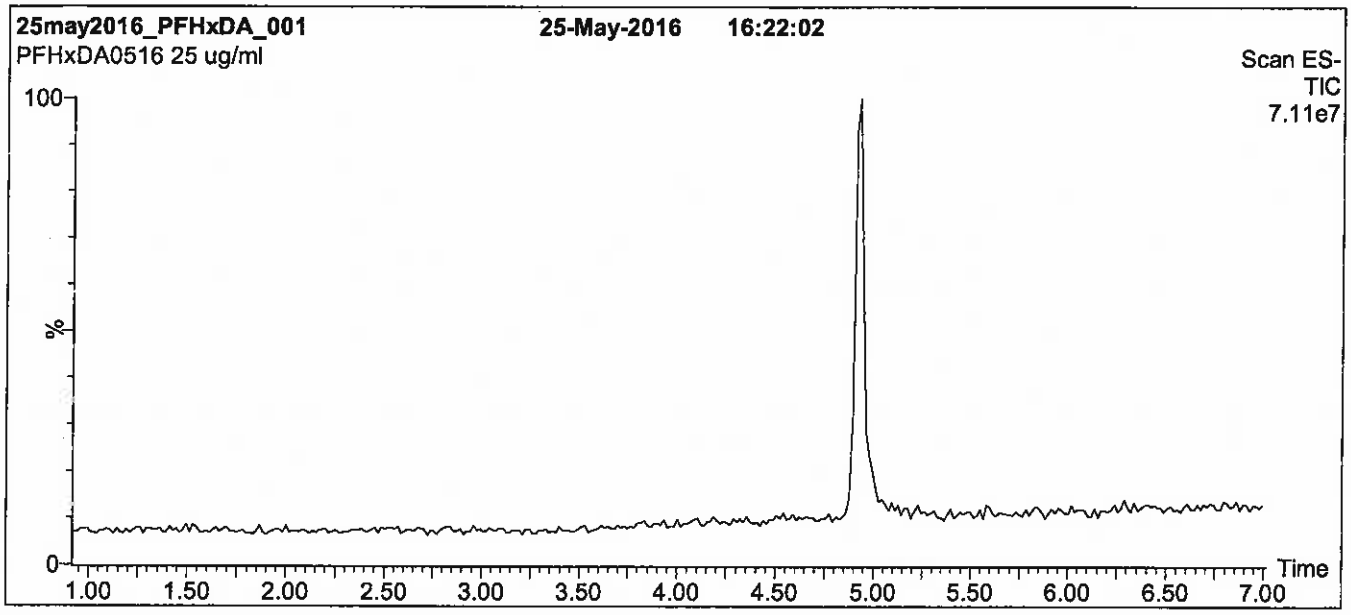
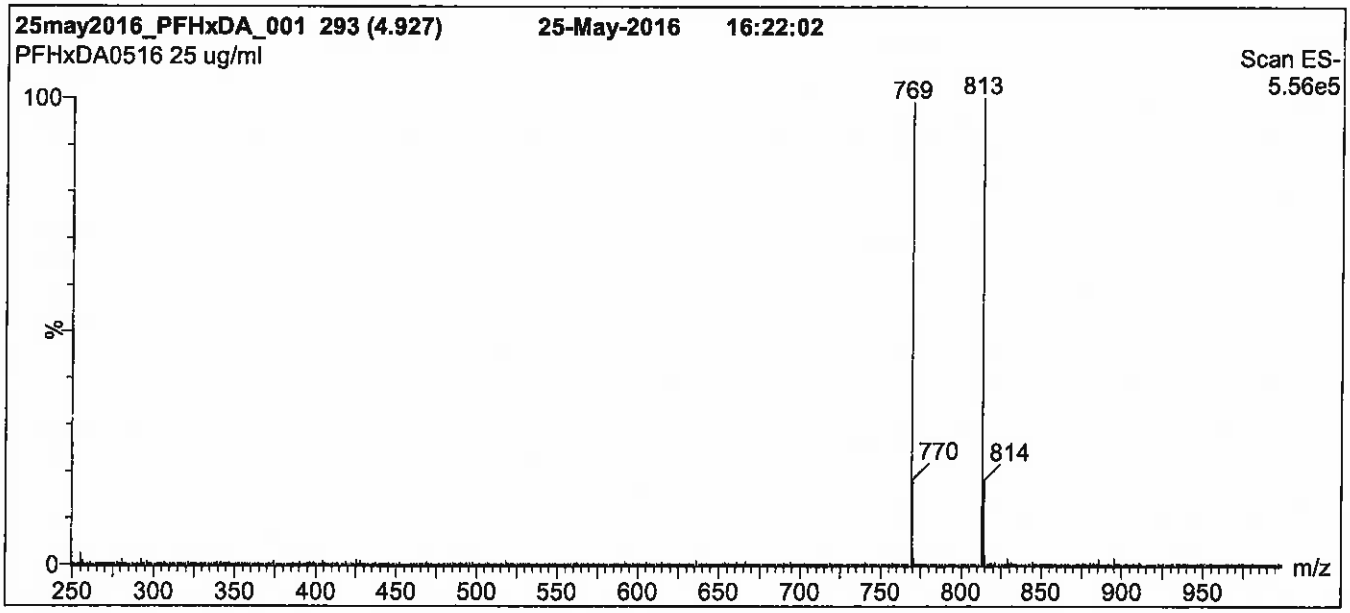
Figure 1: **PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 6 min and hold for 2.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

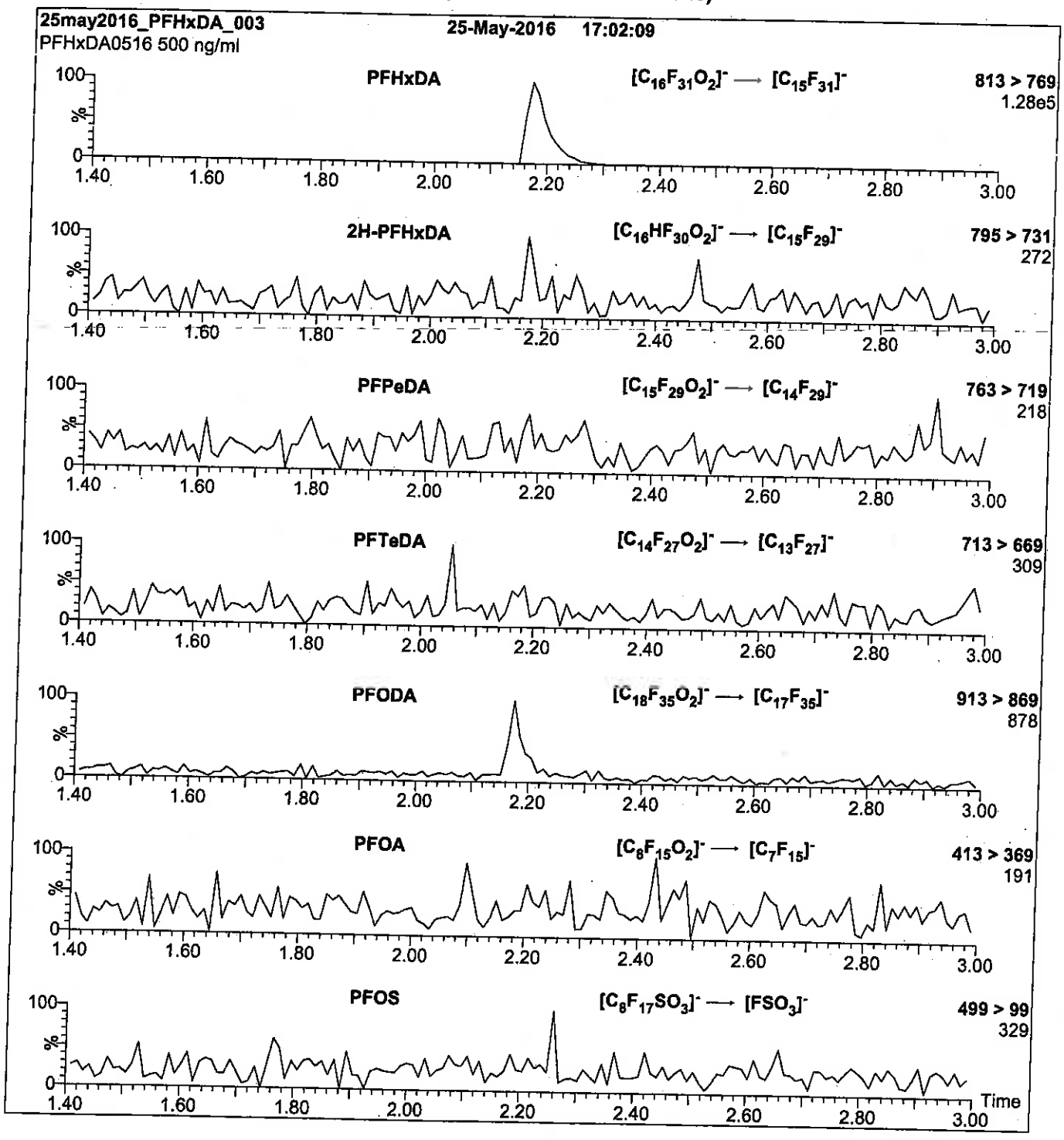
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 15

Reagent

LCPFHxS-br_00002

SBC
R: 9/13/16

730513
ID: LCPFHxS-br_00002
Exp: 07/03/20 Prpd: SBC
Potassium Perfluorohexane

730514
ID: LCPFHxS-br_00003
Exp: 07/03/20 Prpd: SBC
Potassium Perfluorohexane

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0615
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	06/29/2015
LAST TESTED: (mm/dd/yyyy)	07/03/2015
EXPIRY DATE: (mm/dd/yyyy)	07/03/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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HOMOGENEITY:

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

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

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CALA

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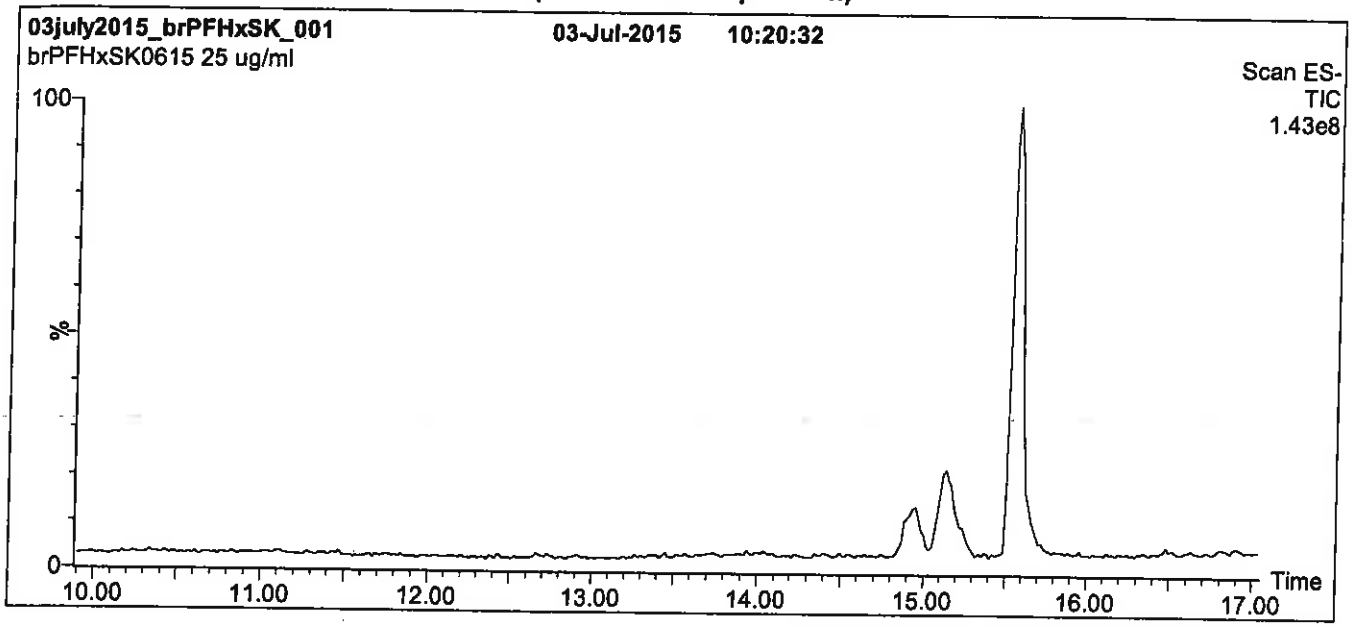
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

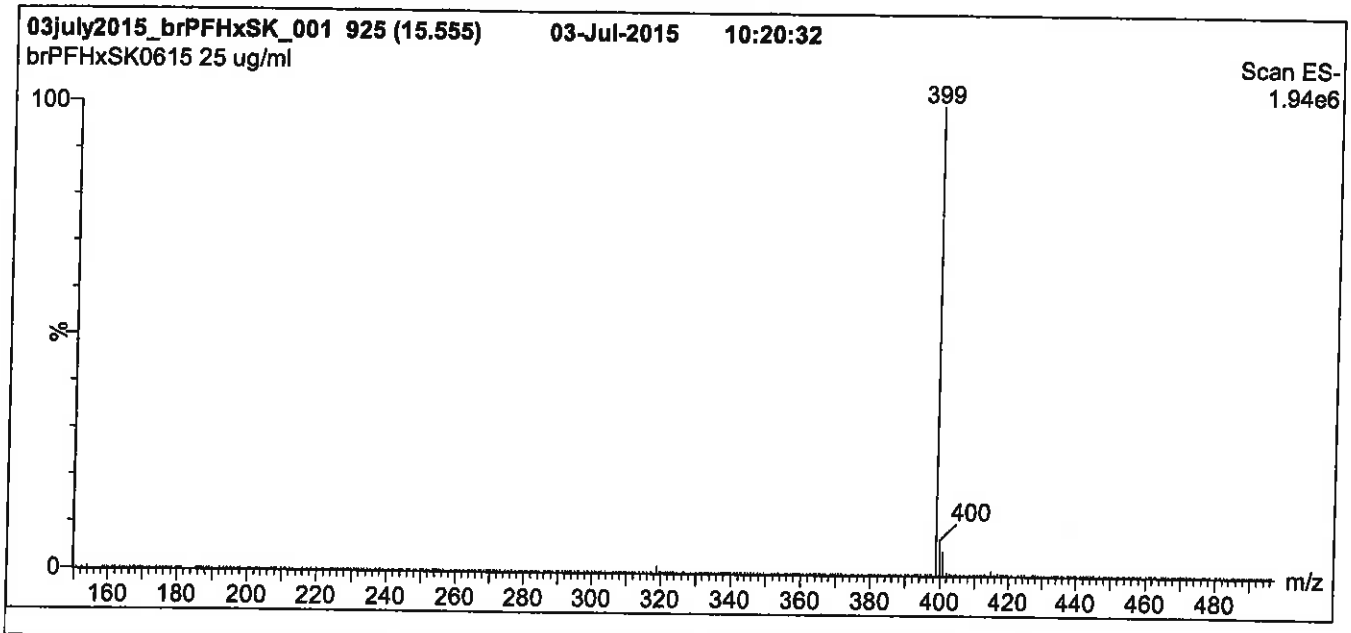
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

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

Certified By: B.G. Chittim **Date:** 07/15/2015 (mm/dd/yyyy)

Figure 1: **br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

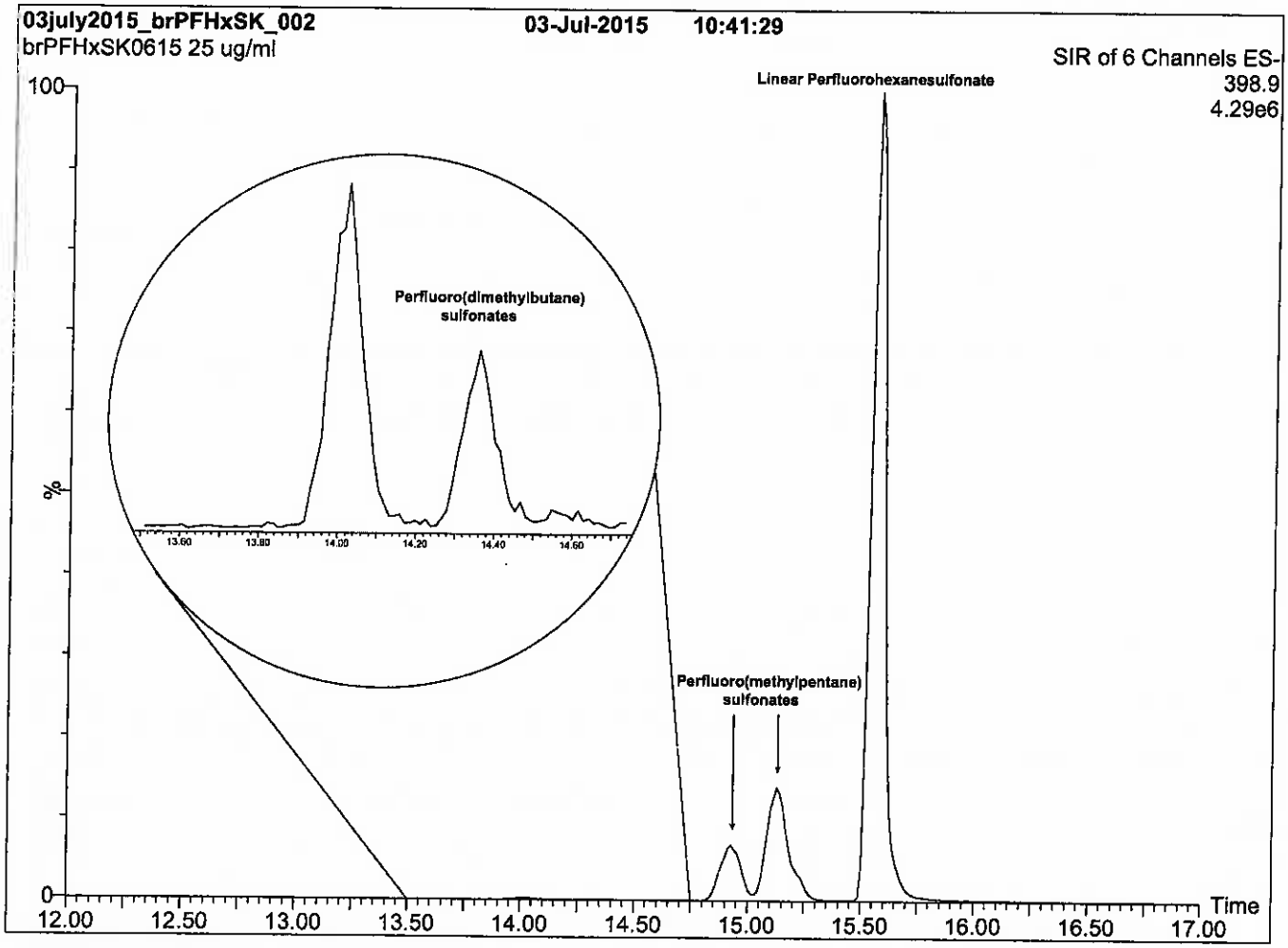
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Figure 2: **br-PFHxSK; LC/MS Data**



Conditions for Figure 2:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

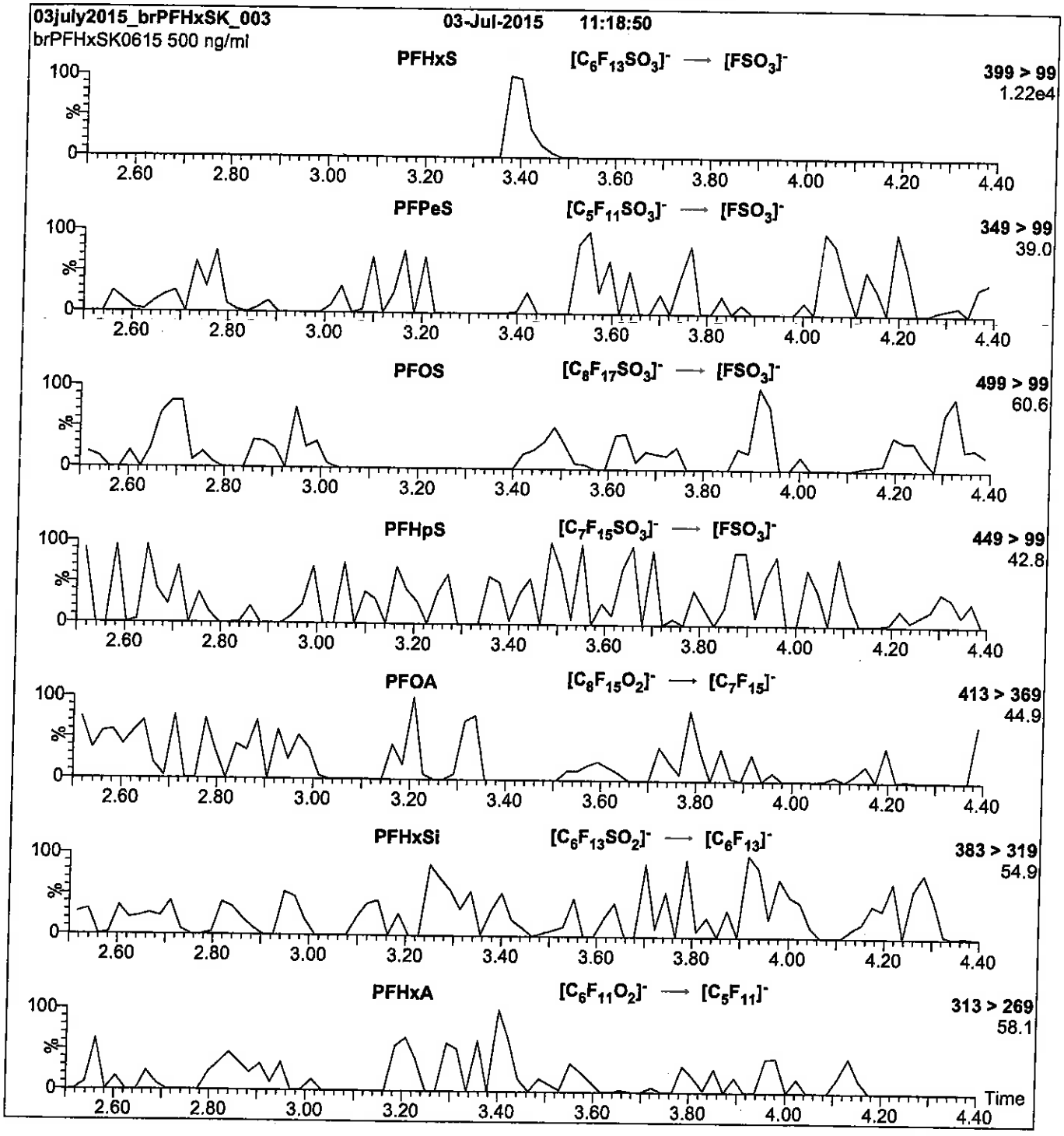
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

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

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



Conditions for Figure 3:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFNA_00005

609703
ID: LCPFNA_00005
Exp: 10/23/20 Prpd: CBW
PF-n-nonanoic acid

R·4/7/16 CBW

WELLINGTON LABORATORIES

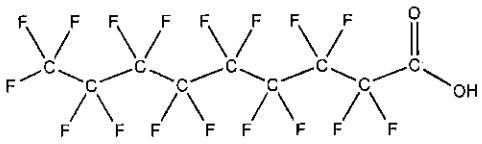
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA1015

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 464.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/23/2015
EXPIRY DATE: (mm/dd/yyyy) 10/23/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/30/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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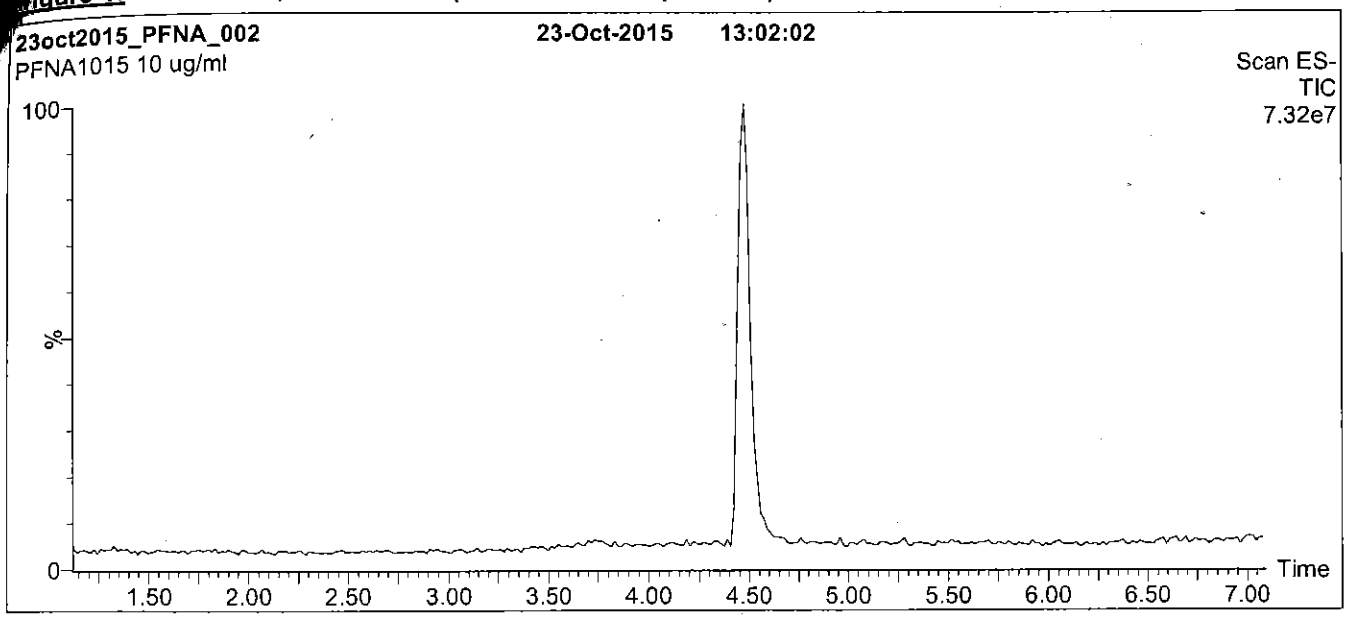
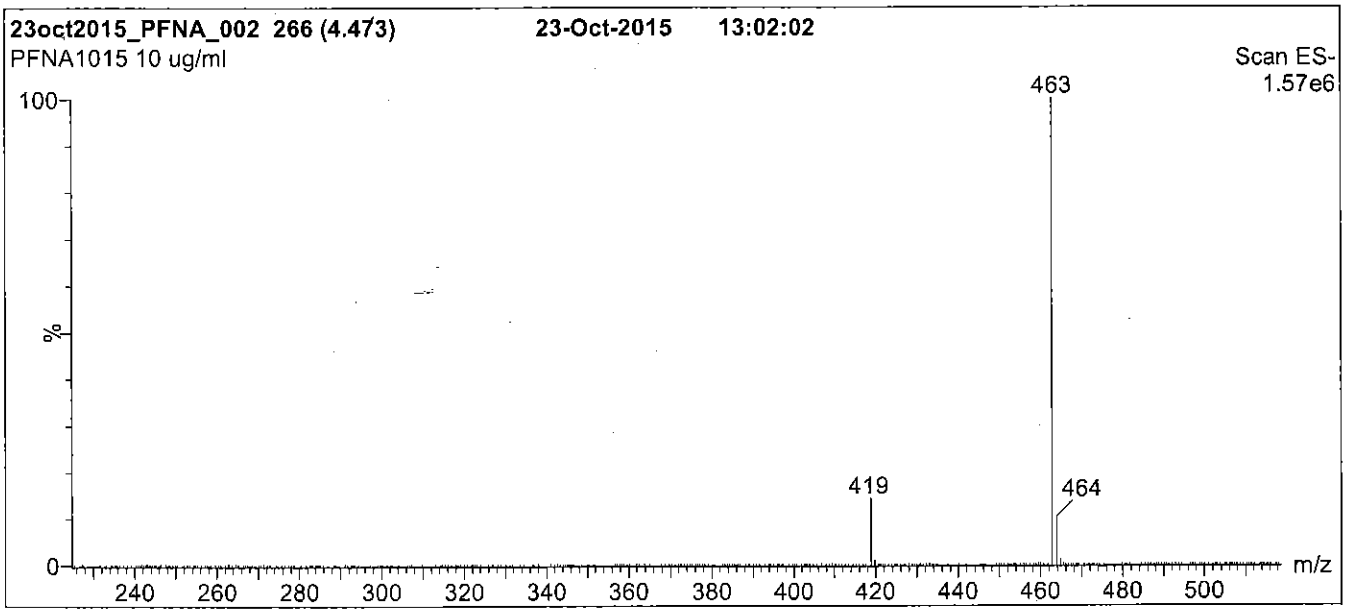
Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

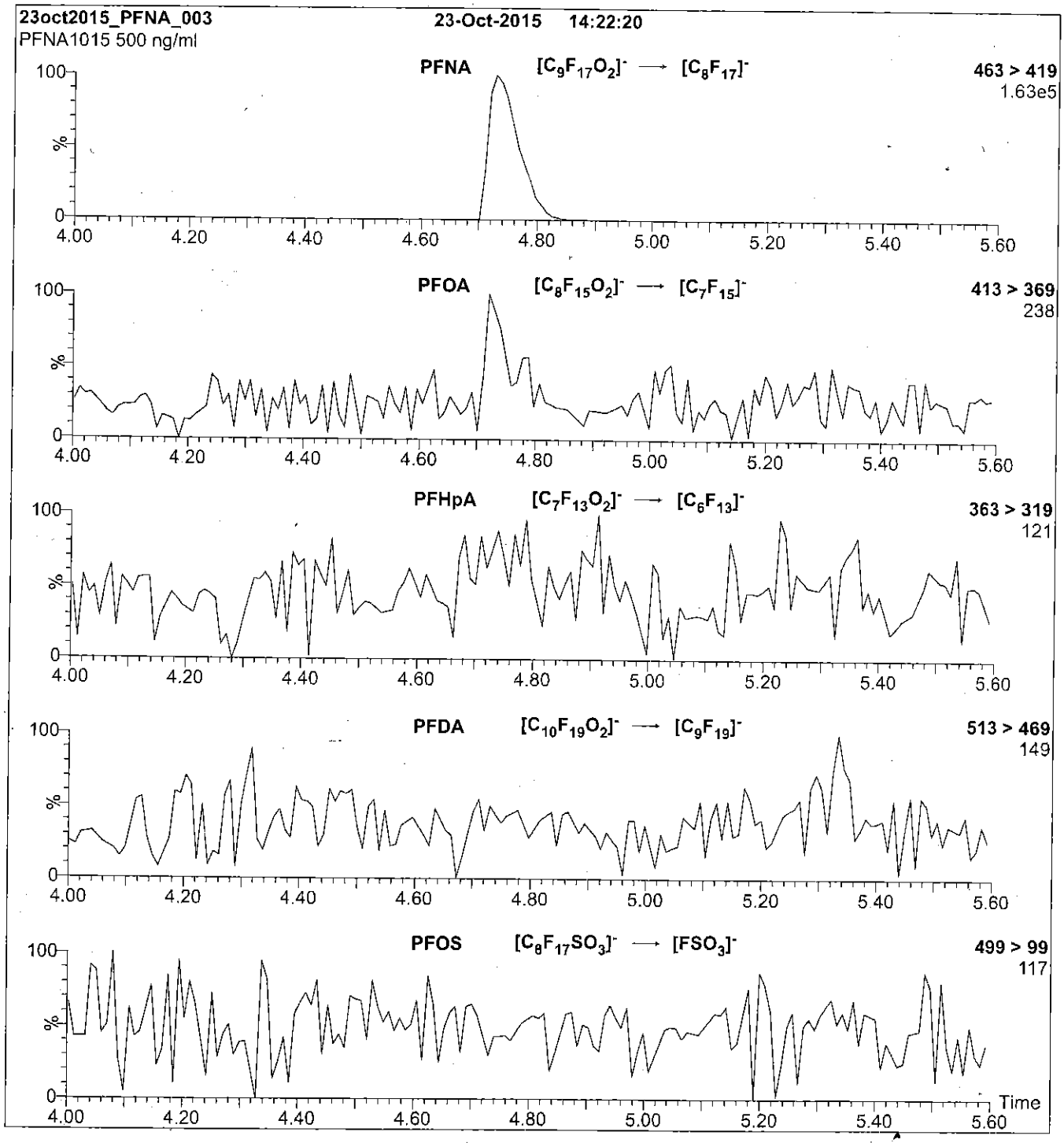
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFNA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCPFNA_00006

R: SBC 9/13/16
Scanned 10/14/16

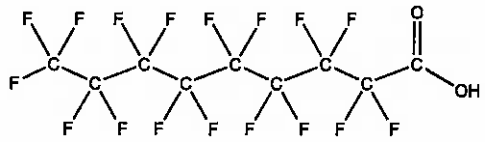
730559
ID: LCPFNA_00006
Exp: 10/23/20 Prpd: SBC
PF-n-nonanoic acid

730560
ID: LCPFNA_00007
Exp: 10/23/20 Prpd: SBC
PF-n-nonanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFNA	**LOT NUMBER:**	PFNA1015
COMPOUND:	Perfluoro-n-nonanoic acid		
STRUCTURE:		**CAS #:**	375-95-1



MOLECULAR FORMULA:	$C_9HF_{17}O_2$	**MOLECULAR WEIGHT:**	464.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/23/2015		
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/30/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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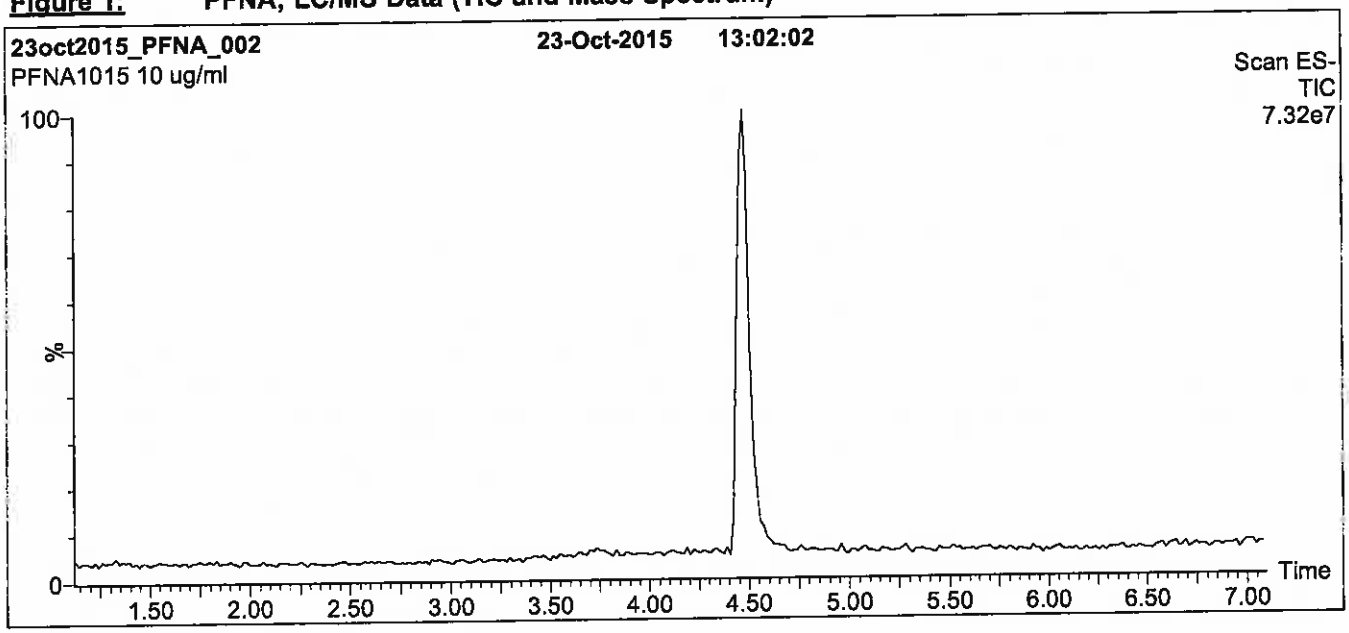
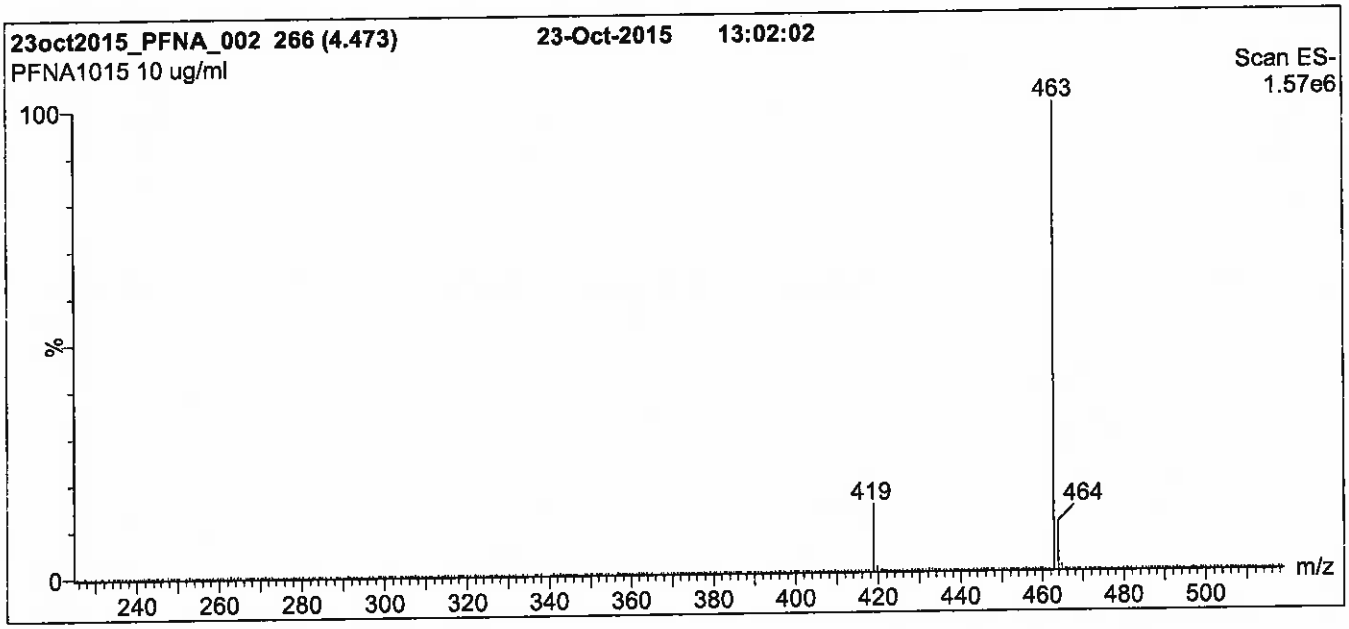
QUALITY MANAGEMENT:

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

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

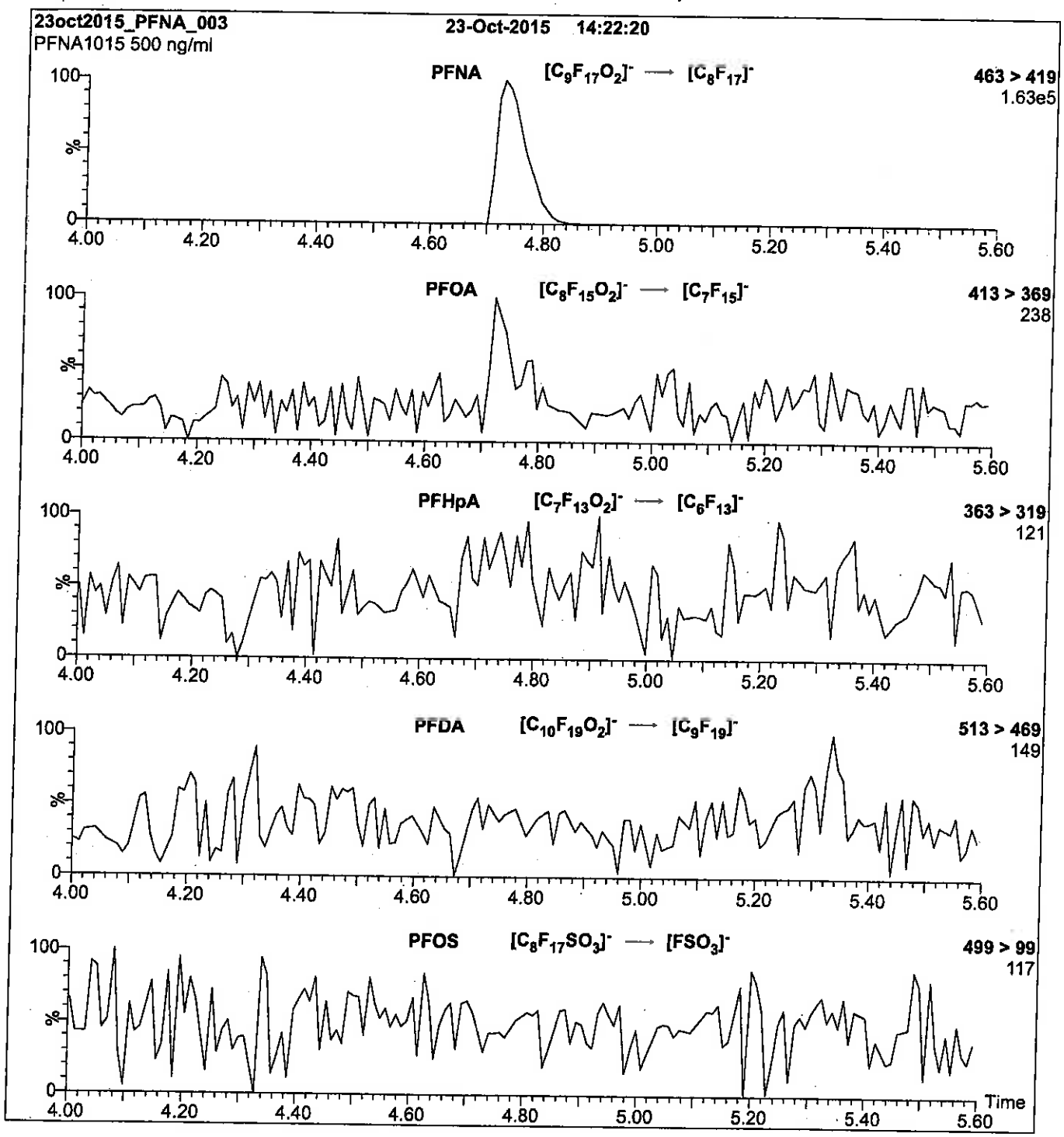
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCPFOA_00006

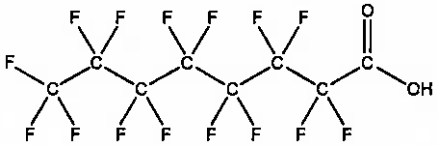
R-7/6/16 CBW

671577
ID: LCPFOA_00006
Exp: 11/06/20 Prpd: CBW
PF-n-octanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFOA	**LOT NUMBER:**	PFOA1115
COMPOUND:	Perfluoro-n-octanoic acid		
STRUCTURE:		**CAS #:**	335-67-1



MOLECULAR FORMULA:	$C_8HF_{15}O_2$	**MOLECULAR WEIGHT:**	414.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/06/2015		
EXPIRY DATE: (mm/dd/yyyy)	11/06/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 11/11/2015 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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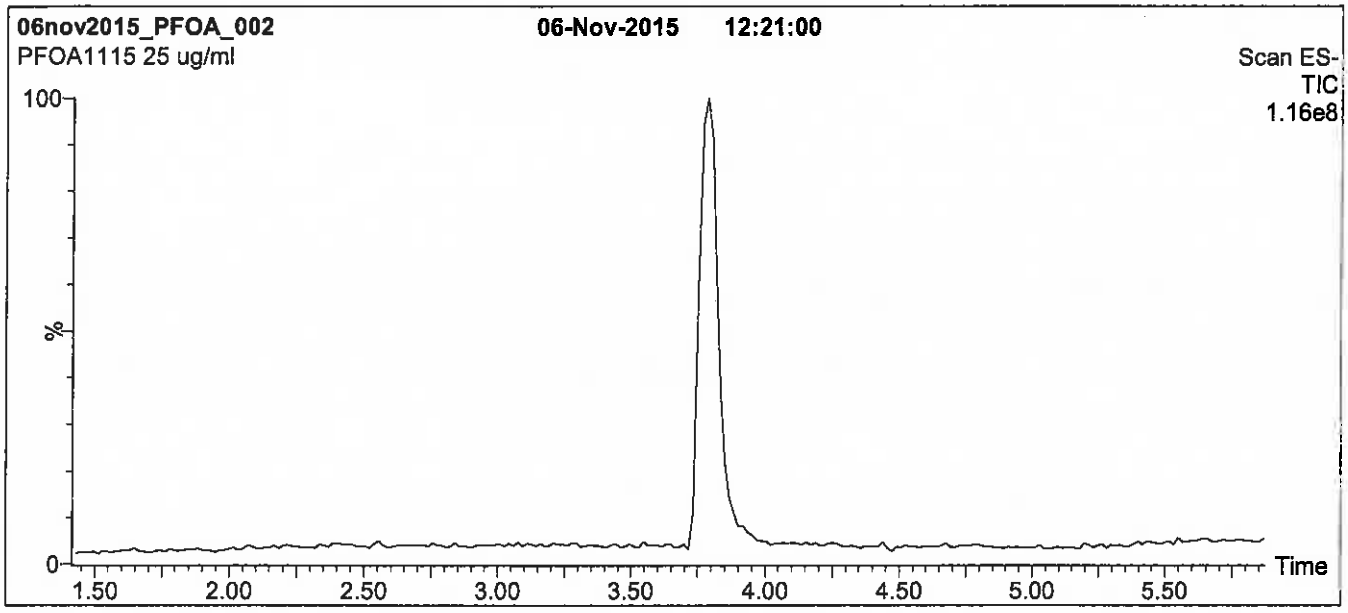
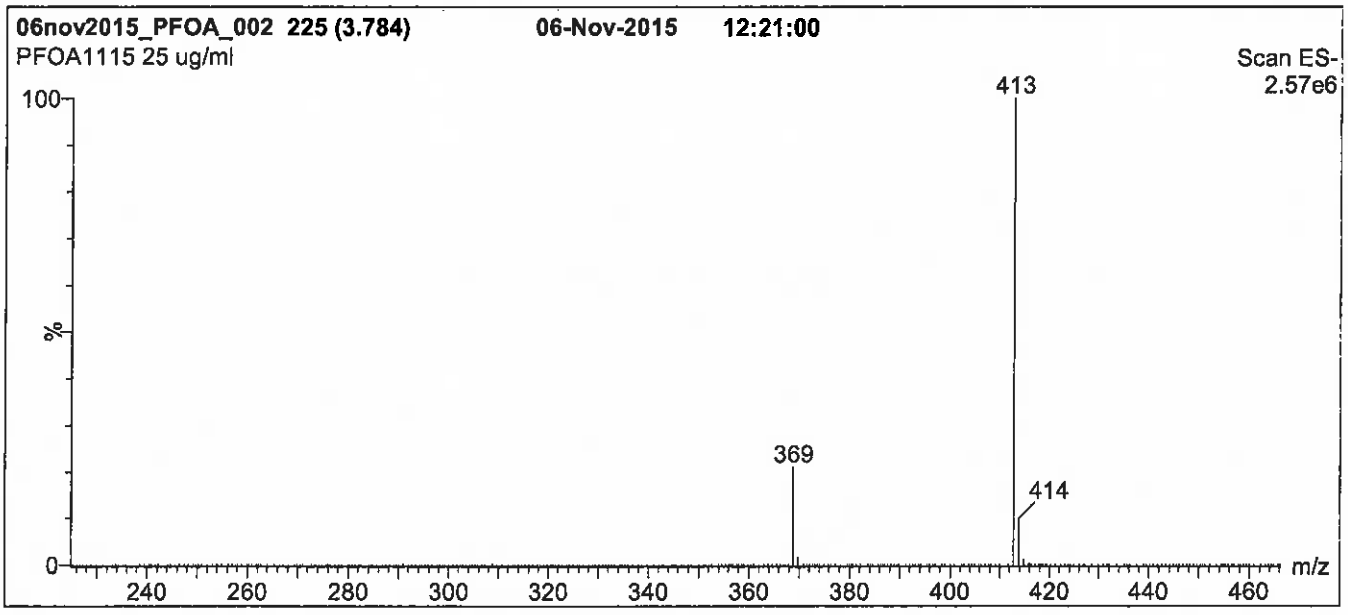
Figure 1: **PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

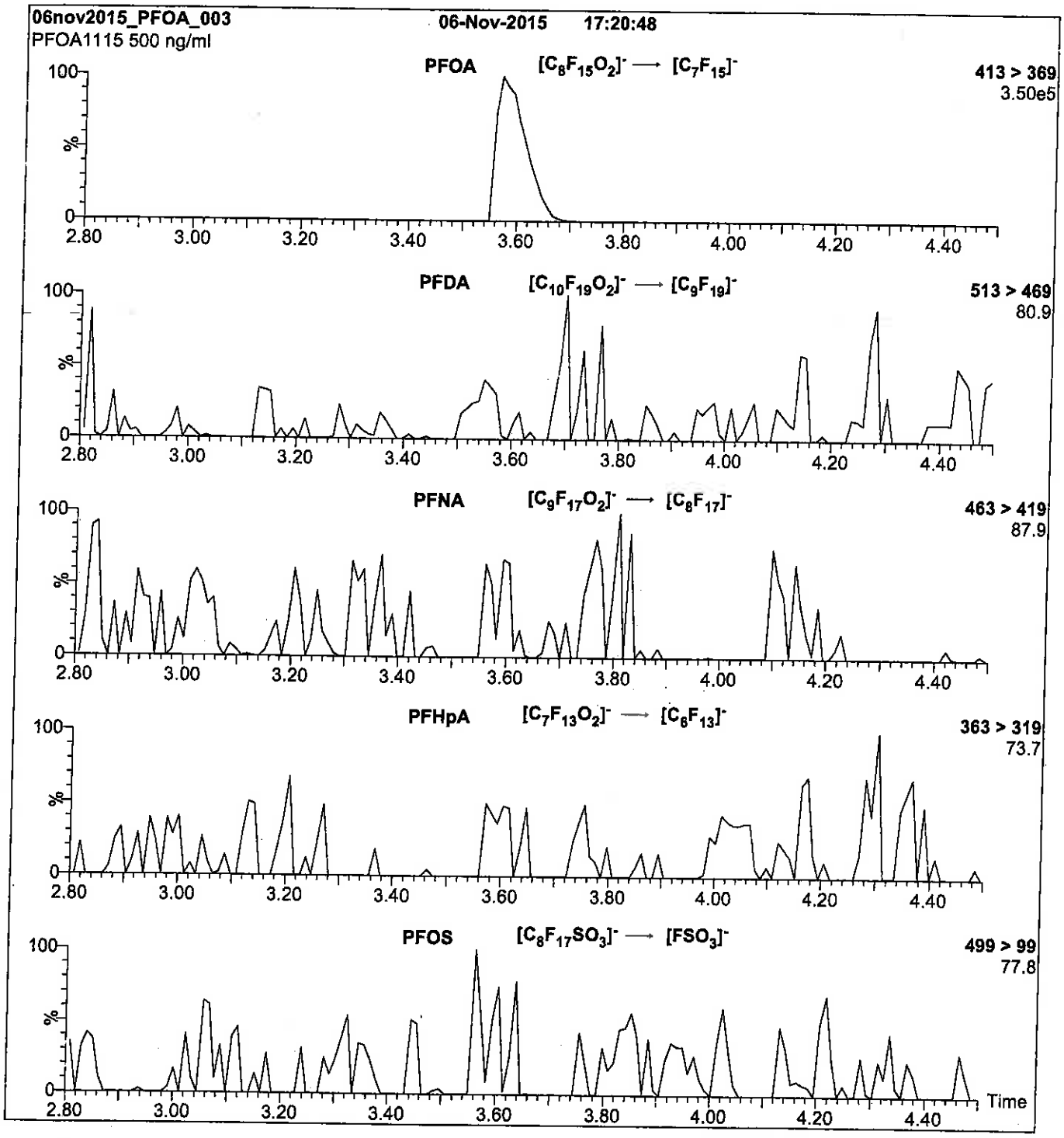
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 10

Reagent

LCPFODA_00005

605234
ID: LCPFODA_00005
Exp: 01/30/20 Prpd: CBW
PFODA stock 50ug/mL

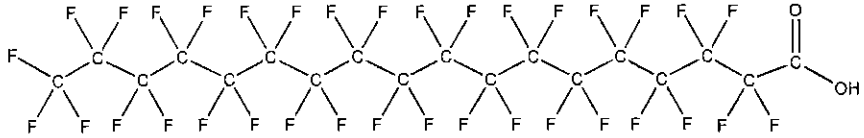
Rec. 3/29/16 JRB

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid
LOT NUMBER: PFODA0115

STRUCTURE:
CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
MOLECULAR WEIGHT: 914.14
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/30/2015
EXPIRY DATE: (mm/dd/yyyy) 01/30/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/25/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED Reference Material Producer

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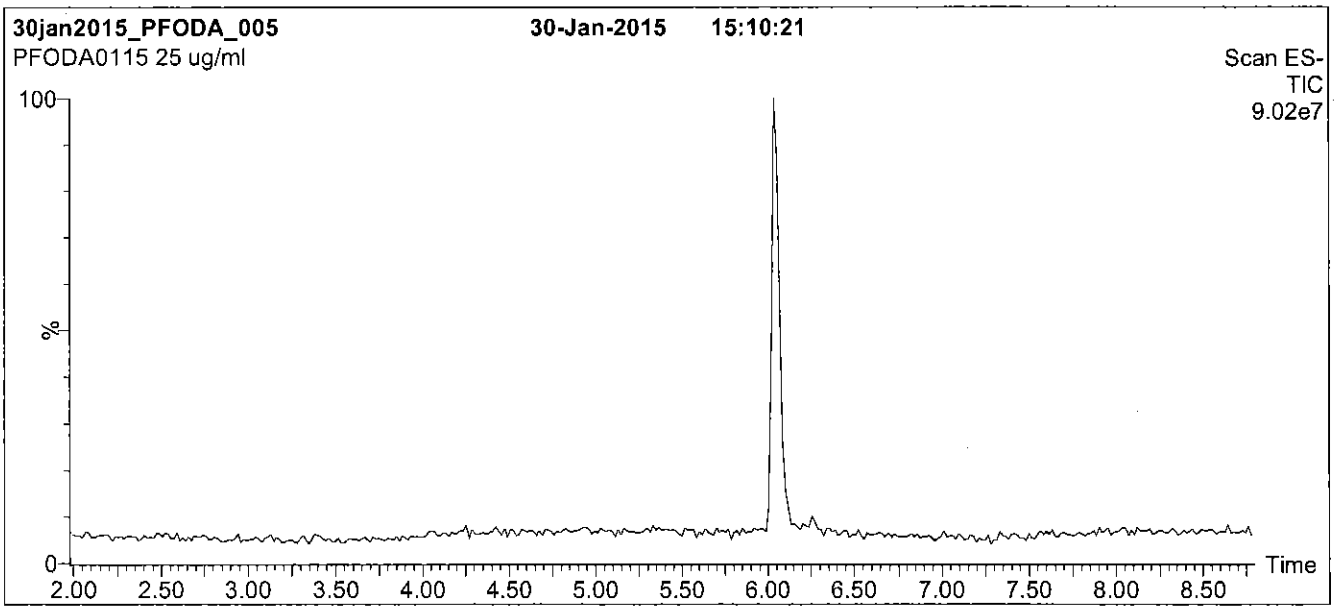
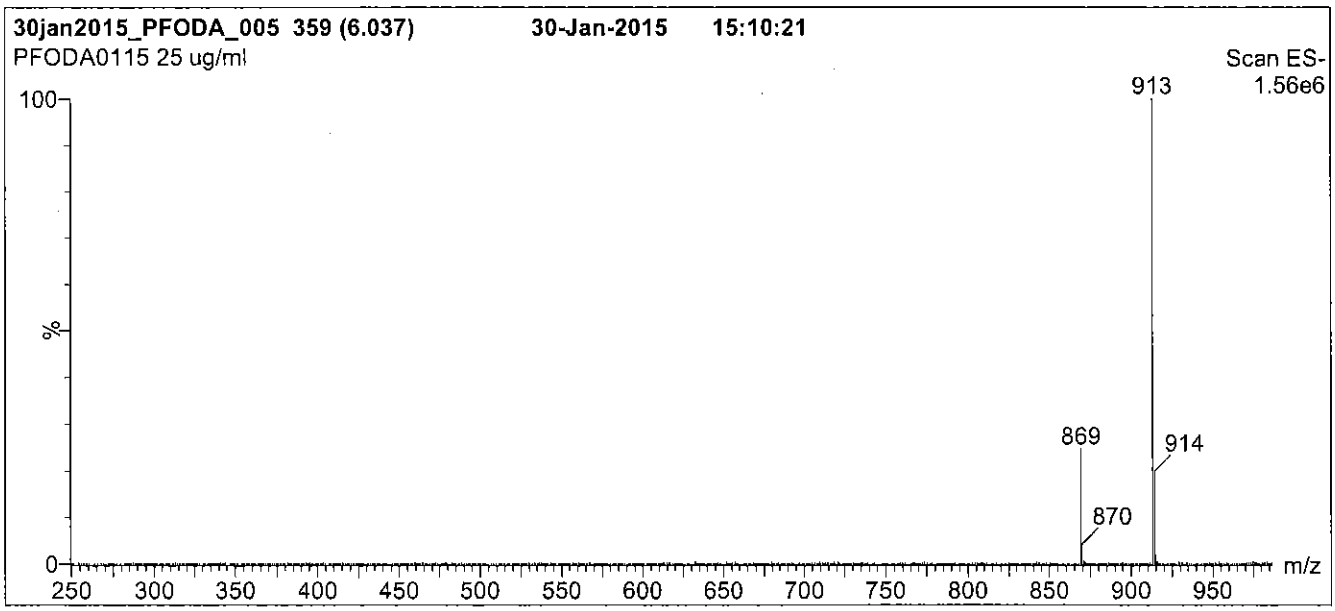
Figure 1: **PFODA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

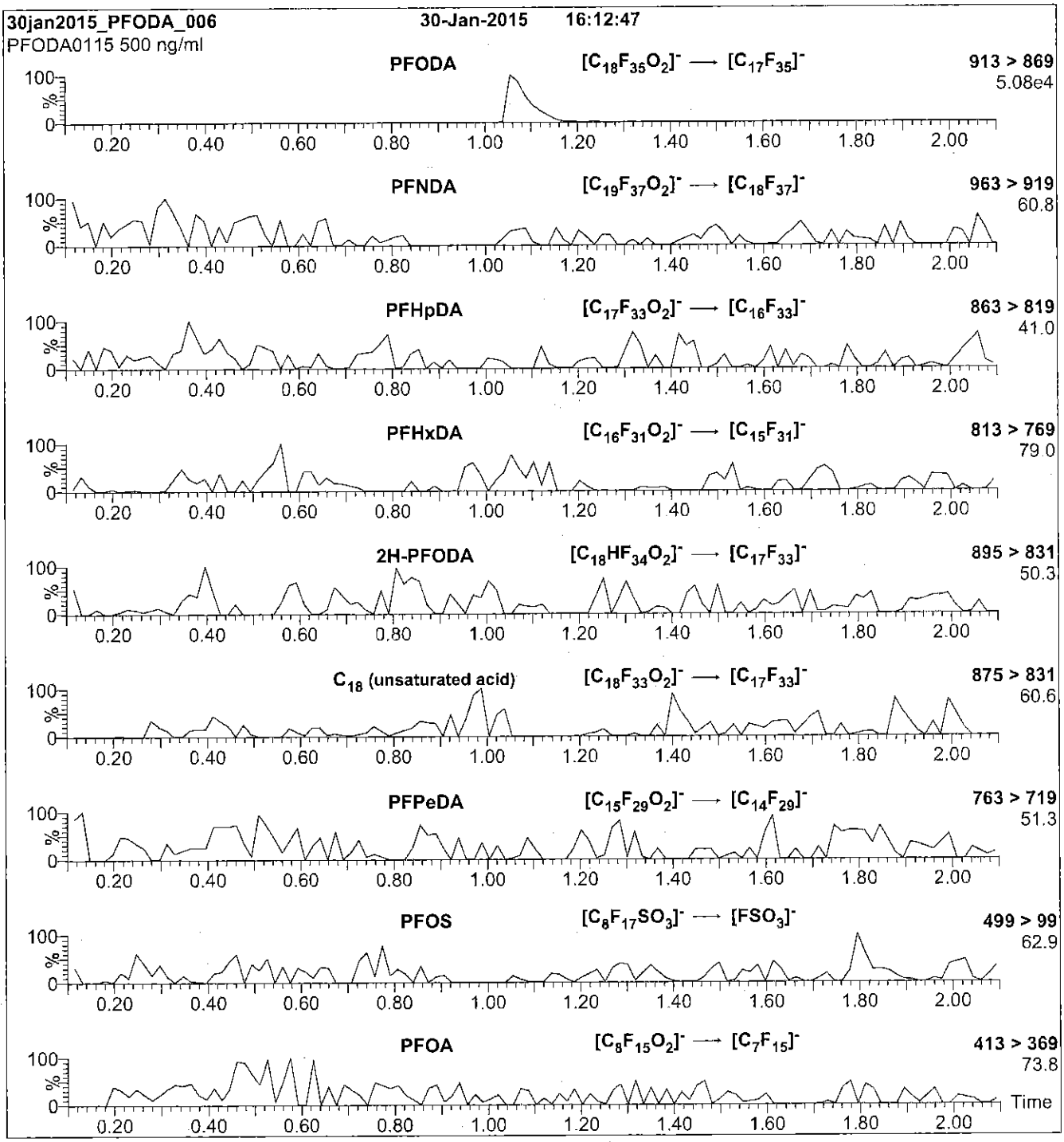
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 15

Reagent

LCPFODA_00006

Scanned 10/14/16 R: SBC 9/13/16

730632
ID: LCPFODA_00006
Exp: 04/29/21 Prpd: SBC
PFODA stock 50ug/mL

730633
ID: LCPFODA_00007
Exp: 04/29/21 Prpd: SBC
PFODA stock 50ug/mL

WELLINGTON LABORATORIES

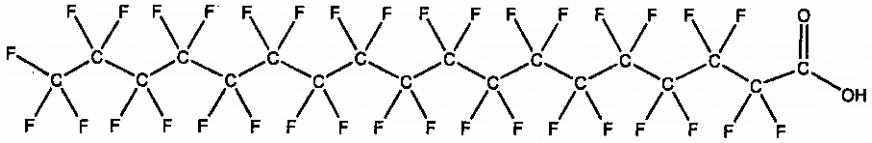
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid

LOT NUMBER: PFODA0416

STRUCTURE:

CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 914.14
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/29/2016
EXPIRY DATE: (mm/dd/yyyy) 04/29/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/20/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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CALA Testing A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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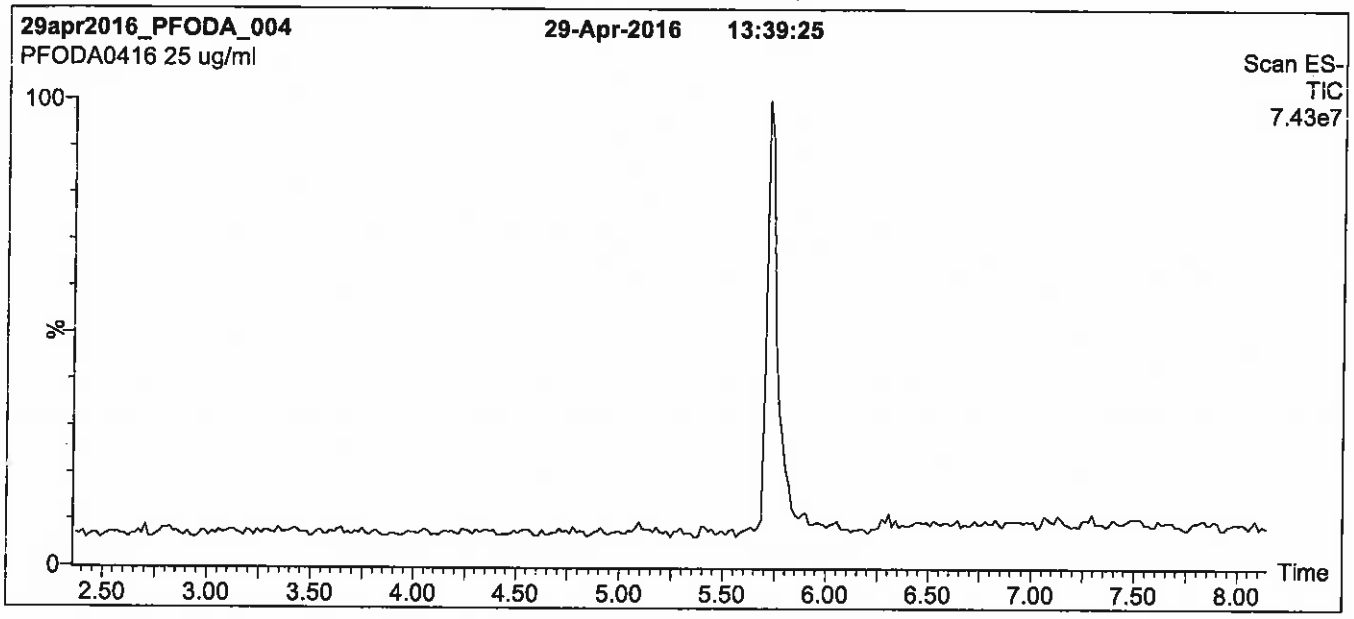
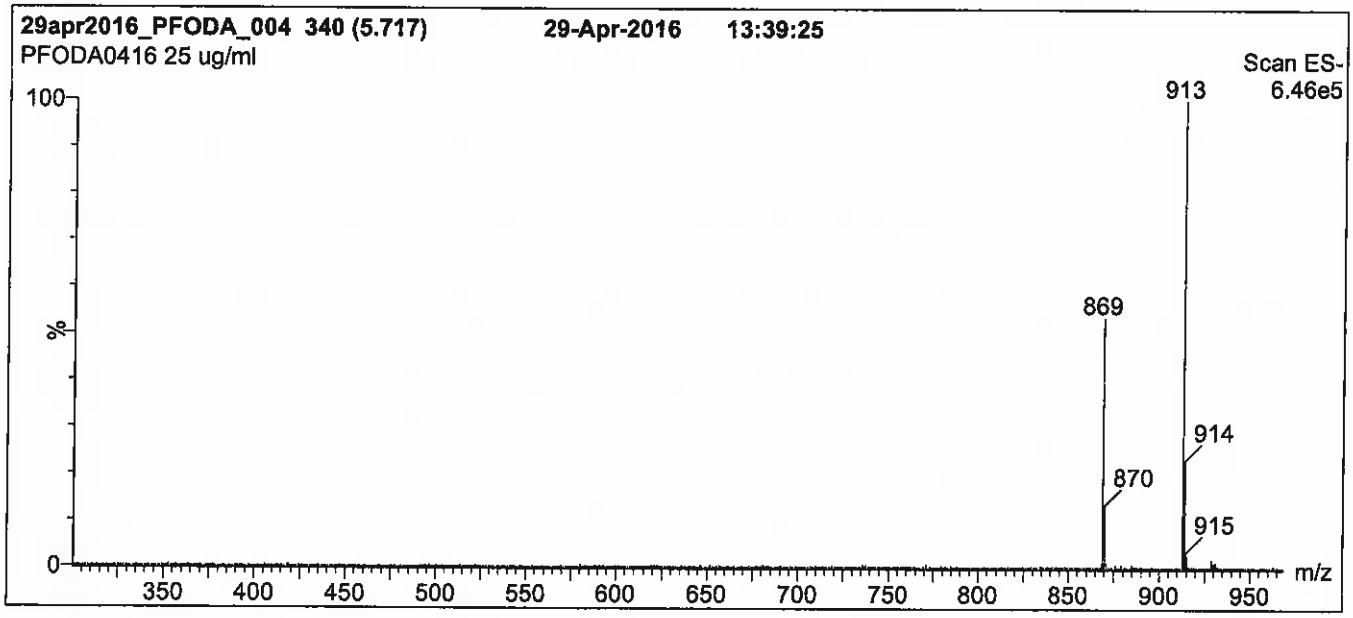
Figure 1: **PFODA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 6 min and hold for
2.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

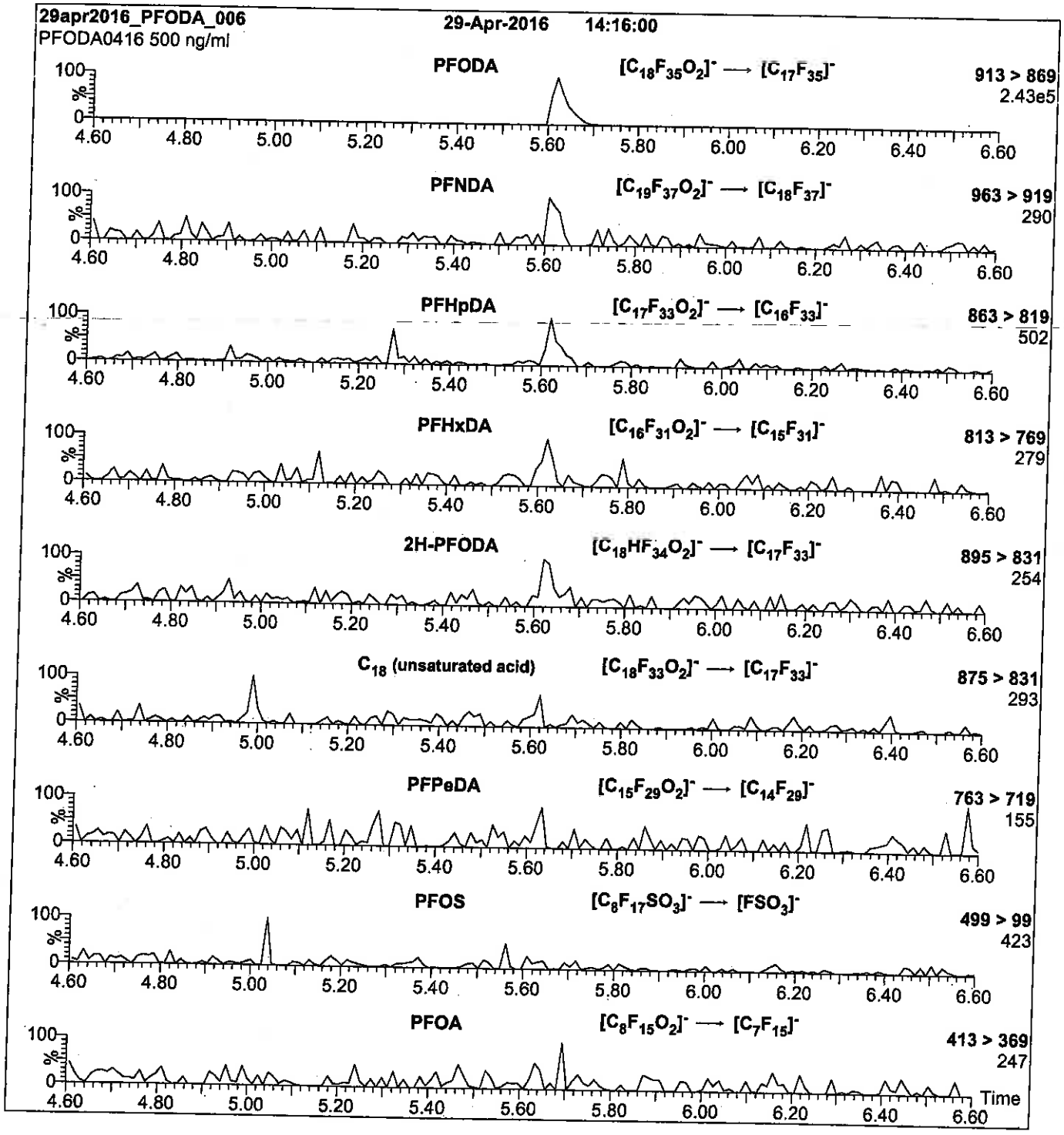
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 90% (80:20 MeOH:ACN) / 10% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCPFOS-br_00002

Scanned 10/14/16 SC R: SBC 9/13/16

730515
ID: LCPFOS-br_00002
Exp: 10/14/20 Prpd: SBC
Potassium Perfluorooctane

730516
ID: LCPFOS-br_00003
Exp: 10/14/20 Prpd: SBC
Potassium Perfluorooctane

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK1015
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	10/13/2015
LAST TESTED: (mm/dd/yyyy)	10/14/2015
EXPIRY DATE: (mm/dd/yyyy)	10/14/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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

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

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

TRACEABILITY:

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CALA

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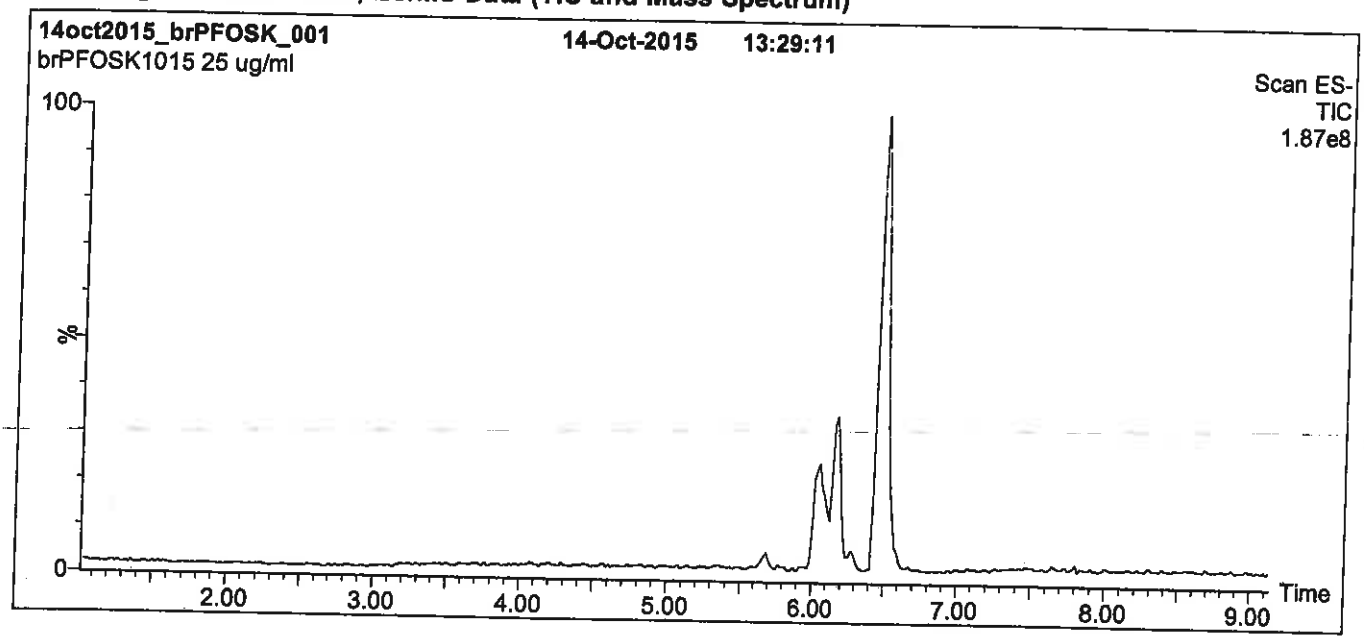
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

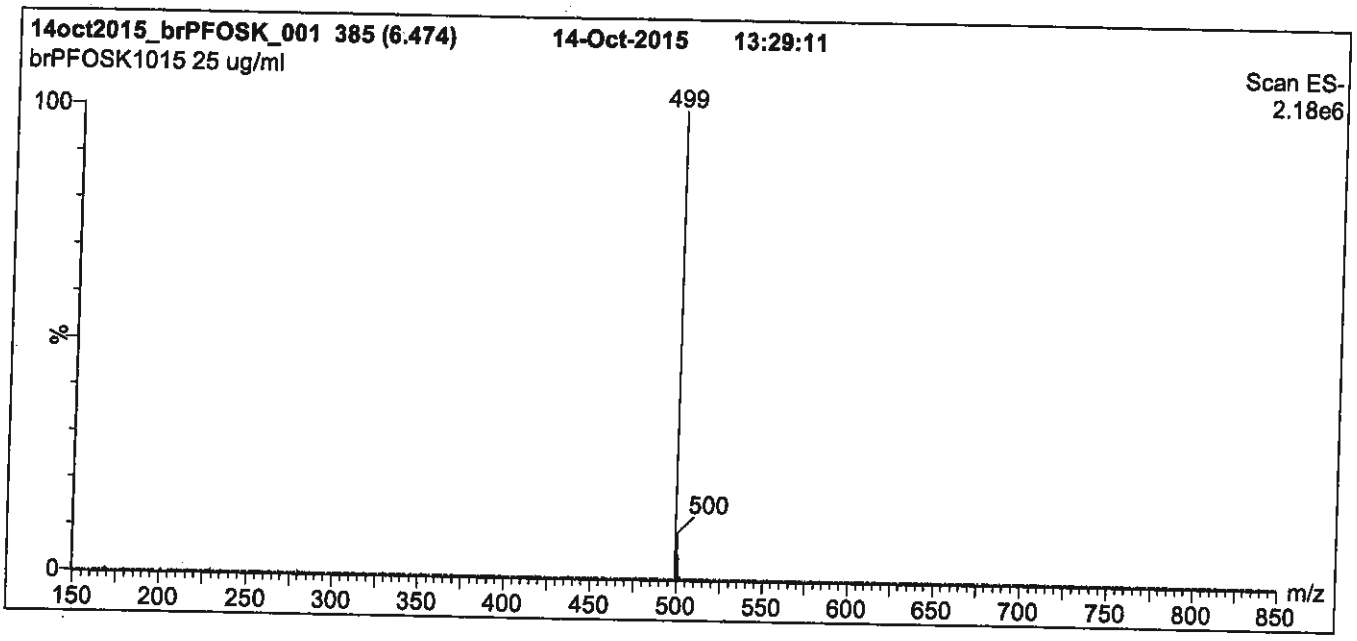
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-C(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2-C(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF_2-CF(CF_3)-CF_2CF_2SO_3^-K^+$	0.07

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

Certified By: _____ **Date:** 10/15/2015
B.G. Chittim (mm/dd/yyyy)

Figure 1: **br-PFOSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

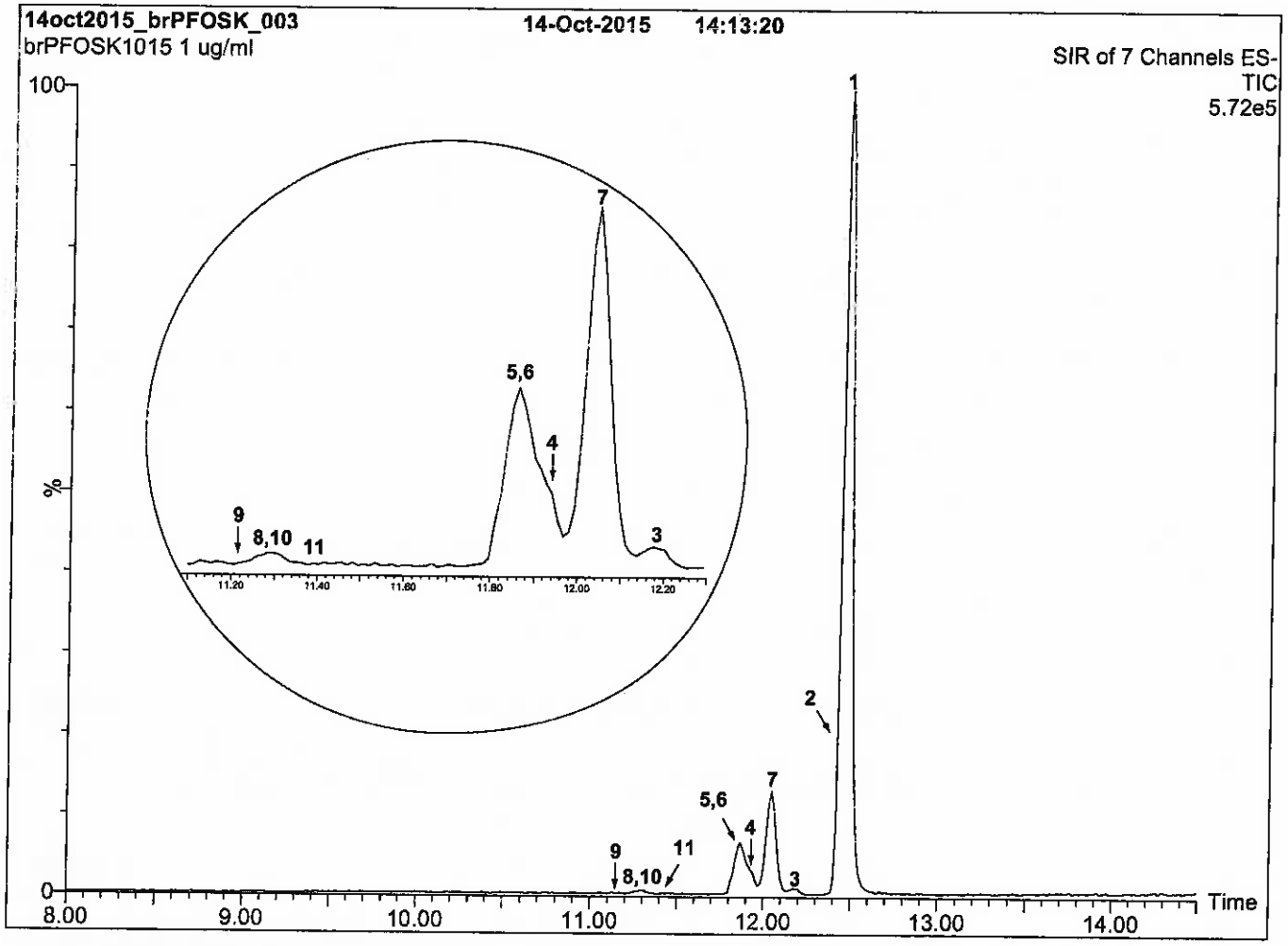
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18} (1.7 µm, 2.1 x 100 mm)

Injection: 1.0 µg/ml of br-PFOSK

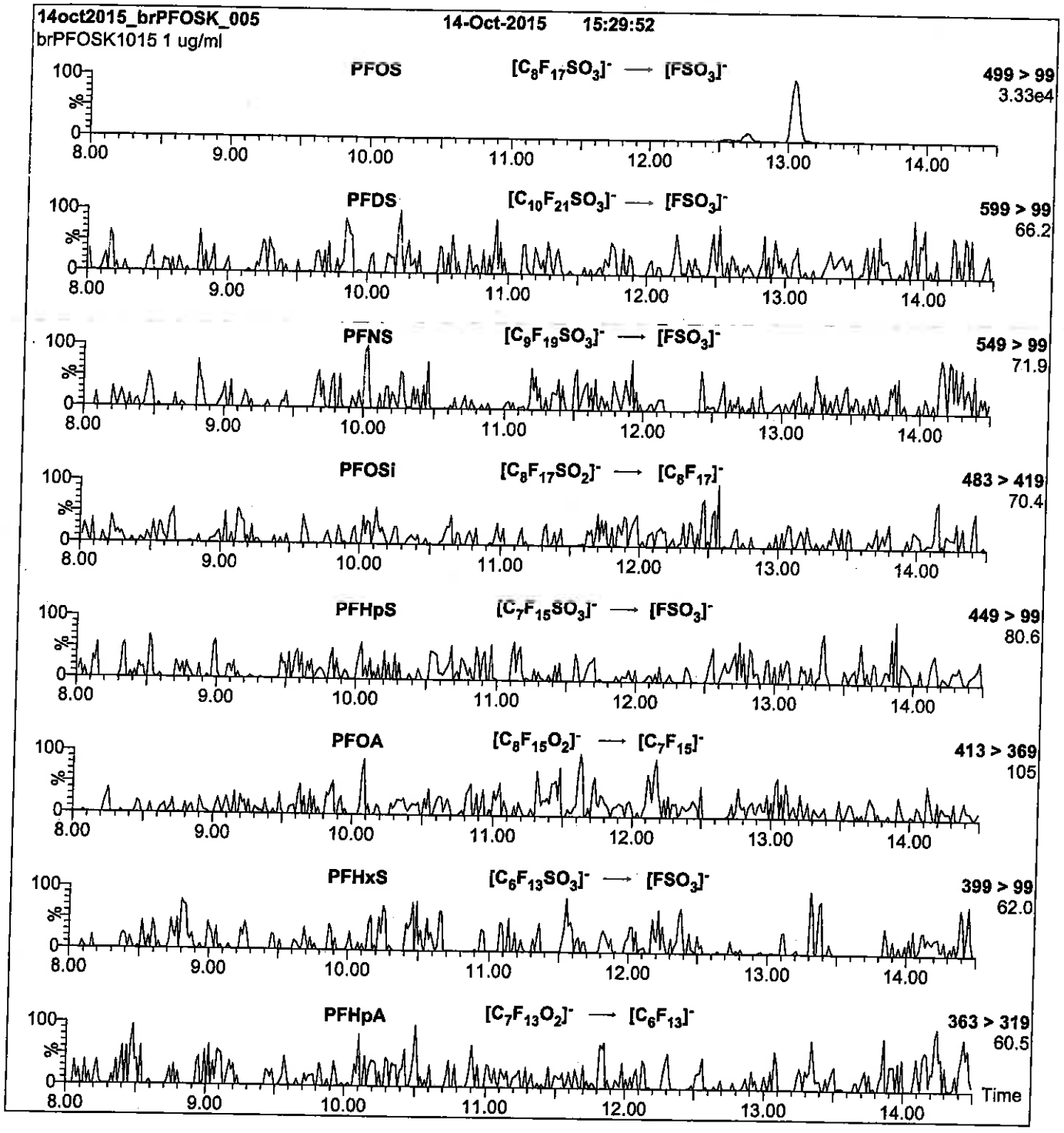
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

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

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



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.06e-3
Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00006

Rec 12/30/15 CW

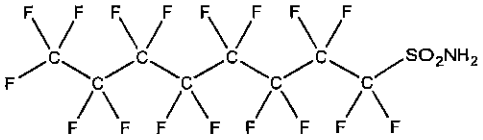
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FOSA-I
COMPOUND: Perfluoro-1-octanesulfonamide
LOT NUMBER: FOSA0815I

STRUCTURE:

CAS #: 754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/02/2015		
EXPIRY DATE: (mm/dd/yyyy)	09/02/2017		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: B.G. Chittim **Date:** 09/11/2015 (mm/dd/yyyy)

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 AR REFERENCE MATERIAL PRODUCER

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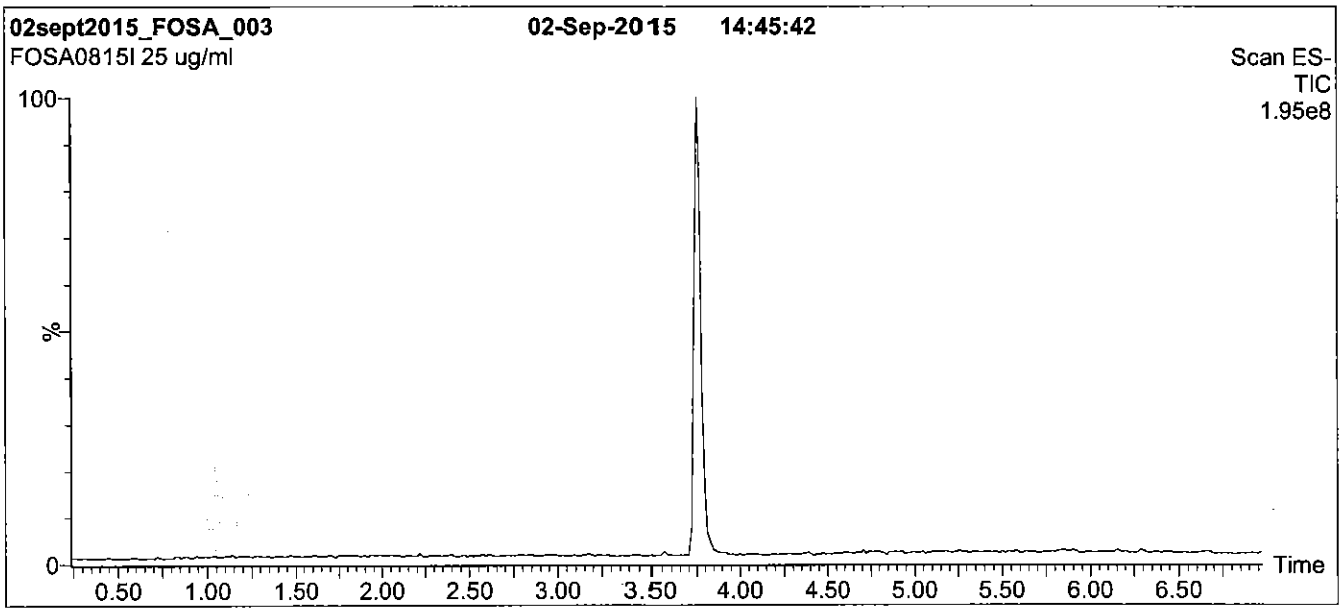
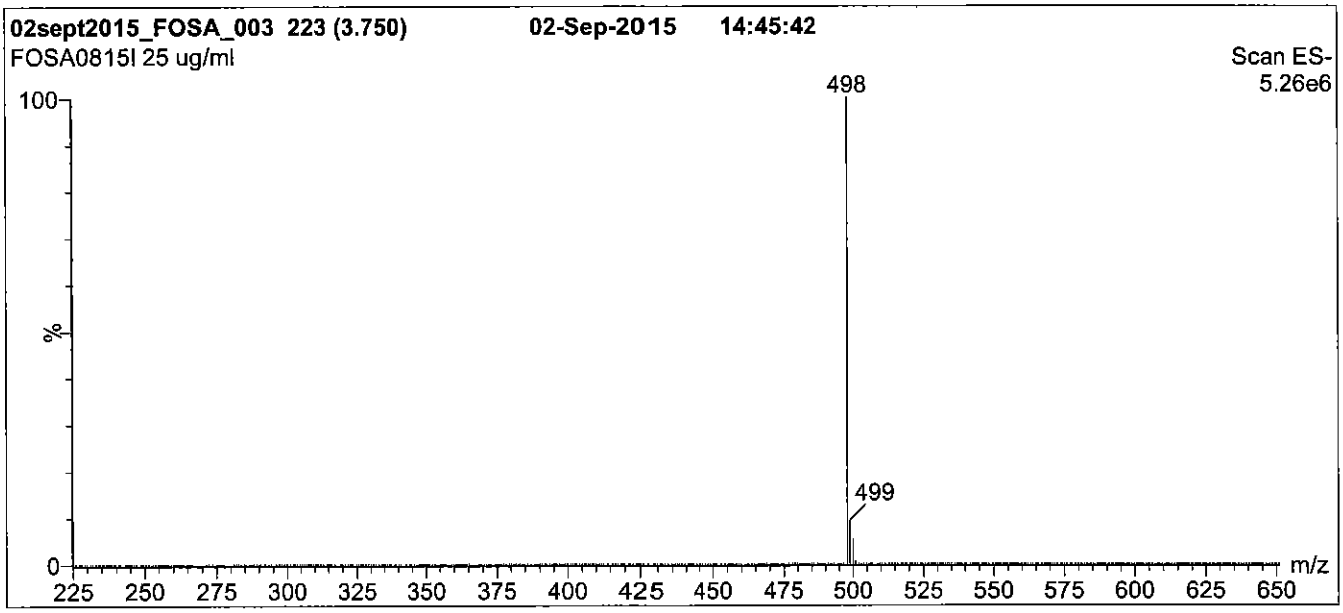
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

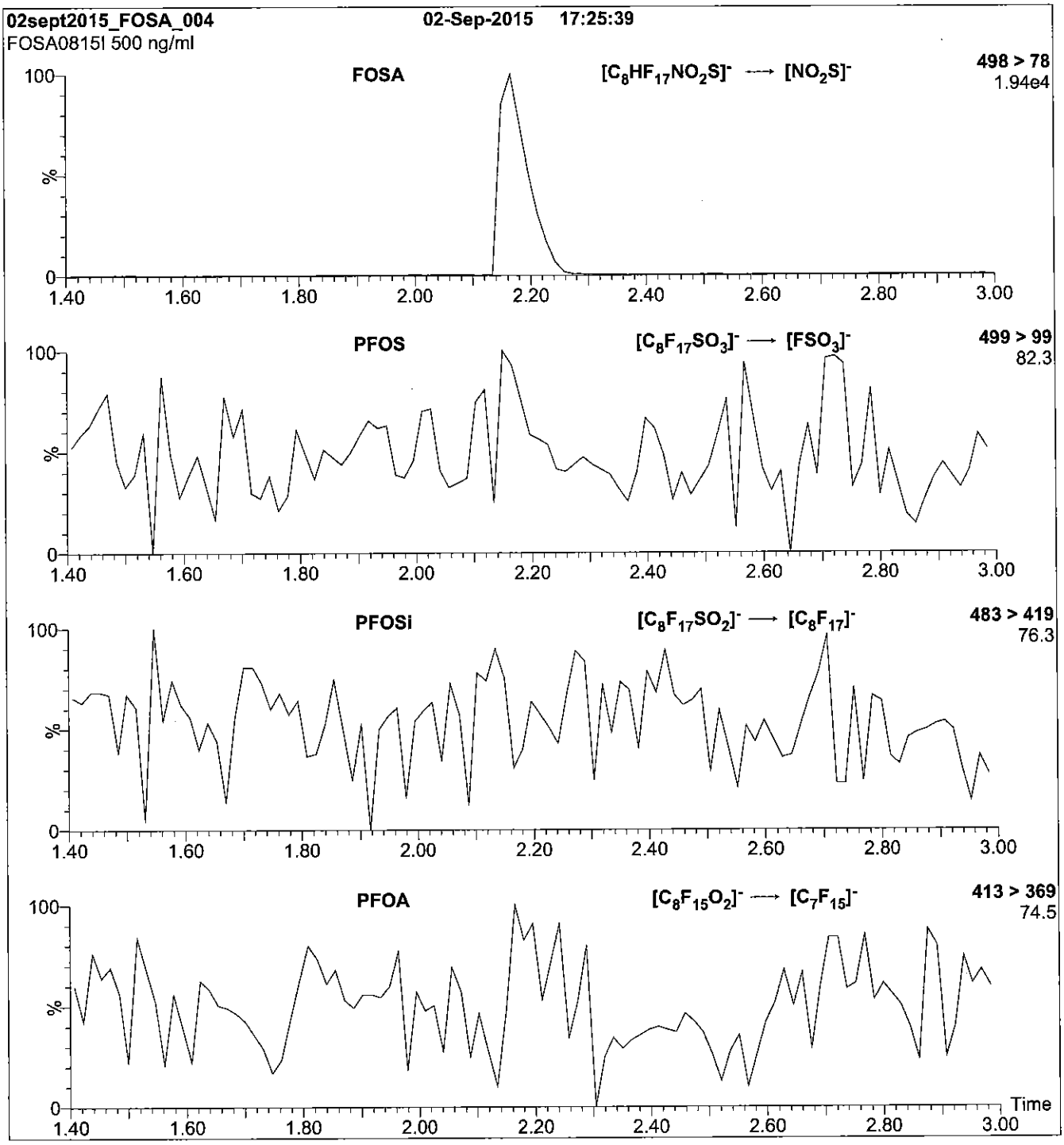
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml FOSA-I)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFOSA_00008

Scanned 10/14/16

R: SBC 9/13/16

730534
ID: LCPFOSA_00009
Exp: 09/02/17 Prpd: SBC
PF-1-octanesulfonamide

730533
ID: LCPFOSA_00008
Exp: 09/02/17 Prpd: SBC
PF-1-octanesulfonamide

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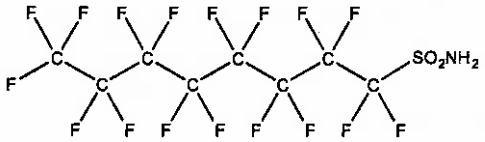
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	FOSA-I	**LOT NUMBER:**	FOSA0815I
COMPOUND:	Perfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/02/2015		
EXPIRY DATE: (mm/dd/yyyy)	09/02/2017		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 09/11/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

CALA Testing

ANAB ACCREDITED ISO 17025 ISO 17034 REFERENCE MATERIAL PRODUCER

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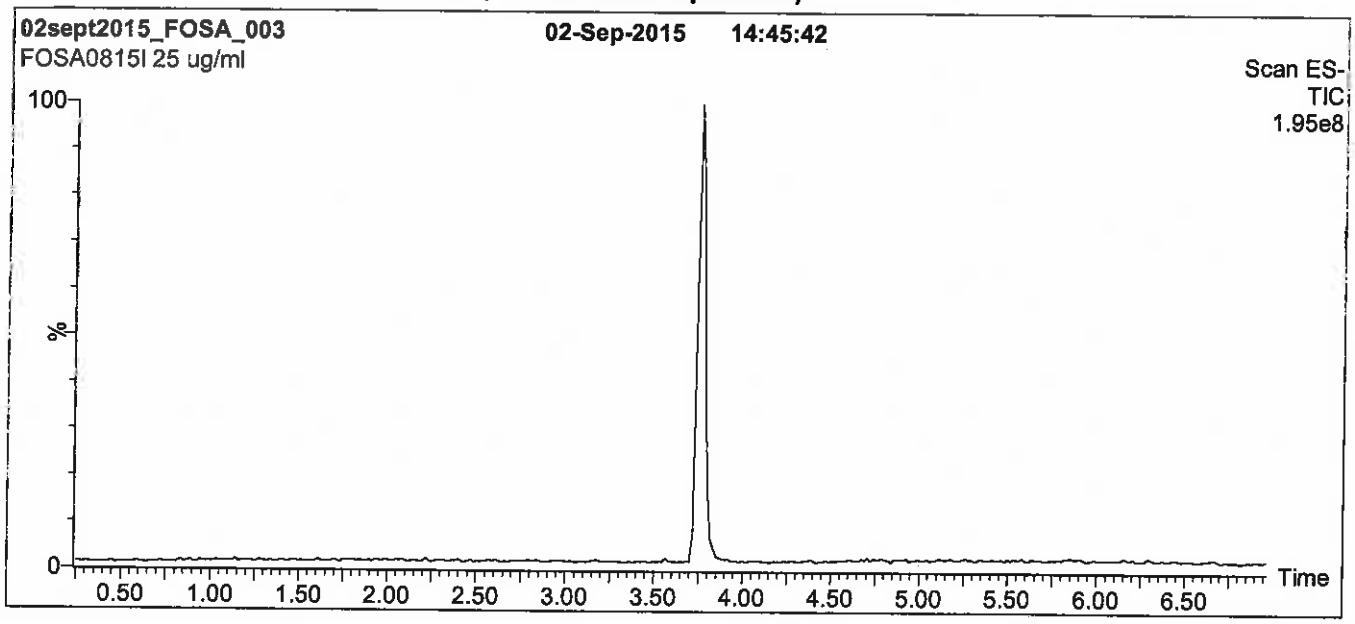
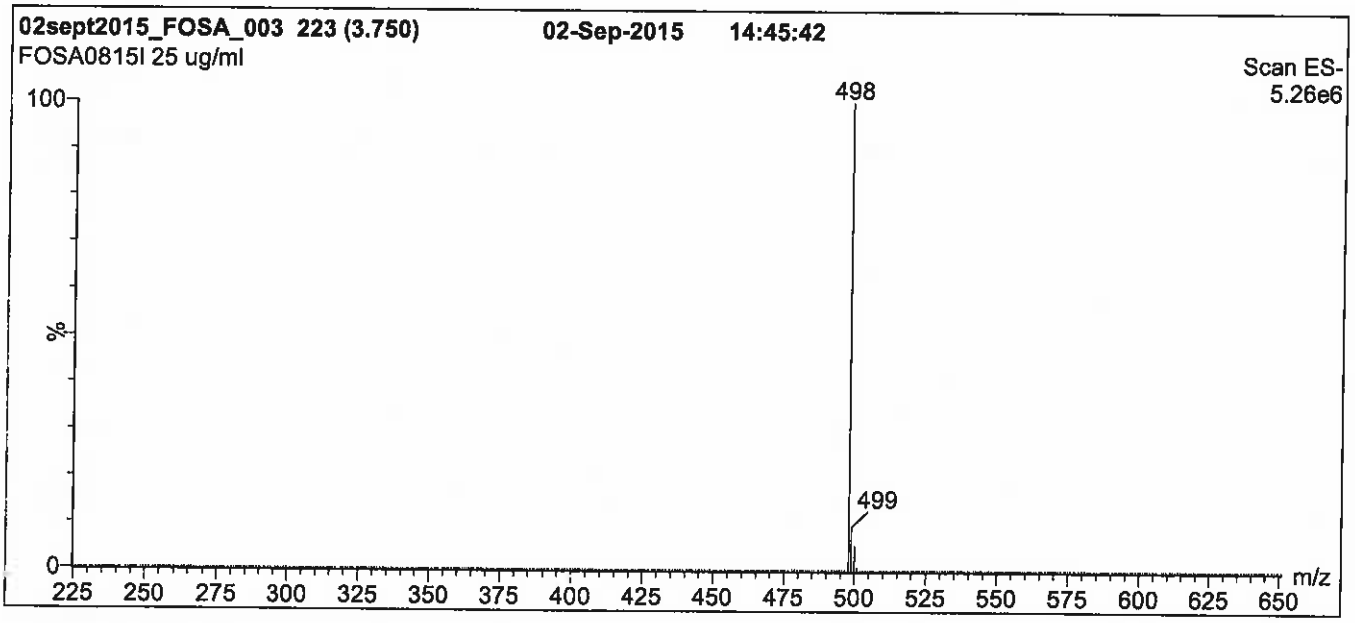
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

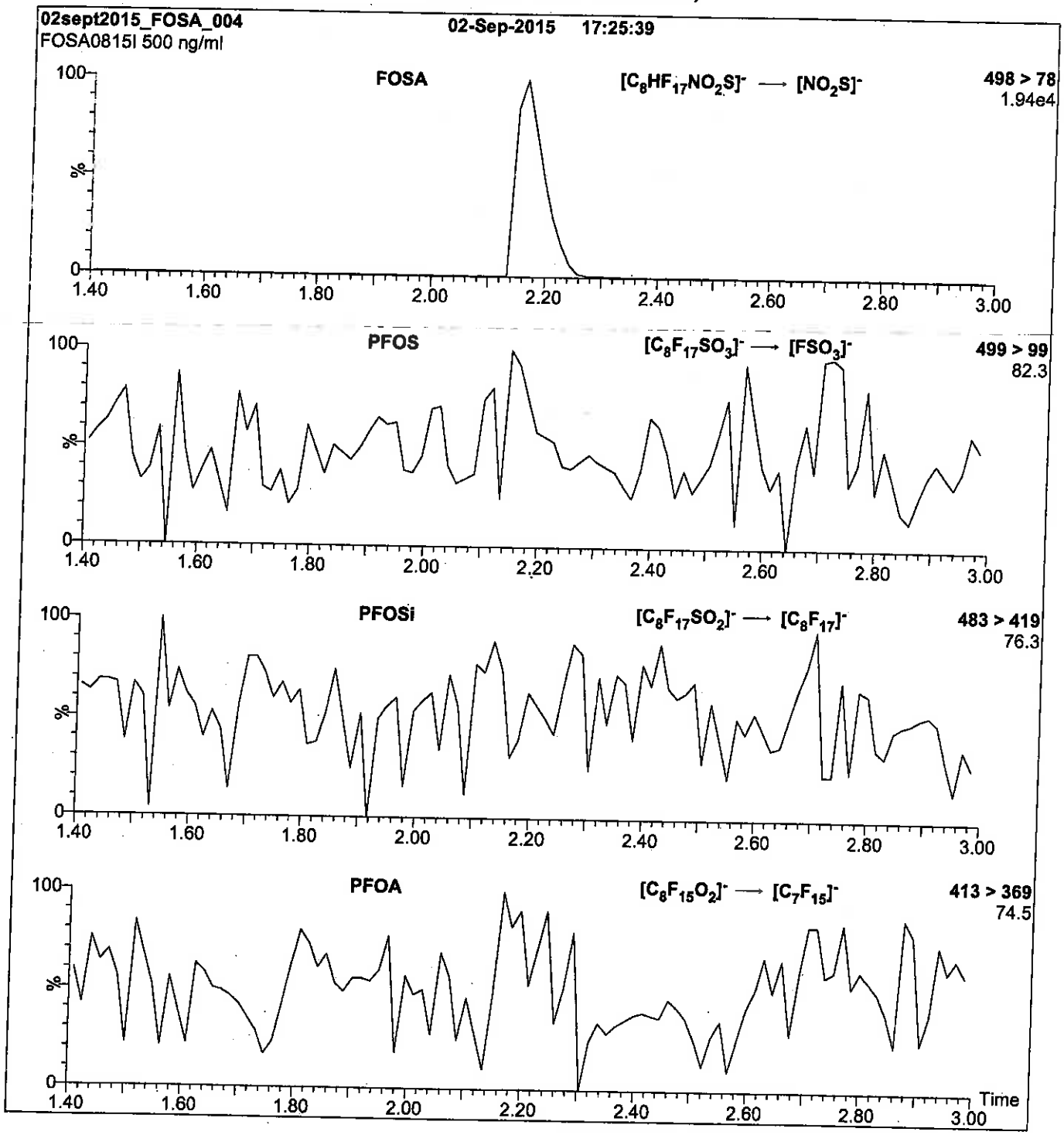
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml FOSA-I)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFPeA_00005

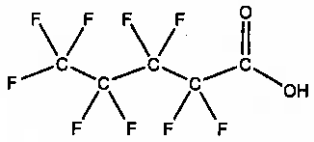
R: 7/6/16 CBW

671579
ID: LCPFPeA_00005
Exp: 01/30/20 Prpd: CBW
PF-n-pentanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFPeA	**LOT NUMBER:**	PFPeA0115
COMPOUND:	Perfluoro-n-pentanoic acid		
STRUCTURE:		**CAS #:**	2706-90-3



MOLECULAR FORMULA:	$C_5HF_9O_2$	**MOLECULAR WEIGHT:**	264.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/30/2015		
EXPIRY DATE: (mm/dd/yyyy)	01/30/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/26/2015 (mm/dd/yyyy)

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

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LIMITED WARRANTY:

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CALA

ANAB ACCREDITED

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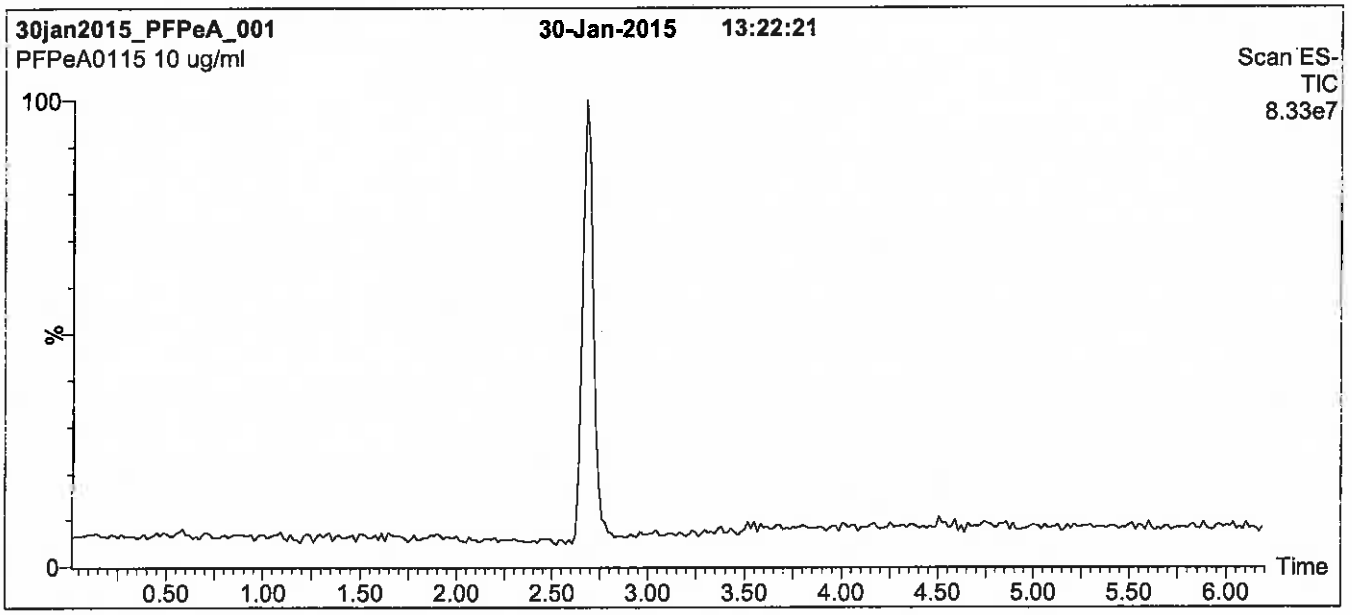
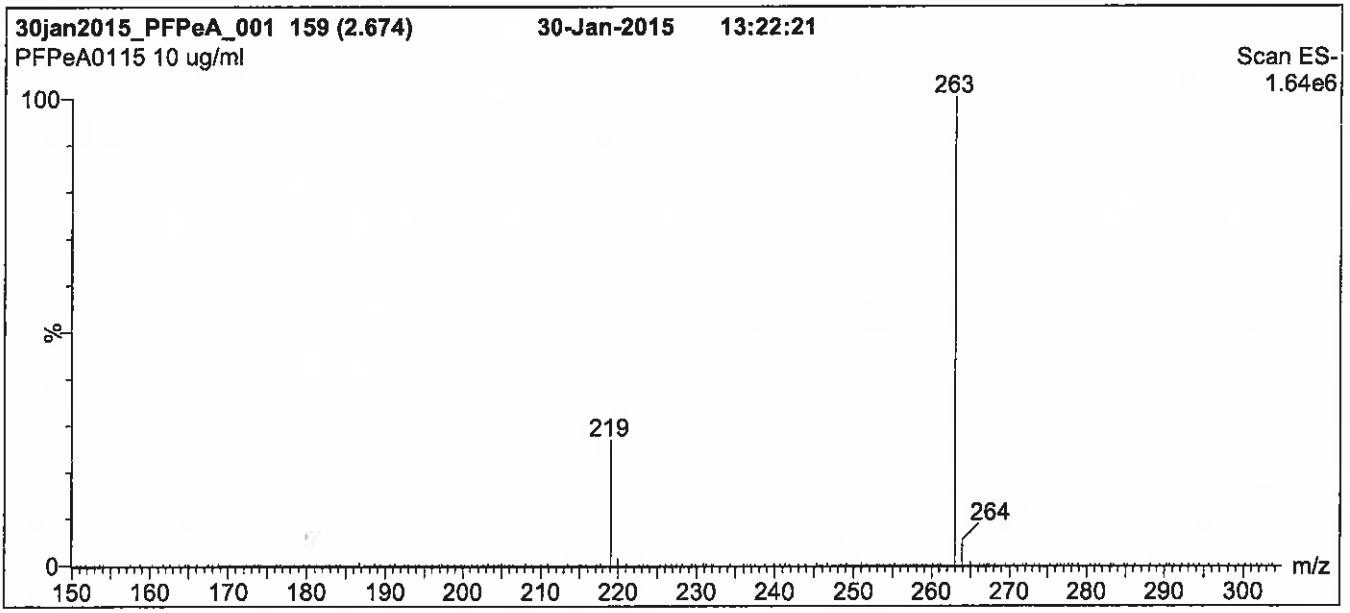
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

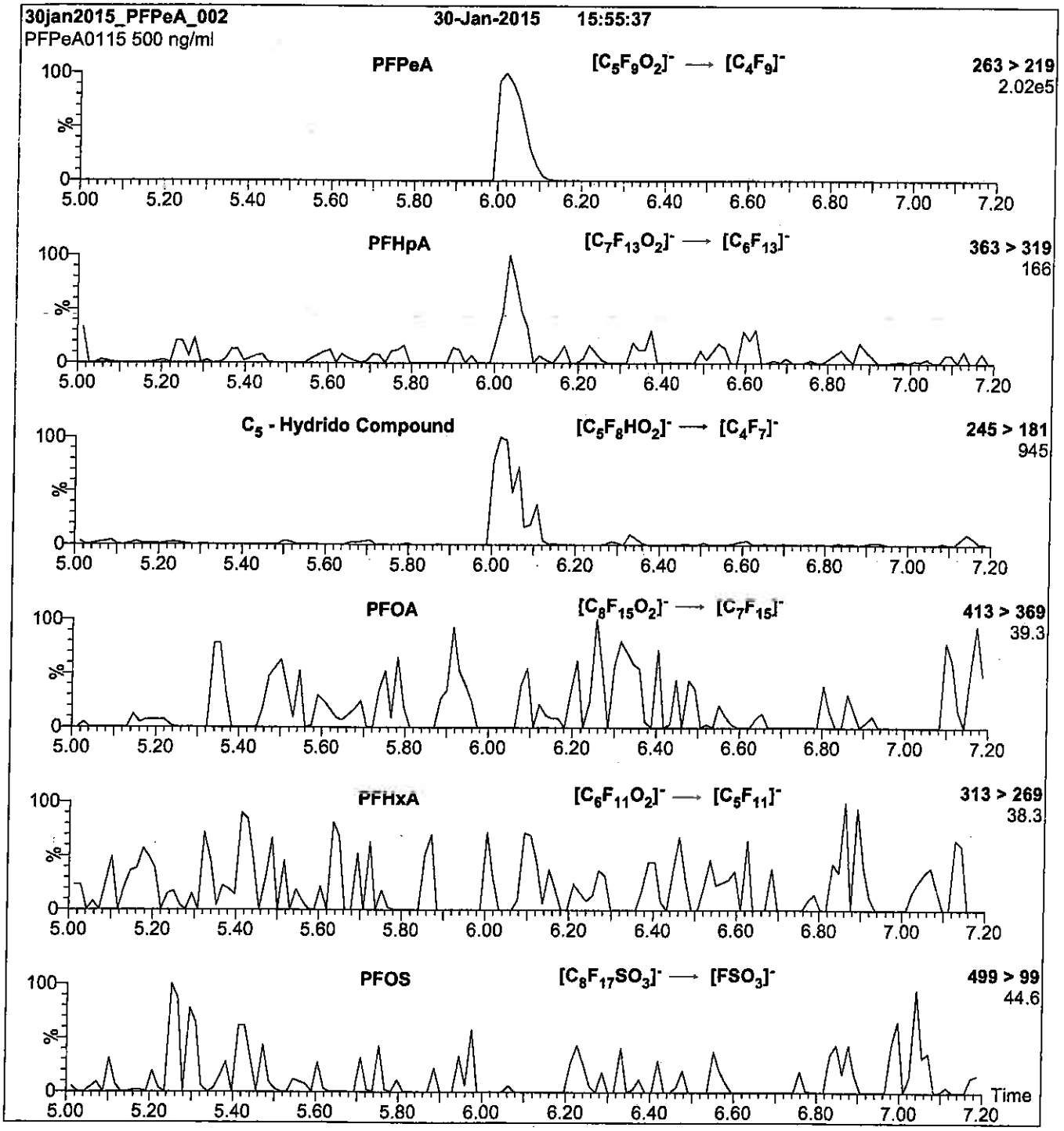
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 9

Reagent

LCPFTeDA_00004

609696
ID: LCPFTeDA_00004
Exp: 12/09/20 Prpd: CBW
PF-n-tetradecanoic acid

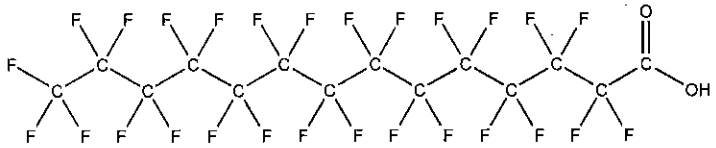
R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA1215
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2015
EXPIRY DATE: (mm/dd/yyyy) 12/09/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

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Certified By: B.G. Chittim **Date:** 12/09/2015 (mm/dd/yyyy)

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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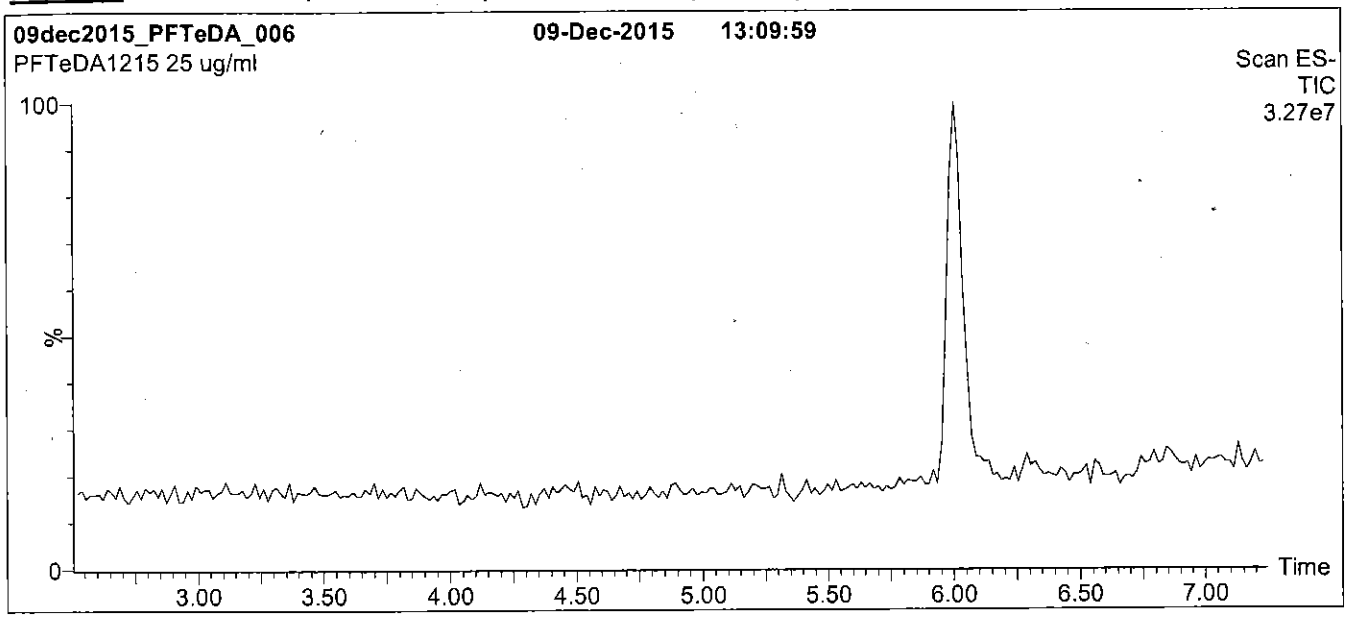
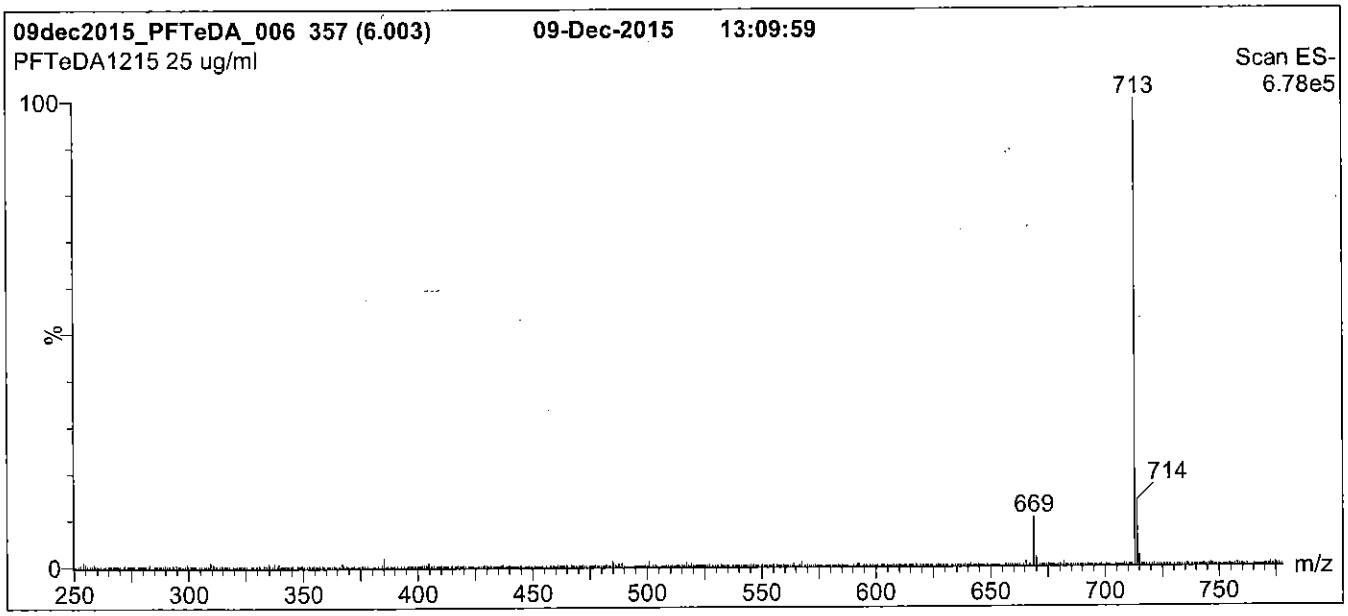
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

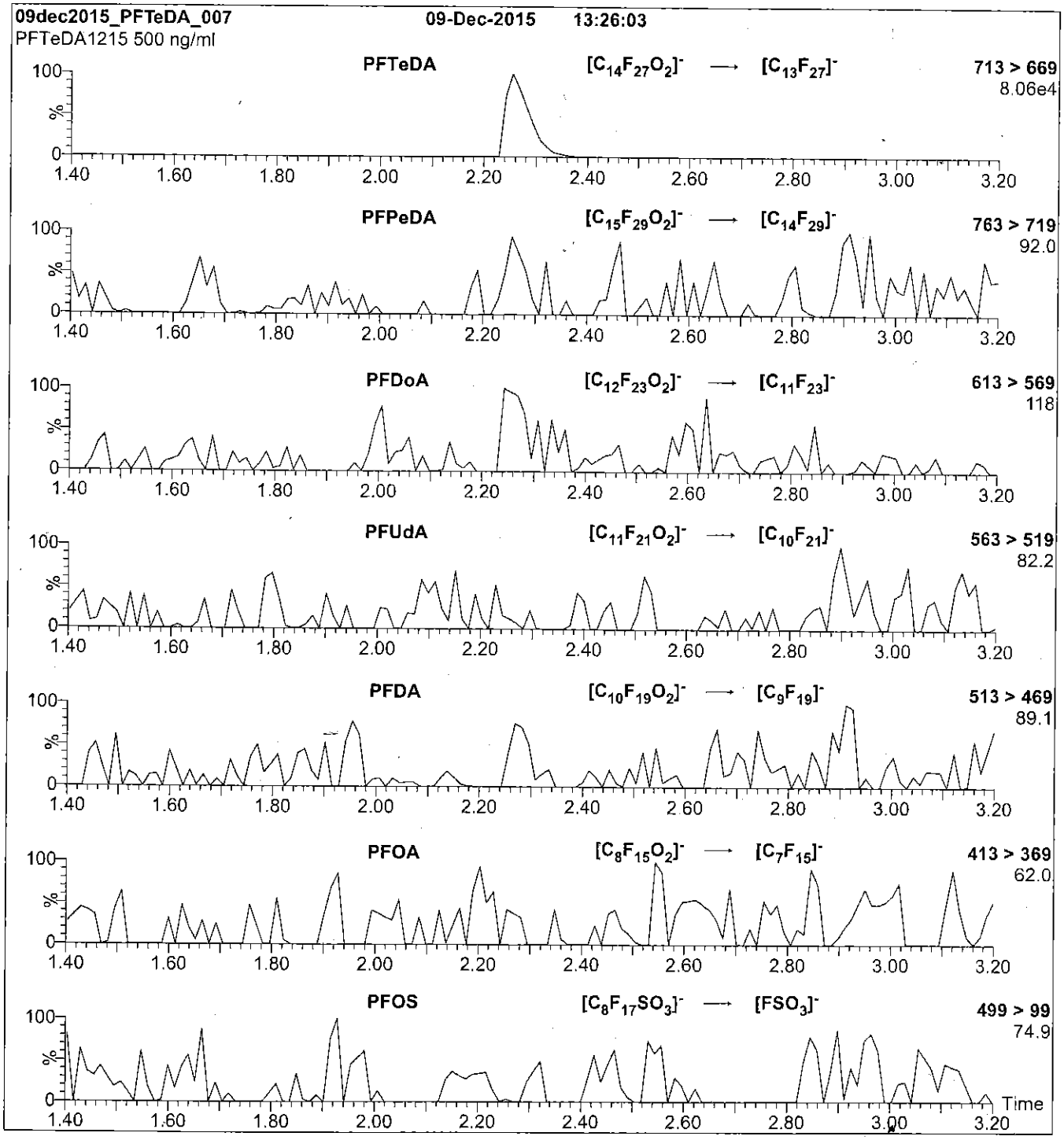
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFTeDA_00005

R: SBG 9/13/16

730645
ID: LCPFTeDA_00005
Exp: 12/09/20 Prpd: SBC
PF-n-tetradecanoic acid

730659
ID: LCPFTeDA_00006
Exp: 12/09/20 Prpd: SBC
PF-n-tetradecanoic acid

WELLINGTON LABORATORIES

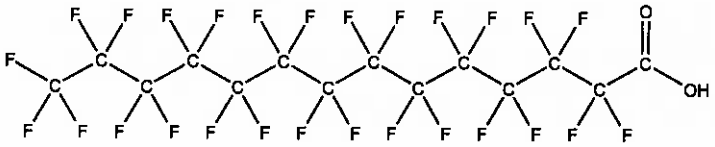
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
COMPOUND: Perfluoro-n-tetradecanoic acid

LOT NUMBER: PFTeDA1215

STRUCTURE:

CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 714.11
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2015
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Figure 1: LC/MS Data (TIC and Mass Spectrum)
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- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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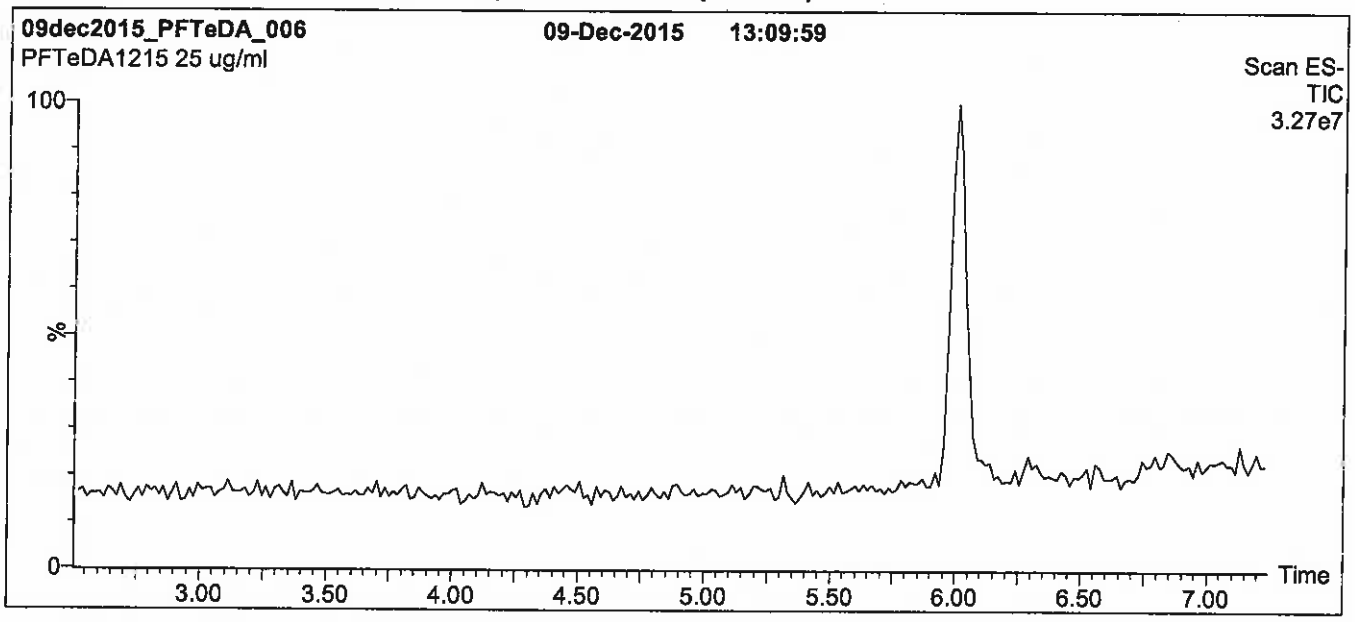
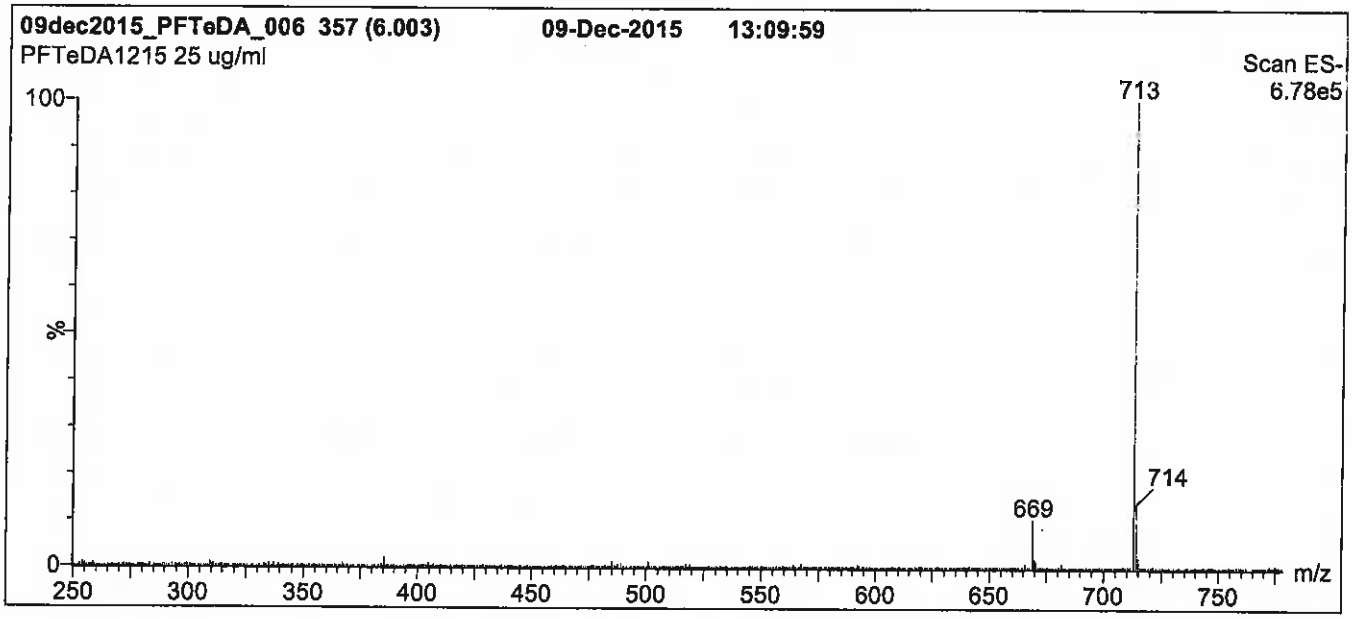
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

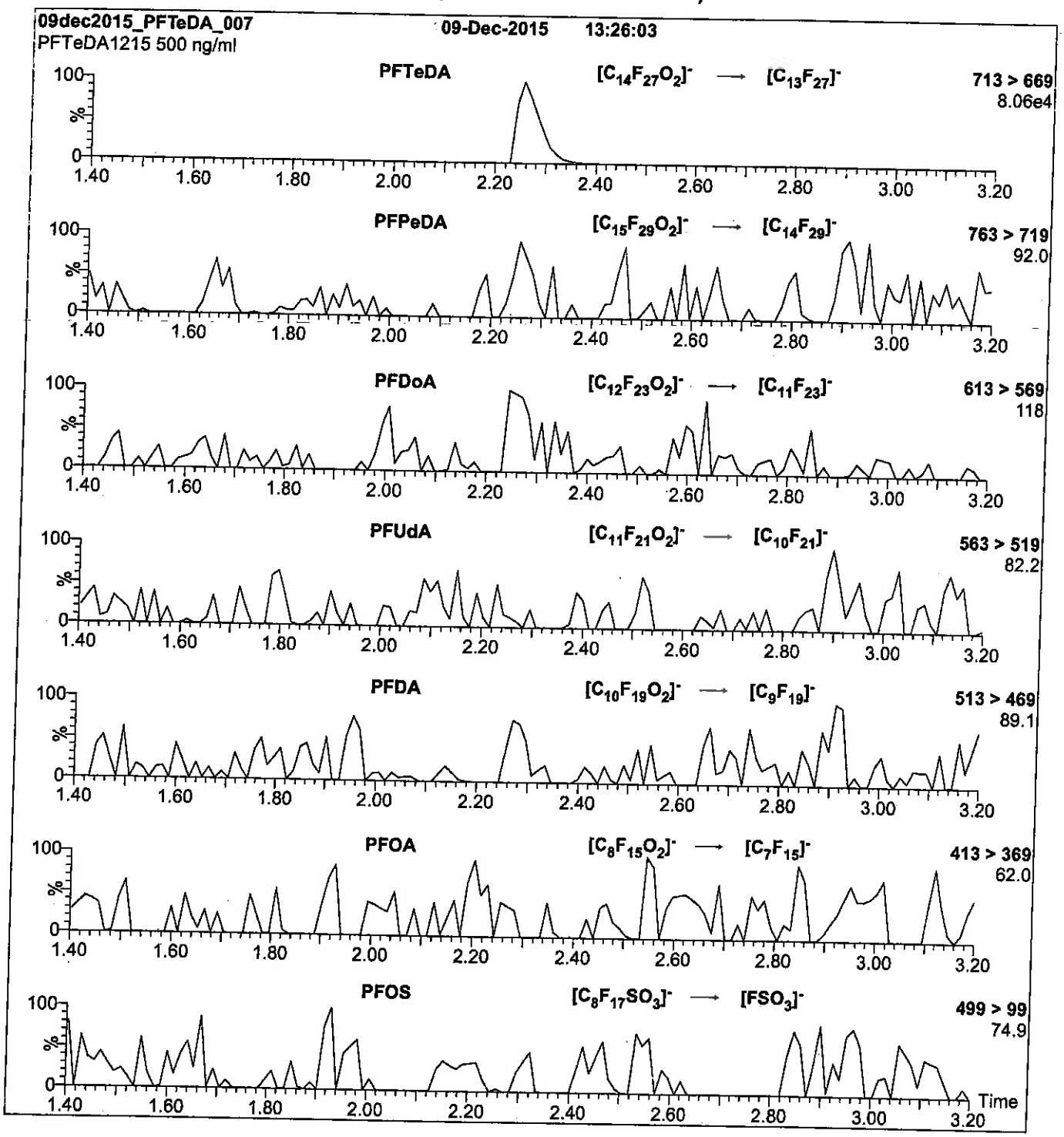
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFTrDA_00004

609697
ID: LCPFTrDA_00004
Exp: 12/10/18 Prpd: CBW
PF-n-tridecanoic acid

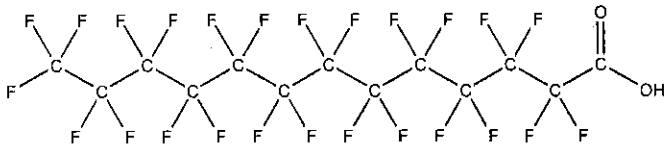
R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
LOT NUMBER: PFTrDA1213
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE:
CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
MOLECULAR WEIGHT: 664.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/10/2013
EXPIRY DATE: (mm/dd/yyyy) 12/10/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$); ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/25/2015 (mm/dd/yyyy)

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

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CALA Member Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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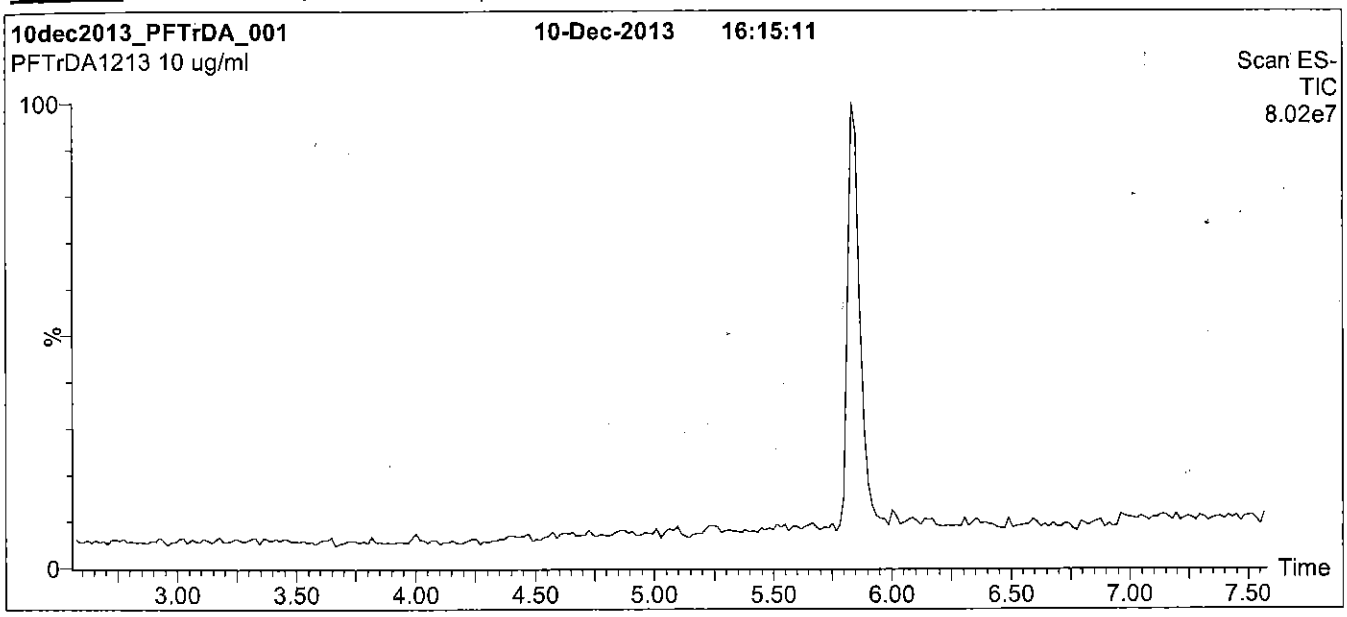
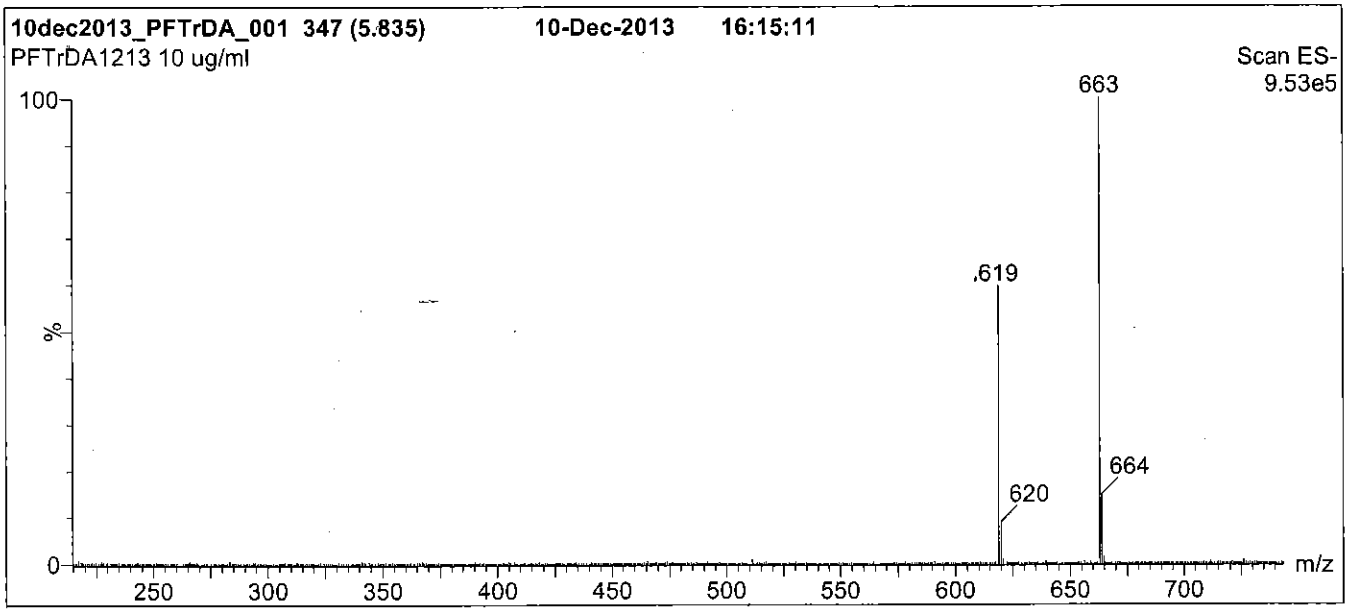




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

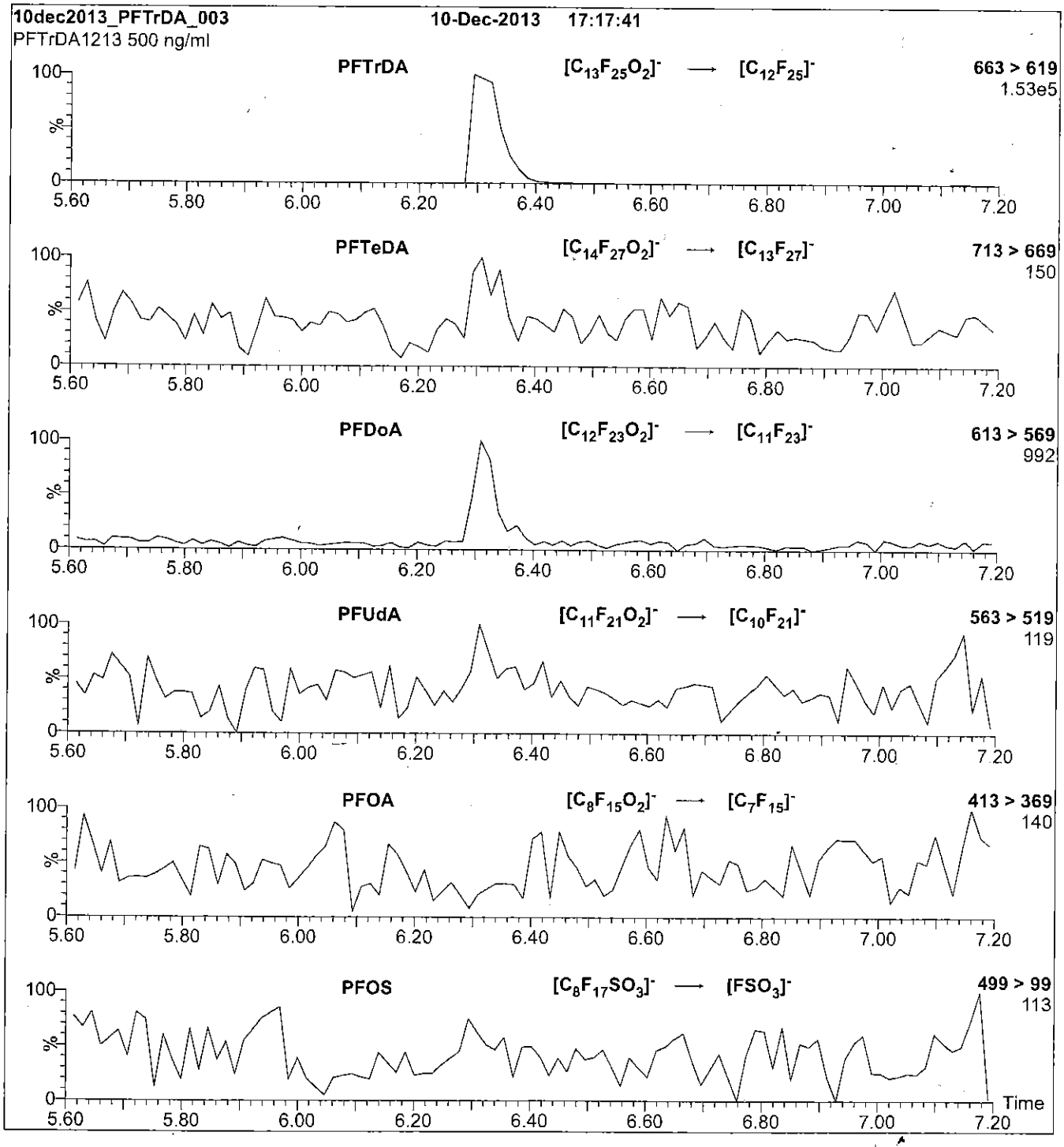
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 15

Reagent

LCPFTrDA_00005

R: SBC 9/13/16

730665
ID: LCPFTrDA_00005
Exp: 02/12/21 Prpd: SBC
PF-n-tridecanoic acid

730666
ID: LCPFTrDA_00006
Exp: 02/12/21 Prpd: SBC
PF-n-tridecanoic acid

WELLINGTON LABORATORIES

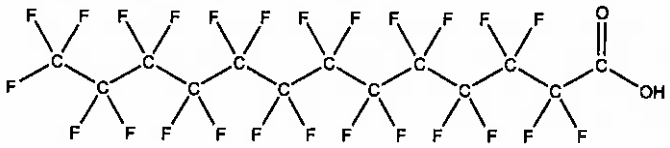
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
COMPOUND: Perfluoro-n-tridecanoic acid

LOT NUMBER: PFTrDA0216

STRUCTURE:

CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 664.11
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/12/2016
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/16/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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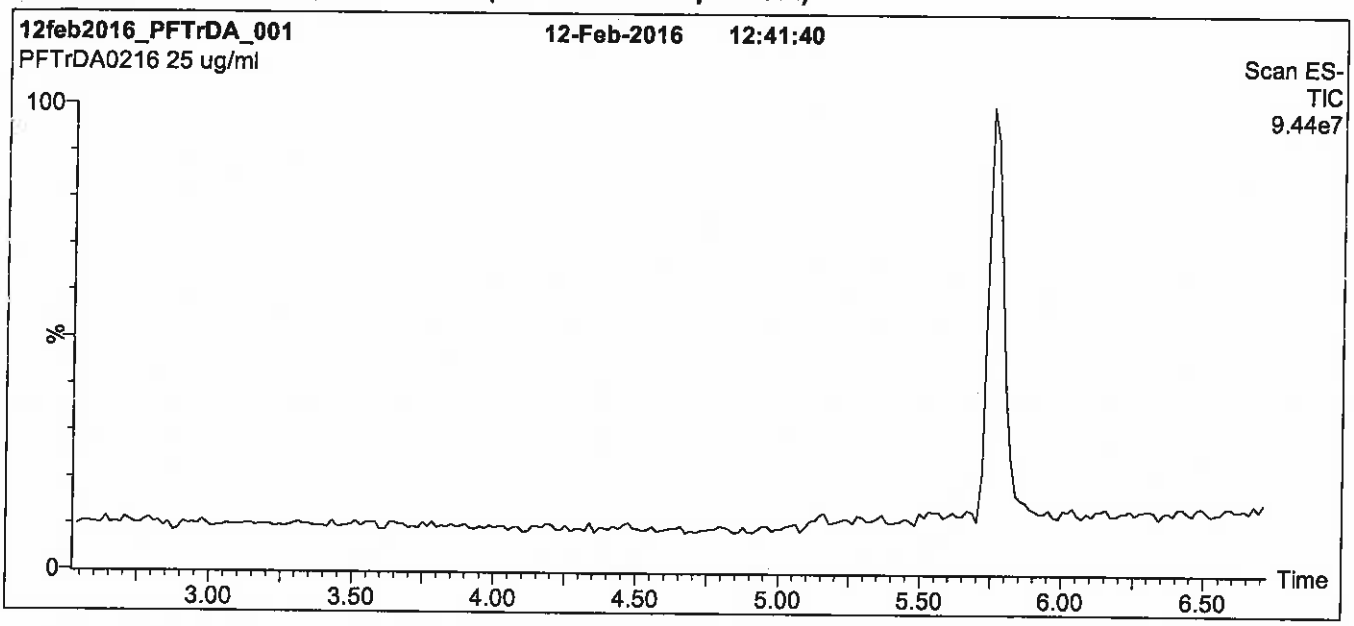
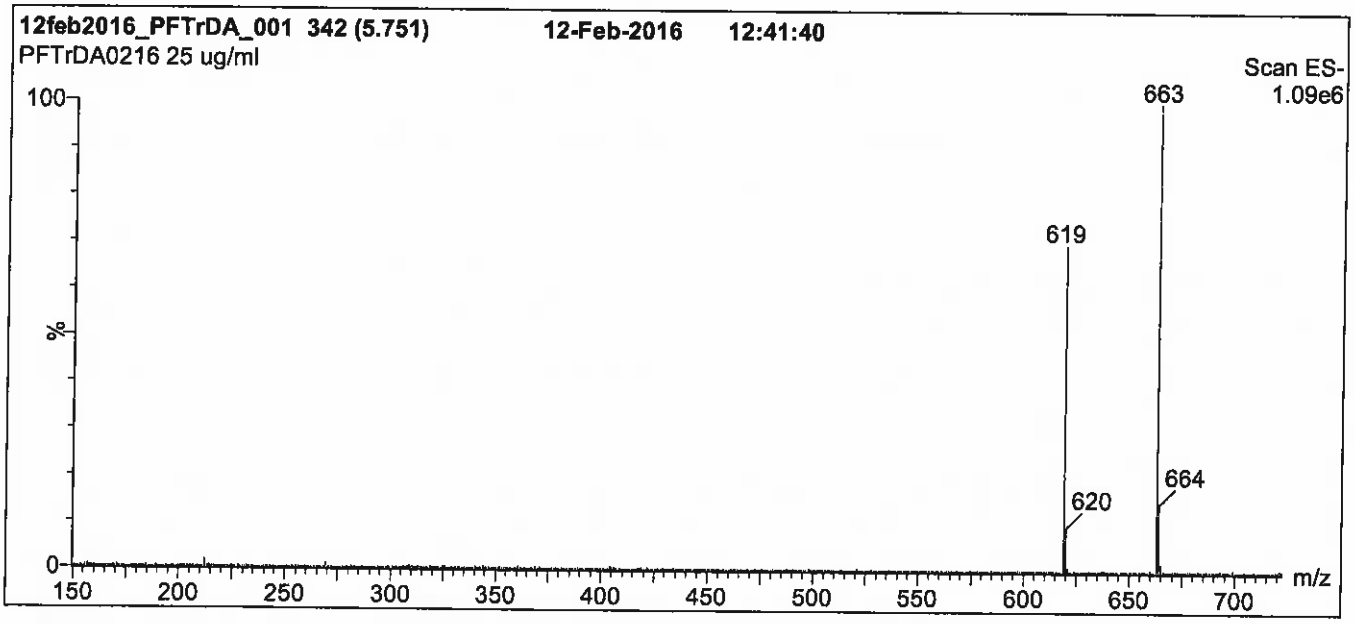




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

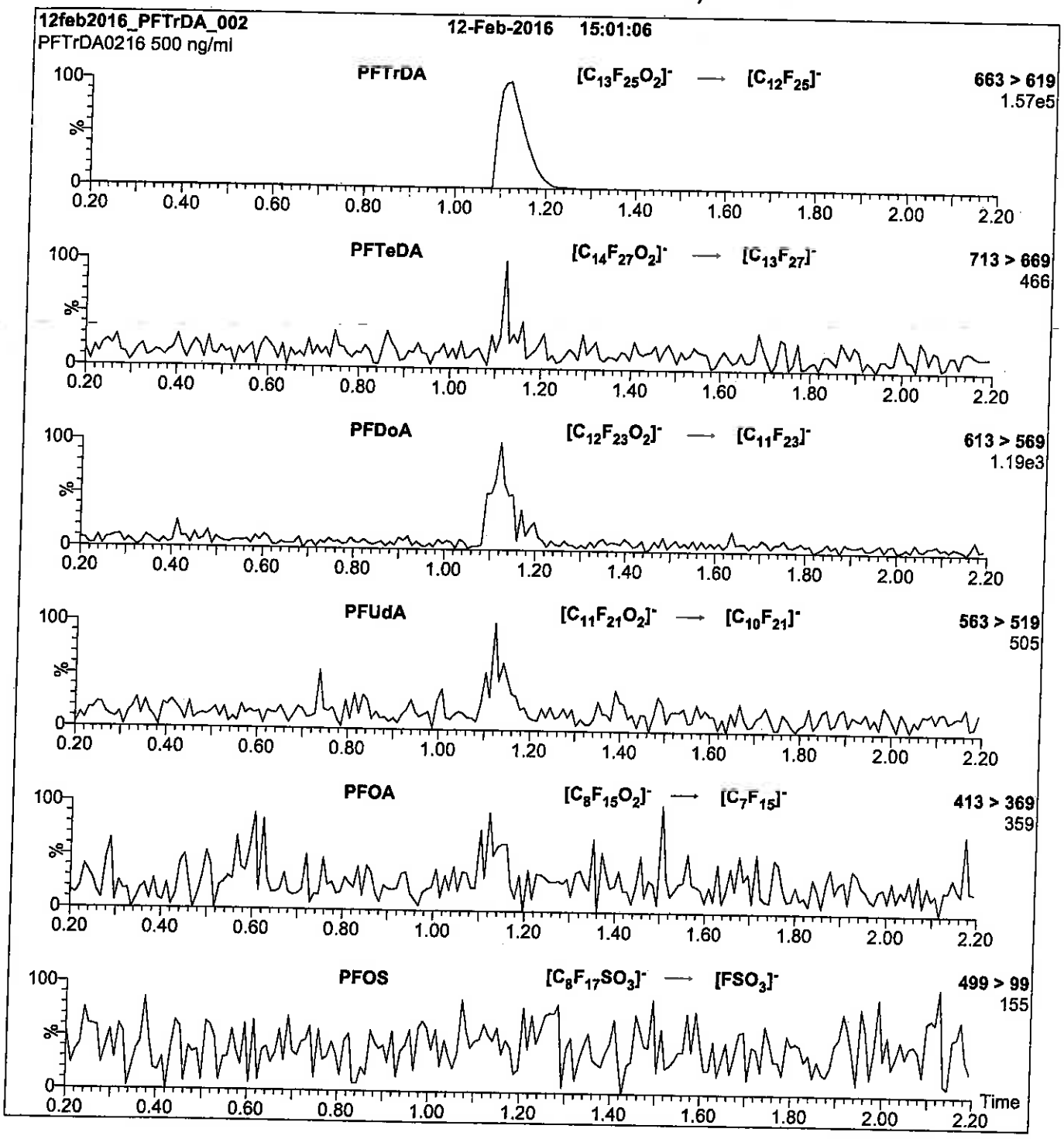
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00005

Scanned 10/14/16 R: SBC 9/13/16

730535
ID: LCPFUdA_00005
Exp: 08/19/20 Prpd: SBC
PF-n-undecanoic acid

730536
ID: LCPFUdA_00006
Exp: 08/19/20 Prpd: SBC
PF-n-undecanoic acid

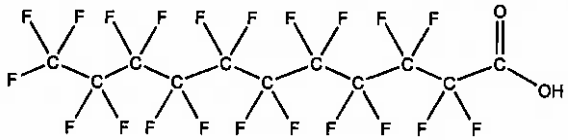
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFUdA
COMPOUND: Perfluoro-n-undecanoic acid
LOT NUMBER: PFUdA0815

STRUCTURE:

CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
MOLECULAR WEIGHT: 564.09
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/19/2015
EXPIRY DATE: (mm/dd/yyyy) 08/19/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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Certified By: B.G. Chittim **Date:** 08/21/2015 (mm/dd/yyyy)

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

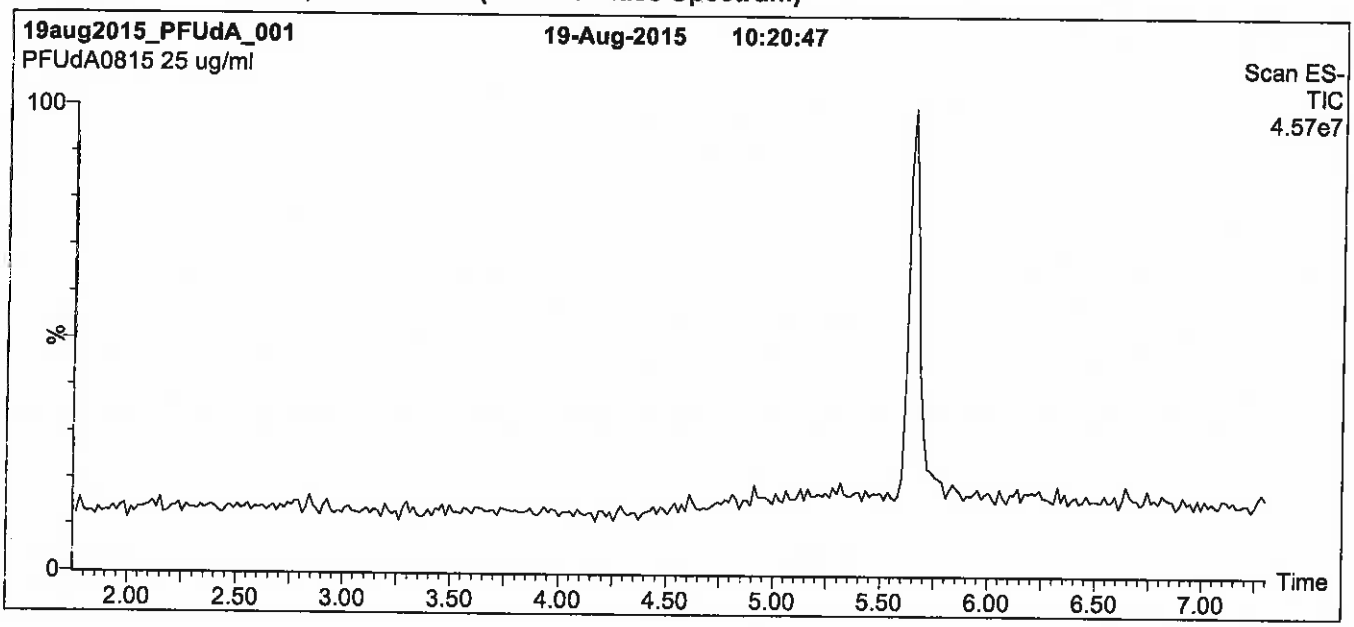
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

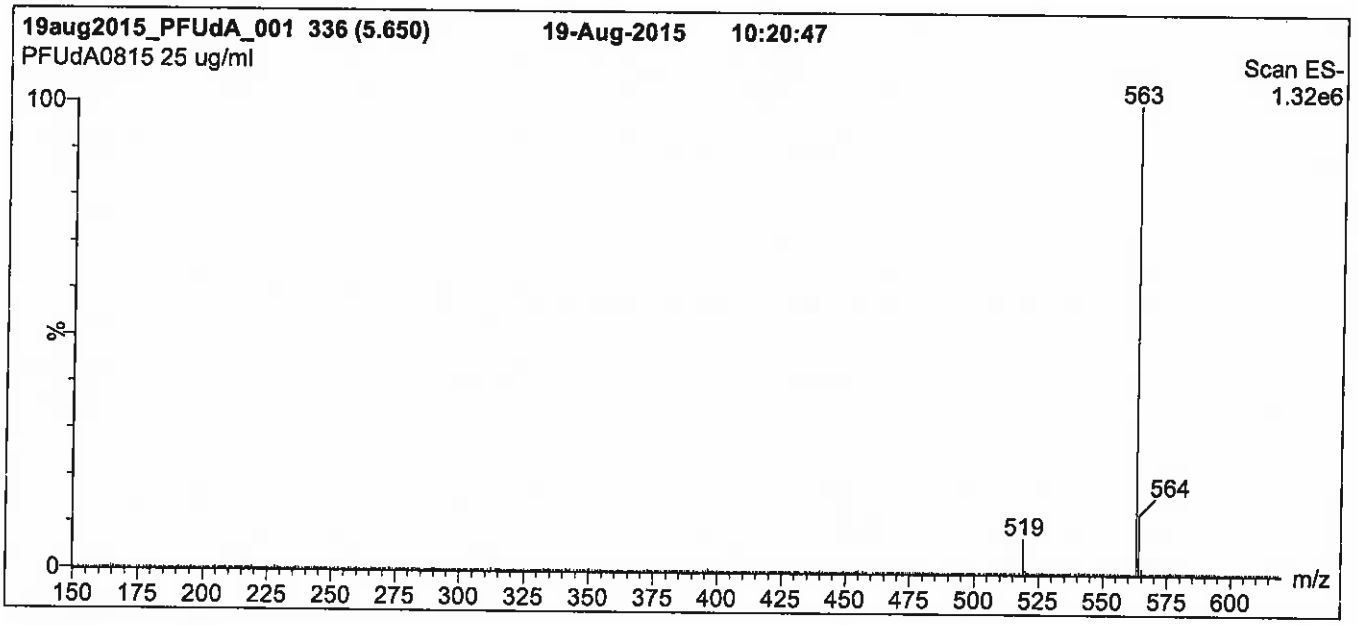
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

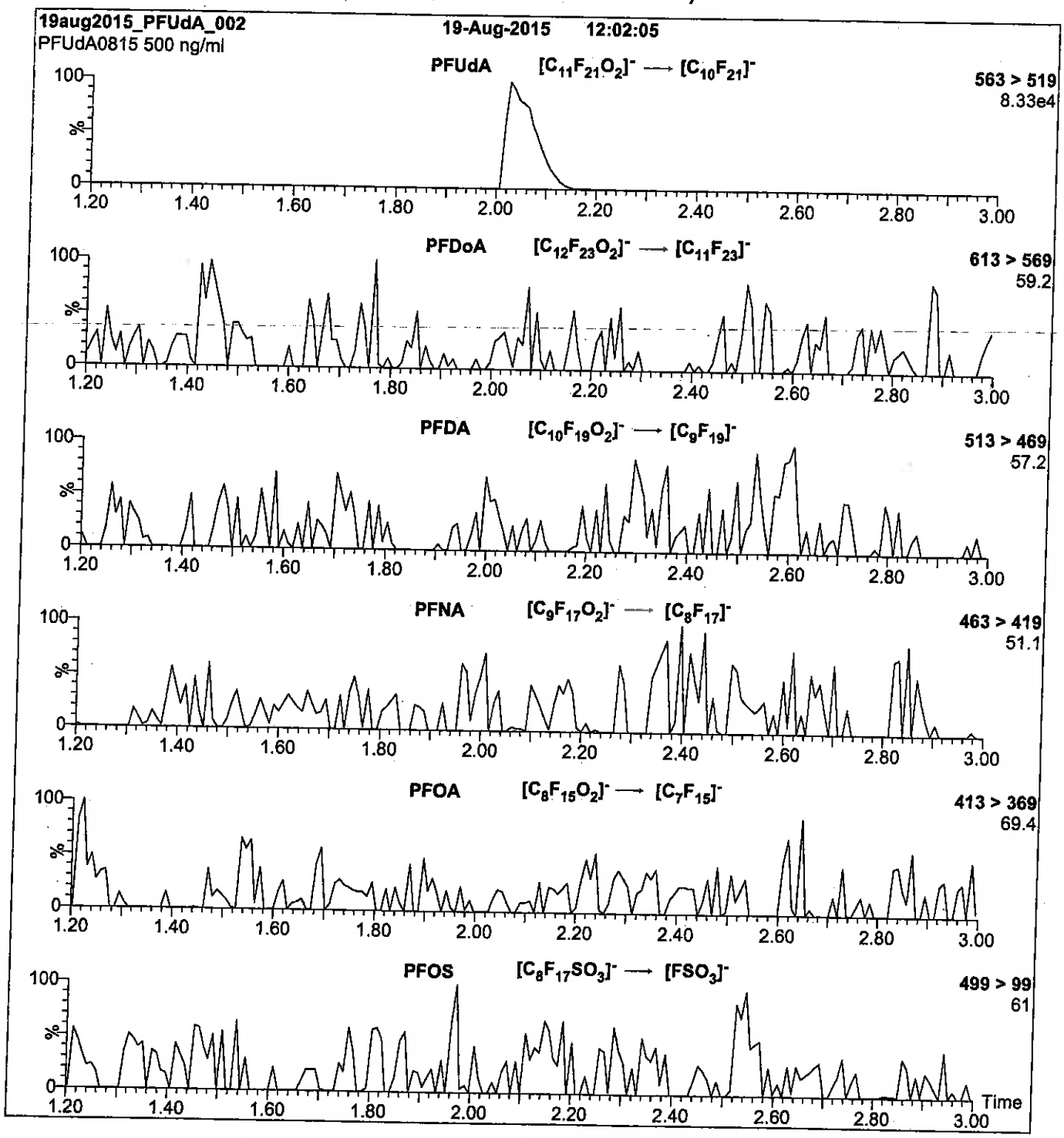
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS) by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxS #	PFOA #	PFOS #
DPT-16-22-GW-31-35	320-24060-1	33	64	86
DPT-16-22-GW-31-35 DL	320-24060-1 DL	85	88	103
DPT-16-22-GW-31-35 -DUP	320-24060-2	36	46	94
DPT-16-22-GW-31-35 -DUP DL	320-24060-2 DL	87	53	105
DPT-16-22-GW-19-23	320-24060-3	61	67	92
DPT-16-22-GW-19-23 DL	320-24060-3 DL	102	81	104
DPT-16-33-GW-31-35	320-24060-4	54	61	77
DPT-16-33-GW-31-35 DL	320-24060-4 DL	106	93	105
DPT-16-33-GW-19-23	320-24060-5	19 Q	41	35
DPT-16-33-GW-19-23 DL	320-24060-5 DL	107	105	98
SW-16-01-SW	320-24060-6	82	83	93
DPT-16-14-GW-31-35	320-24060-7	49	59	44
DPT-16-14-GW-31-35 DL	320-24060-7 DL	106	96	98
SW-16-02-SW	320-24060-8	84	77	92
SW-16-02-SW-DUP	320-24060-9	88	82	98
DPT-16-14-GW-19-23	320-24060-10	30	61	34
DPT-16-14-GW-19-23 DL	320-24060-10 DL	106	103	87
DPT-16-12-GW-31-35	320-24060-11	69	64	81
DPT-16-12-GW-31-35 DL	320-24060-11 DL	109	82	100
DPT-16-12-GW-19-23	320-24060-12	31	49	48
DPT-16-12-GW-19-23 DL	320-24060-12 DL	92	91	91
DPT-16-16-GW-31-35	320-24060-13	39	48	68
DPT-16-16-GW-31-35 DL	320-24060-13 DL	88	74	93
DPT-16-16-GW-19-23	320-24060-14	68	61	74
DPT-16-16-GW-19-23 DL	320-24060-14 DL	109	75	97
DPT-16-25-GW-31-35	320-24060-15	66	70	97
DPT-16-25-GW-19-23	320-24060-16	31	68	78
DPT-16-25-GW-19-23 DL	320-24060-16 DL	85	98	111
DPT-16-24-GW-21-25	320-24060-17	86	61	92

	QC LIMITS
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxS #	PFOA #	PFOS #
DPT-16-24-GW-21-25 DL	320-24060-17 DL	113	70	103
DPT-16-24-GW-31-35	320-24060-18	78	61	97
DPT-16-24-GW-31-35 DL	320-24060-18 DL	122	89	112
DPT-16-28-GW-31-35	320-24060-19	44	60	98
DPT-16-28-GW-31-35 DL	320-24060-19 DL	97	77	104
DPT-16-28-GW-19-23	320-24060-20	51	78	49
DPT-16-28-GW-19-23 DL	320-24060-20 DL	108	114	98
	MB 320-142688/1-A	107	112	105
	LCS 320-142688/2-A	109	108	107
	LCSD 320-142688/3-A	105	105	106

	QC LIMITS
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 27DEC2016A_034.d

Lab ID: LCS 320-142688/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0400	0.0412	103	60-140	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0432	122	50-150	
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0404	109	60-140	
13C4 PFOA	0.100	0.108	108	25-150	
18O2 PFHxS	0.0946	0.103	109	25-150	
13C4 PFOS	0.0956	0.102	107	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 27DEC2016A_035.d

Lab ID: LCSD 320-142688/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0400	0.0420	105	2	30	60-140	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0447	126	3	30	50-150	
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0408	110	1	30	60-140	
13C4 PFOA	0.100	0.105	105			25-150	
18O2 PFHxS	0.0946	0.0998	105			25-150	
13C4 PFOS	0.0956	0.102	106			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab File ID: 27DEC2016A_033.d Lab Sample ID: MB 320-142688/1-A

Matrix: Water Date Extracted: 12/17/2016 13:28

Instrument ID: A8_N Date Analyzed: 12/27/2016 20:50

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-142688/2-A	27DEC2016A_034.d	12/27/2016 20:57
	LCSD 320-142688/3-A	27DEC2016A_035.d	12/27/2016 21:05
DPT-16-22-GW-31-35	320-24060-1	27DEC2016A_036.d	12/27/2016 21:12
DPT-16-22-GW-31-35-DUP	320-24060-2	27DEC2016A_037.d	12/27/2016 21:20
DPT-16-22-GW-19-23	320-24060-3	27DEC2016A_038.d	12/27/2016 21:27
DPT-16-33-GW-31-35	320-24060-4	27DEC2016A_039.d	12/27/2016 21:35
DPT-16-33-GW-19-23	320-24060-5	27DEC2016A_040.d	12/27/2016 21:42
SW-16-01-SW	320-24060-6	27DEC2016A_044.d	12/27/2016 22:12
DPT-16-14-GW-31-35	320-24060-7	27DEC2016A_045.d	12/27/2016 22:20
SW-16-02-SW	320-24060-8	27DEC2016A_046.d	12/27/2016 22:27
SW-16-02-SW-DUP	320-24060-9	27DEC2016A_047.d	12/27/2016 22:35
DPT-16-14-GW-19-23	320-24060-10	27DEC2016A_048.d	12/27/2016 22:42
DPT-16-12-GW-31-35	320-24060-11	27DEC2016A_049.d	12/27/2016 22:50
DPT-16-12-GW-19-23	320-24060-12	27DEC2016A_050.d	12/27/2016 22:57
DPT-16-16-GW-31-35	320-24060-13	27DEC2016A_051.d	12/27/2016 23:05
DPT-16-16-GW-19-23	320-24060-14	27DEC2016A_052.d	12/27/2016 23:12
DPT-16-25-GW-31-35	320-24060-15	27DEC2016A_053.d	12/27/2016 23:20
DPT-16-25-GW-19-23	320-24060-16	27DEC2016A_057.d	12/27/2016 23:50
DPT-16-24-GW-21-25	320-24060-17	27DEC2016A_058.d	12/27/2016 23:57
DPT-16-24-GW-31-35	320-24060-18	27DEC2016A_059.d	12/28/2016 00:05
DPT-16-28-GW-31-35	320-24060-19	27DEC2016A_060.d	12/28/2016 00:12
DPT-16-28-GW-19-23	320-24060-20	27DEC2016A_061.d	12/28/2016 00:20

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab File ID: 27DEC2016A_033.d Lab Sample ID: MB 320-142688/1-A

Matrix: Water Date Extracted: 12/17/2016 13:28

Instrument ID: A8_N Date Analyzed: 12/27/2016 20:50

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
DPT-16-33-GW-19-23 DL	320-24060-5 DL	29DEC2016C_003.d	12/29/2016 13:42
DPT-16-14-GW-19-23 DL	320-24060-10 DL	29DEC2016C_004.d	12/29/2016 13:49
DPT-16-14-GW-31-35 DL	320-24060-7 DL	29DEC2016C_005.d	12/29/2016 13:57
DPT-16-12-GW-19-23 DL	320-24060-12 DL	29DEC2016C_006.d	12/29/2016 14:04
DPT-16-28-GW-19-23 DL	320-24060-20 DL	29DEC2016C_007.d	12/29/2016 14:12
DPT-16-22-GW-31-35 DL	320-24060-1 DL	29DEC2016C_008.d	12/29/2016 14:19
DPT-16-22-GW-31-35-DUP DL	320-24060-2 DL	29DEC2016C_009.d	12/29/2016 14:27
DPT-16-22-GW-19-23 DL	320-24060-3 DL	29DEC2016C_010.d	12/29/2016 14:34
DPT-16-33-GW-31-35 DL	320-24060-4 DL	29DEC2016C_011.d	12/29/2016 14:42
DPT-16-12-GW-31-35 DL	320-24060-11 DL	29DEC2016C_012.d	12/29/2016 14:49
DPT-16-16-GW-31-35 DL	320-24060-13 DL	29DEC2016C_015.d	12/29/2016 15:12
DPT-16-16-GW-19-23 DL	320-24060-14 DL	29DEC2016C_016.d	12/29/2016 15:19
DPT-16-25-GW-19-23 DL	320-24060-16 DL	29DEC2016C_017.d	12/29/2016 15:27
DPT-16-24-GW-21-25 DL	320-24060-17 DL	29DEC2016C_018.d	12/29/2016 15:34
DPT-16-24-GW-31-35 DL	320-24060-18 DL	29DEC2016C_019.d	12/29/2016 15:42
DPT-16-28-GW-31-35 DL	320-24060-19 DL	29DEC2016C_020.d	12/29/2016 15:49

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-22-GW-31-35 Lab Sample ID: 320-24060-1

Matrix: Water Lab File ID: 27DEC2016A_036.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 09:45

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 252.1(mL) Date Analyzed: 12/27/2016 21:12

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.18	M	0.0025	0.0020	0.00074
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.44*	*E*	*0.0025*	0.0020	*0.00091*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.59*	*E*	*0.0040*	0.0030	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	64		25-150
STL00994	18O2 PFHxS	33		25-150
STL00991	13C4 PFOS	86		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_036.d
Lims ID: 320-24060-A-1-A
Client ID: DPT-16-22-GW-31-35
Sample Type: Client
Inject. Date: 27-Dec-2016 21:12:43 ALS Bottle#: 26 Worklist Smp#: 36
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:43:13 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:40:13

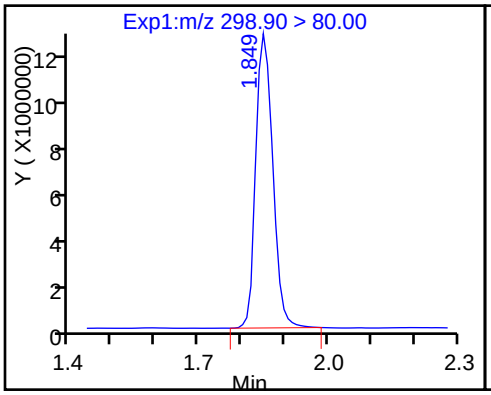
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.849	1.858	-0.009	1.000	33838431	222.4				E
298.90 > 99.00	1.849	1.858	-0.009	1.000	17206795		1.97(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.462	-0.010		5080140	15.5		32.8	60114	
D 14 13C4 PFOA										
417.00 > 372.00	2.796	2.799	-0.003		7384036	32.1		64.1	513692	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.796	2.799	-0.003	1.000	13149666	88.8			77808	M
413.00 > 169.00	2.773	2.799	-0.026	0.992	8943327		1.47(0.90-1.10)		31895	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.172	3.067	0.105	1.000	63829758	299.0			770175	E
499.00 > 99.00	3.172	3.067	0.105	1.000	13309537		4.80(0.90-1.10)		235018	
D 17 13C4 PFOS										
503.00 > 80.00	3.172	3.175	-0.003		10260792	41.2		86.3	192684	

QC Flag Legend

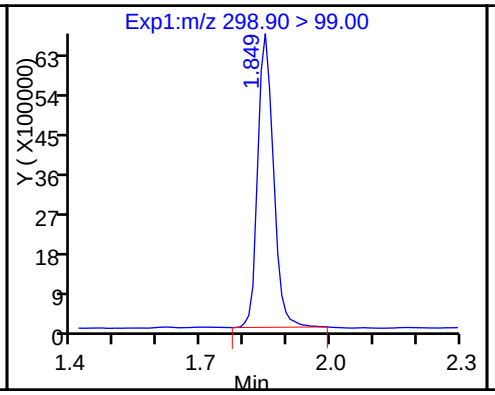
Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_036.d
Injection Date: 27-Dec-2016 21:12:43 Instrument ID: A8_N
Lims ID: 320-24060-A-1-A Lab Sample ID: 320-24060-1
Client ID: DPT-16-22-GW-31-35
Operator ID: A8-PC\A8 ALS Bottle#: 26 Worklist Smp#: 36
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL

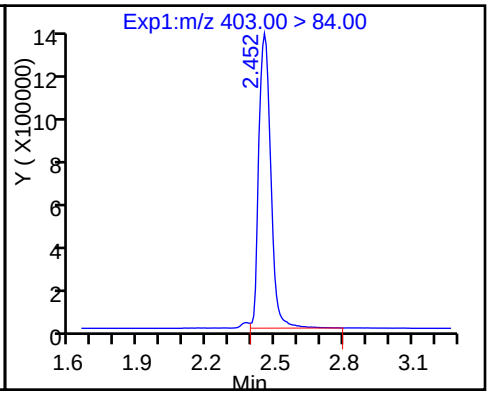
5 Perfluorobutanesulfonic acid



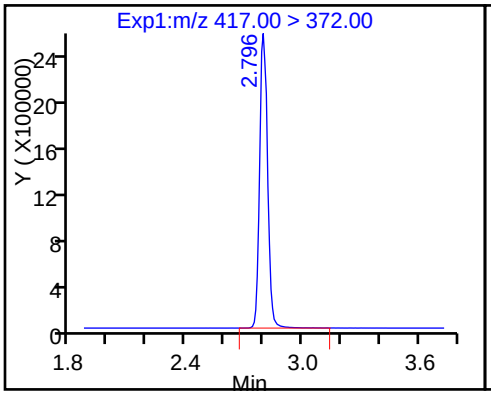
5 Perfluorobutanesulfonic acid



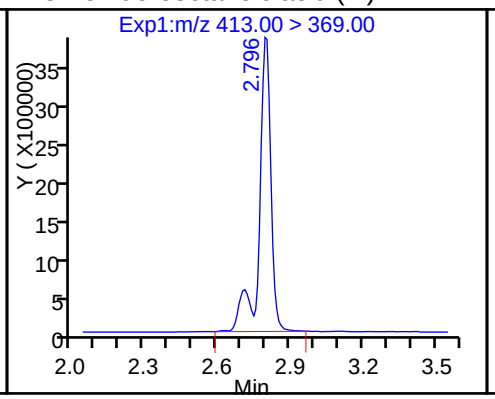
D 10 18O2 PFHxS



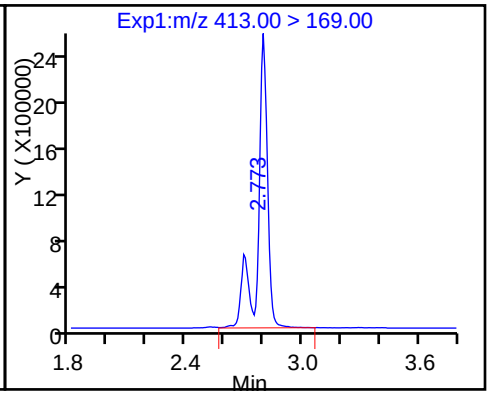
D 14 13C4 PFOA



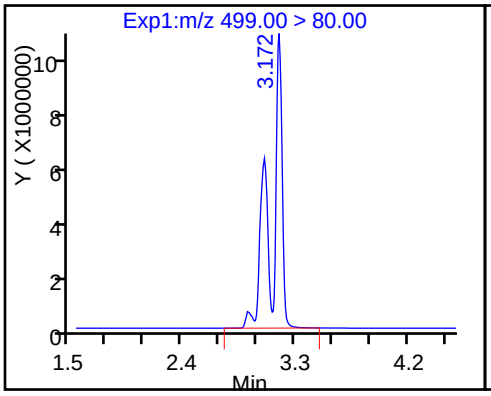
15 Perfluorooctanoic acid (M)



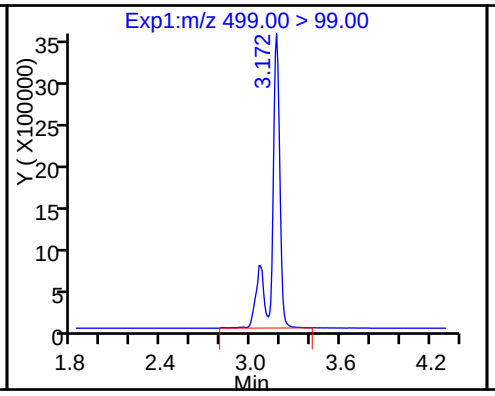
15 Perfluorooctanoic acid



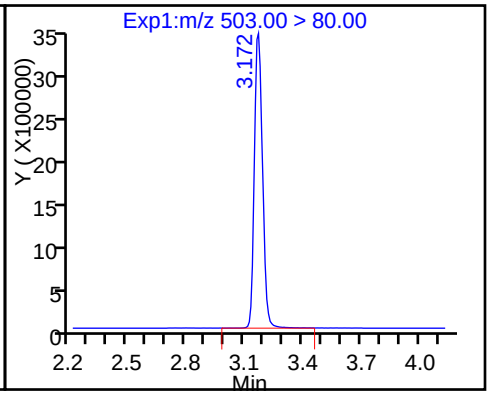
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

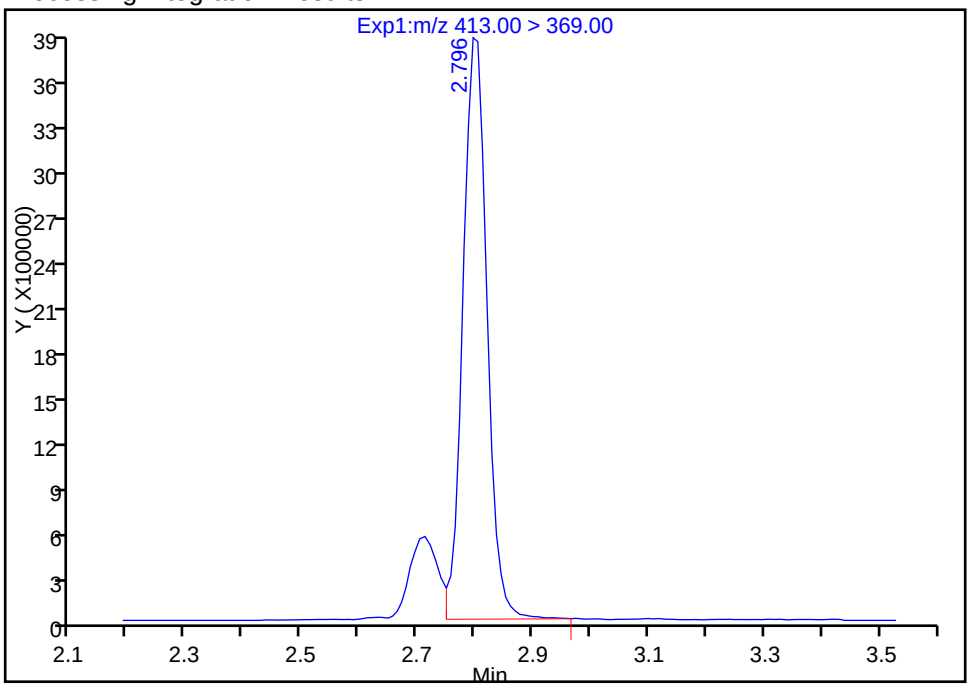
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_036.d				
Injection Date:	27-Dec-2016 21:12:43	Instrument ID:	A8_N		
Lims ID:	320-24060-A-1-A	Lab Sample ID:	320-24060-1		
Client ID:	DPT-16-22-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	26	Worklist Smp#:	36
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

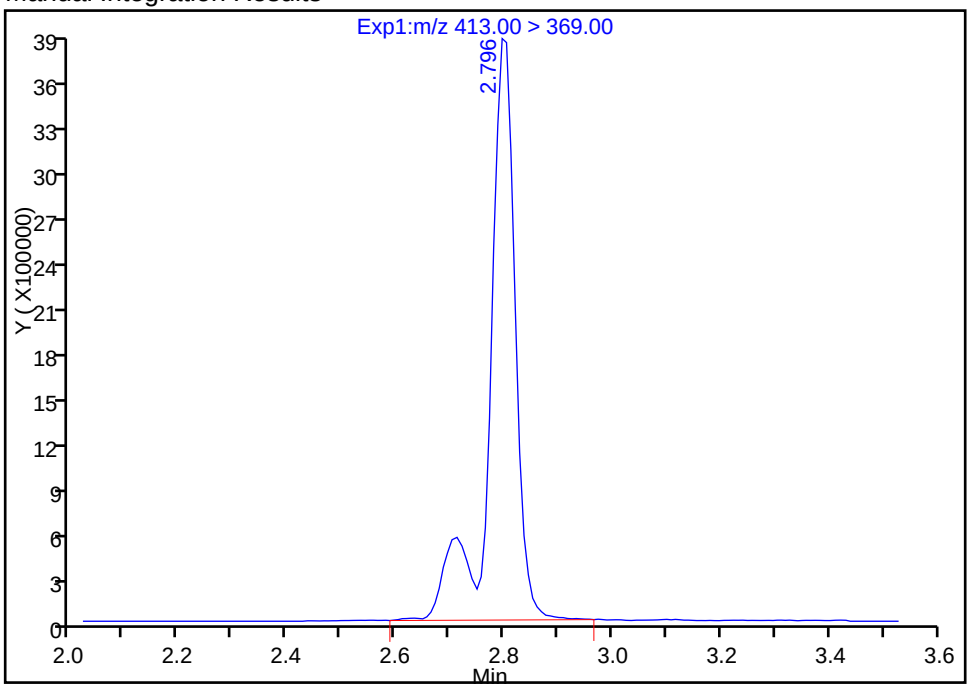
Processing Integration Results

RT: 2.80
Area: 11250852
Amount: 75.944898
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 13149666
Amount: 88.762171
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:40:13

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-22-GW-31-35 DL Lab Sample ID: 320-24060-1 DL

Matrix: Water Lab File ID: 29DEC2016C_008.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 09:45

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 252.1(mL) Date Analyzed: 12/29/2016 14:19

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.18*	*D*	*0.025*	0.020	*0.0074*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.29	D	0.025	0.020	0.0091
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.61	D	0.040	0.030	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	88		25-150
STL00994	18O2 PFHxS	85		25-150
STL00991	13C4 PFOS	103		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_008.d
Lims ID: 320-24060-A-1-A
Client ID: DPT-16-22-GW-31-35
Sample Type: Client
Inject. Date: 29-Dec-2016 14:19:40 ALS Bottle#: 22 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-1-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.848	-0.006	1.000	5666886	14.5				
298.90 > 99.00	1.842	1.848	-0.006	1.000	2383669		2.38(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.440	2.443	-0.003		1306900	4.00		8.5	72933	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.785	2.781	0.004	1.000	1869491	9.16			27547	
413.00 > 169.00	2.754	2.781	-0.027	0.989	1224893		1.53(0.90-1.10)		7626	
D 14 13C4 PFOA										
417.00 > 372.00	2.777	2.789	-0.012		1017567	4.42		8.8	103661	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.031	3.157	-0.126	1.000	7866806	30.7			81631	
499.00 > 99.00	3.153	3.157	-0.004	1.040	1534118		5.13(0.90-1.10)		90753	
D 17 13C4 PFOS										
503.00 > 80.00	3.153	3.157	-0.004		1230272	4.94		10.3	78494	

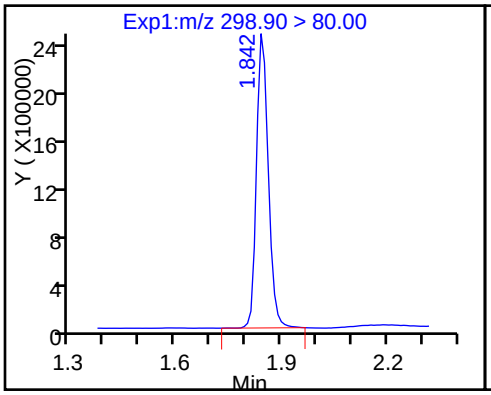
Report Date: 03-Jan-2017 08:08:43 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

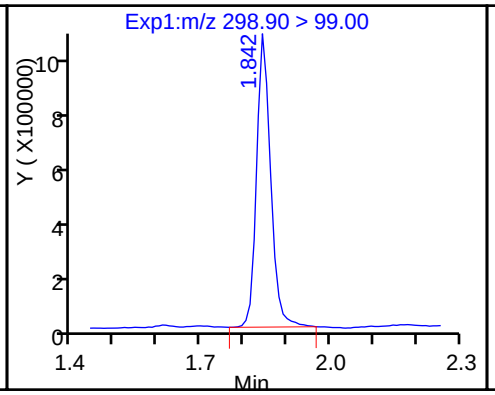
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_008.d

Injection Date:	29-Dec-2016 14:19:40	Instrument ID:	A8_N		
Lims ID:	320-24060-A-1-A	Lab Sample ID:	320-24060-1		
Client ID:	DPT-16-22-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	22	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

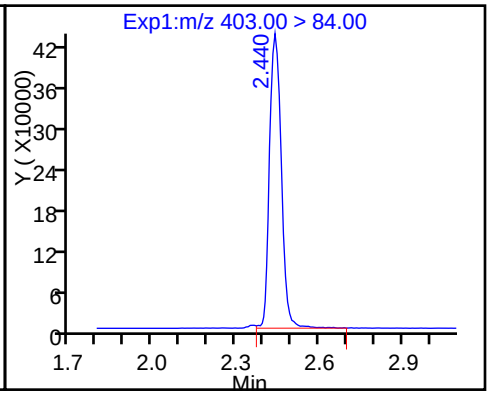
5 Perfluorobutanesulfonic acid



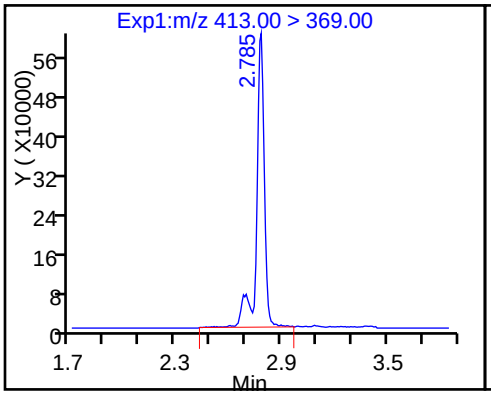
5 Perfluorobutanesulfonic acid



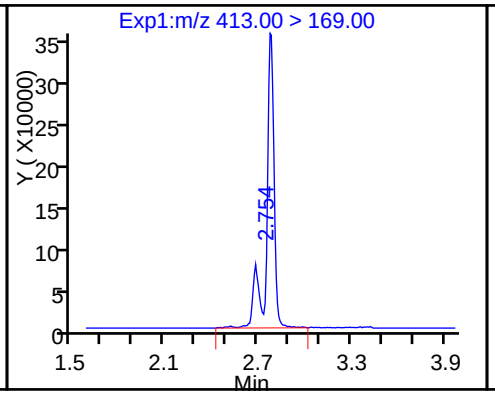
D 10 18O2 PFHxS



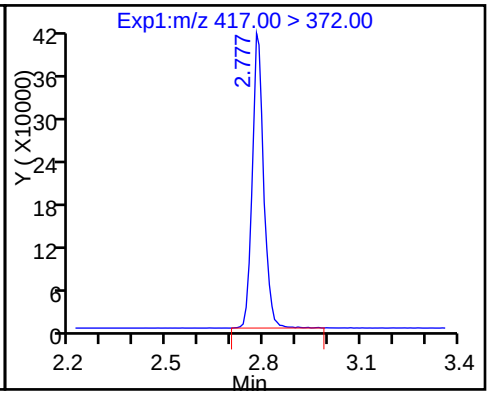
15 Perfluorooctanoic acid



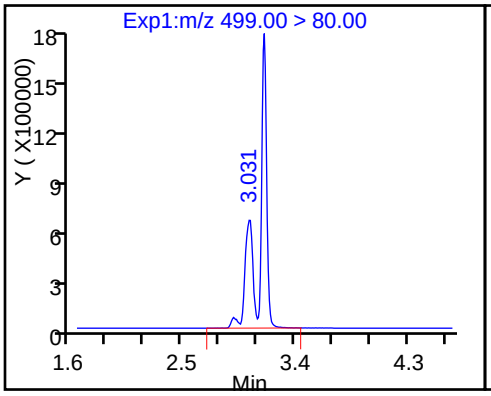
15 Perfluorooctanoic acid



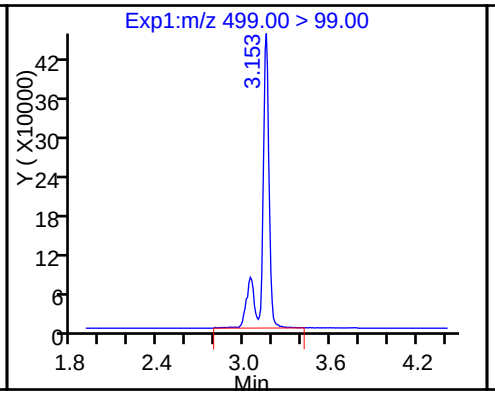
D 14 13C4 PFOA



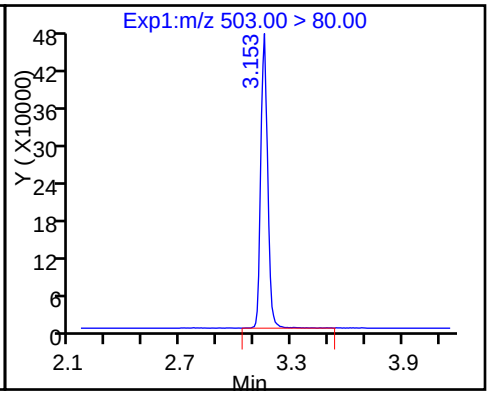
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-22-GW-31-35-DUP Lab Sample ID: 320-24060-2

Matrix: Water Lab File ID: 27DEC2016A_037.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 09:45

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 227(mL) Date Analyzed: 12/27/2016 21:20

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.16	M	0.0028	0.0022	0.00082
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.44*	*E*	*0.0028*	0.0022	*0.0010*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.55*	*E*	*0.0044*	0.0033	*0.0014*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	46		25-150
STL00994	18O2 PFHxS	36		25-150
STL00991	13C4 PFOS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_037.d
Lims ID: 320-24060-A-2-A
Client ID: DPT-16-22-GW-31-35-DUP
Sample Type: Client
Inject. Date: 27-Dec-2016 21:20:13 ALS Bottle#: 27 Worklist Smp#: 37
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:43:13 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:40:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.848	1.858	-0.010	1.000	33168353	200.8				E
298.90 > 99.00	1.848	1.858	-0.010	1.000	16511650		2.01(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.451	2.462	-0.011		5512726	16.9		35.6	59468	
D 14 13C4 PFOA										
417.00 > 372.00	2.797	2.799	-0.002		5242439	22.8		45.5	377745	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.797	2.799	-0.002	1.000	7705072	73.3			59212	M
413.00 > 169.00	2.797	2.799	-0.002	1.000	5273919		1.46(0.90-1.10)		49073	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.045	3.067	-0.022	1.000	58113142	249.2			372548	E
499.00 > 99.00	3.065	3.067	-0.002	1.006	11811144		4.92(0.90-1.10)		115195	
D 17 13C4 PFOS										
503.00 > 80.00	3.165	3.175	-0.010		11207658	45.0		94.2	276933	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

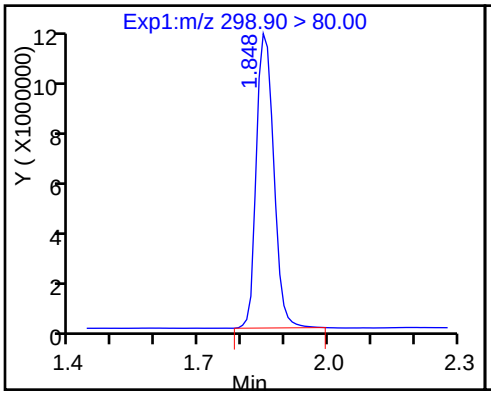
Report Date: 29-Dec-2016 09:43:42 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

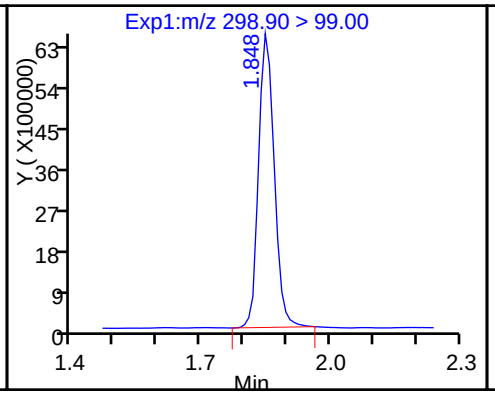
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_037.d

Injection Date:	27-Dec-2016 21:20:13	Instrument ID:	A8_N		
Lims ID:	320-24060-A-2-A	Lab Sample ID:	320-24060-2		
Client ID:	DPT-16-22-GW-31-35-DUP				
Operator ID:	A8-PC\A8	ALS Bottle#:	27	Worklist Smp#:	37
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

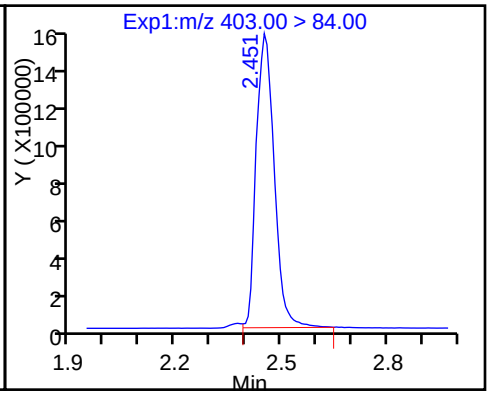
5 Perfluorobutanesulfonic acid



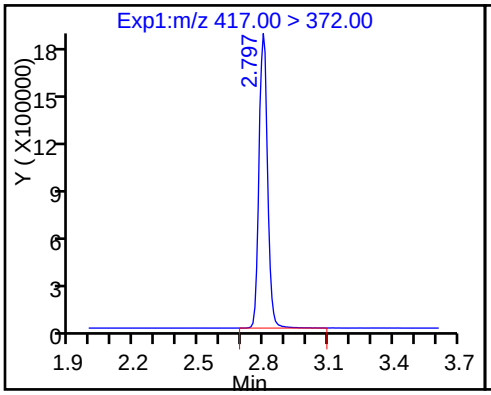
5 Perfluorobutanesulfonic acid



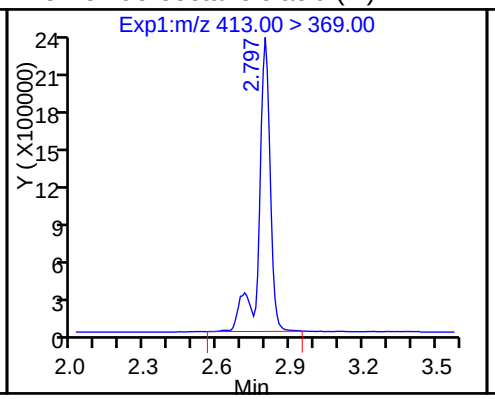
D 10 18O2 PFHxS



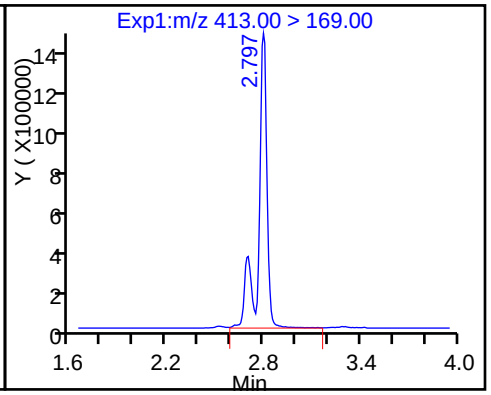
D 14 13C4 PFOA



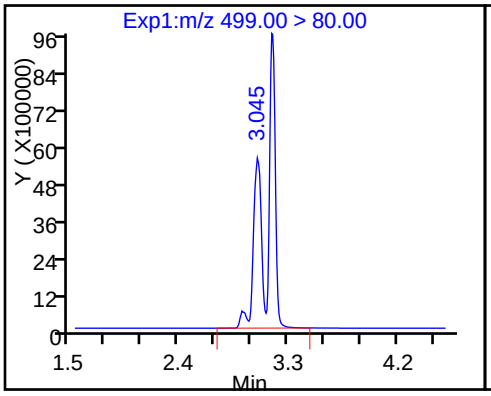
15 Perfluorooctanoic acid (M)



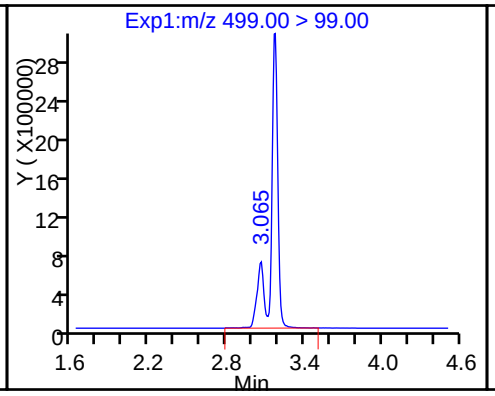
15 Perfluorooctanoic acid



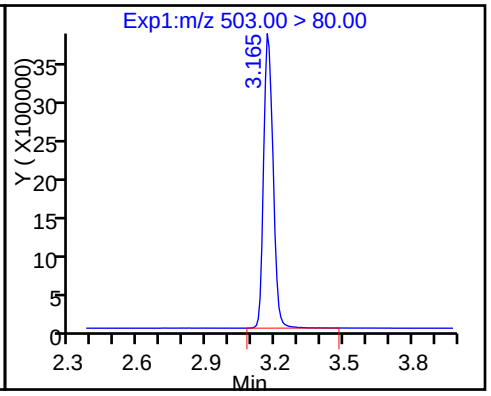
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

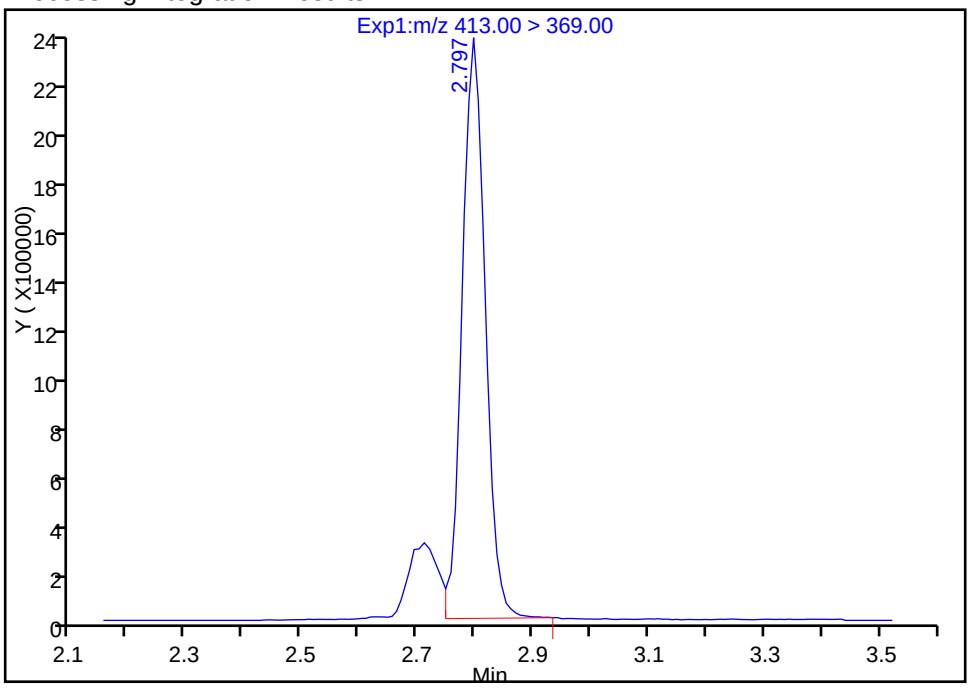
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_037.d				
Injection Date:	27-Dec-2016 21:20:13	Instrument ID:	A8_N		
Lims ID:	320-24060-A-2-A	Lab Sample ID:	320-24060-2		
Client ID:	DPT-16-22-GW-31-35-DUP				
Operator ID:	A8-PC\A8	ALS Bottle#:	27	Worklist Smp#:	37
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

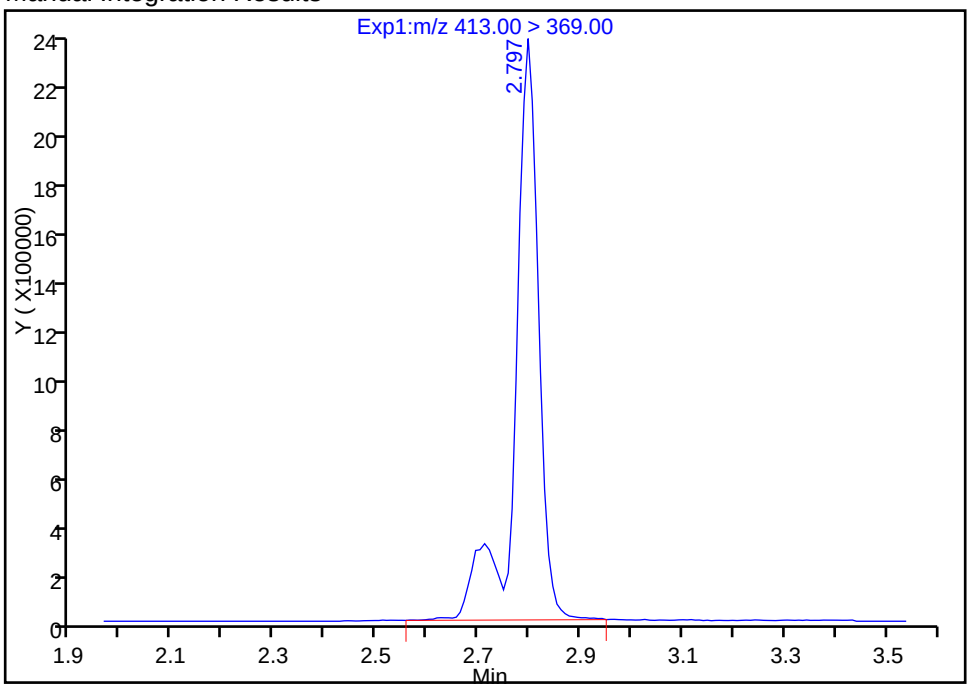
Processing Integration Results

RT: 2.80
Area: 6540618
Amount: 62.185968
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 7705072
Amount: 73.257200
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:40:37

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-22-GW-31-35-DUP DL Lab Sample ID: 320-24060-2 DL

Matrix: Water Lab File ID: 29DEC2016C_009.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 09:45

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 227(mL) Date Analyzed: 12/29/2016 14:27

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.17*	*D*	*0.028*	0.022	*0.0082*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.27	D	0.028	0.022	0.010
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.56	D	0.044	0.033	0.014

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	53		25-150
STL00994	18O2 PFHxS	87		25-150
STL00991	13C4 PFOS	105		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_009.d
Lims ID: 320-24060-A-2-A
Client ID: DPT-16-22-GW-31-35-DUP
Sample Type: Client
Inject. Date: 29-Dec-2016 14:27:09 ALS Bottle#: 23 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-2-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

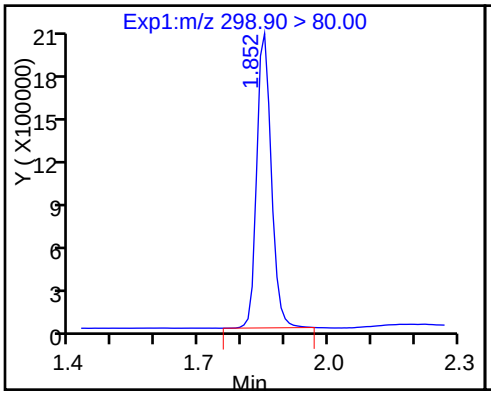
Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.848	0.004	1.000	4918890	12.2				
298.90 > 99.00	1.852	1.848	0.004	1.000	2086836		2.36(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.443	0.001		1346256	4.12		8.7	78503	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.790	2.781	0.009	1.000	954871	7.76			14392	
413.00 > 169.00	2.695	2.781	-0.086	0.966	626392		1.52(0.90-1.10)		3716	
D 14 13C4 PFOA										
417.00 > 372.00	2.790	2.789	0.001		612981	2.66		5.3	77906	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.158	3.157	0.001	1.000	6601033	25.3			213425	
499.00 > 99.00	3.158	3.157	0.001	1.000	1251660		5.27(0.90-1.10)		47933	
D 17 13C4 PFOS										
503.00 > 80.00	3.158	3.157	0.001		1252497	5.03		10.5	79830	

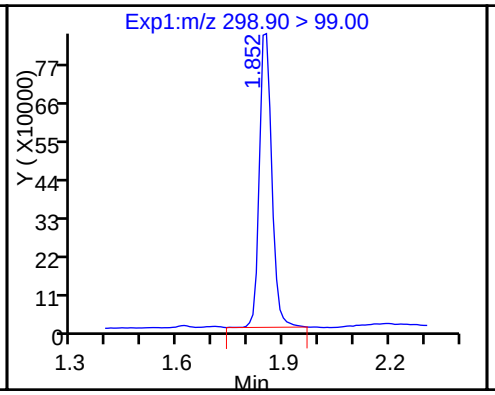
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_009.d
Injection Date: 29-Dec-2016 14:27:09 Instrument ID: A8_N
Lims ID: 320-24060-A-2-A Lab Sample ID: 320-24060-2
Client ID: DPT-16-22-GW-31-35-DUP
Operator ID: A8-PC\A8 ALS Bottle#: 23 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL

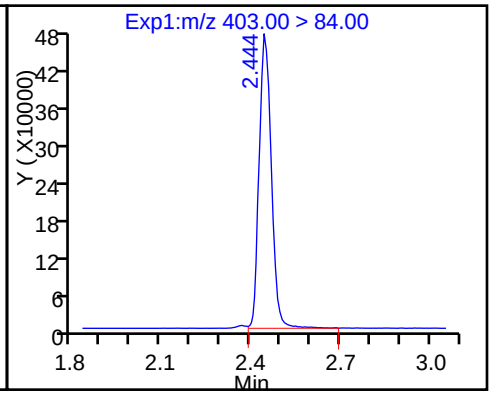
5 Perfluorobutanesulfonic acid



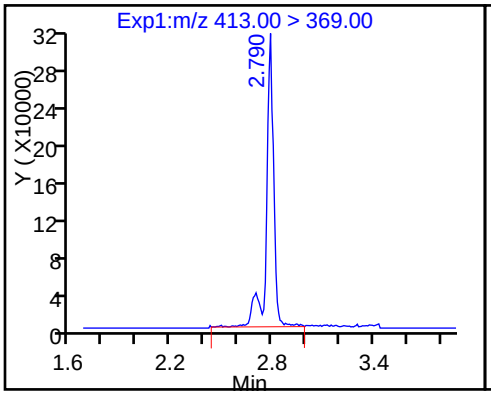
5 Perfluorobutanesulfonic acid



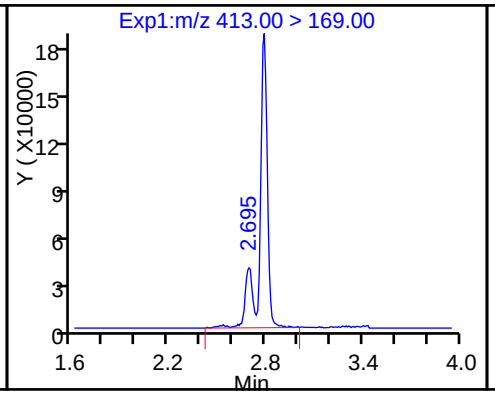
D 10 18O2 PFHxS



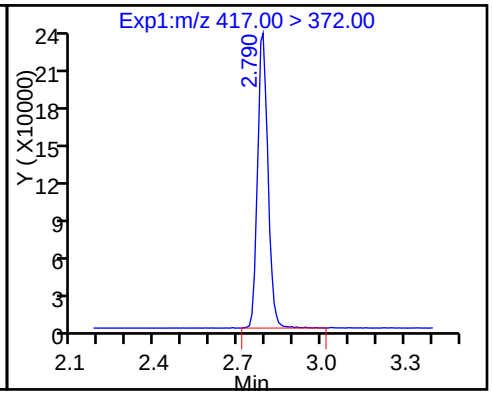
15 Perfluorooctanoic acid



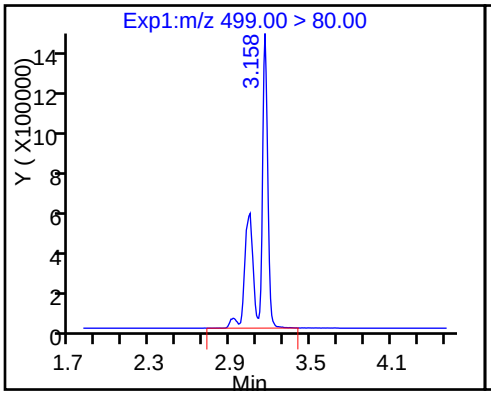
15 Perfluorooctanoic acid



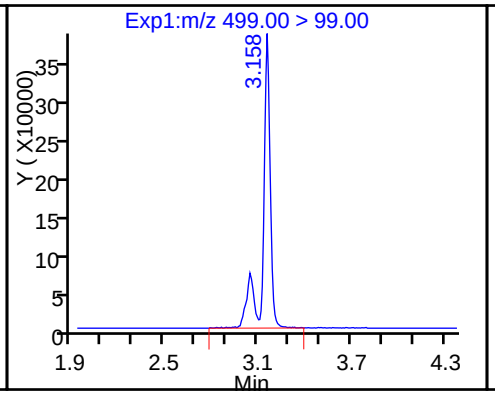
D 14 13C4 PFOA



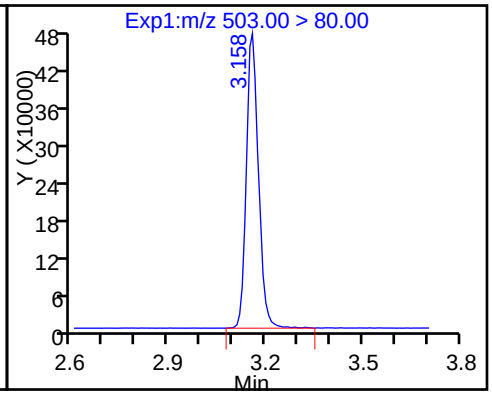
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-22-GW-19-23 Lab Sample ID: 320-24060-3

Matrix: Water Lab File ID: 27DEC2016A_038.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 09:55

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 254.7(mL) Date Analyzed: 12/27/2016 21:27

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.17	M	0.0025	0.0020	0.00073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.070		0.0025	0.0020	0.00090
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.76*	*E*	*0.0039*	0.0029	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	67		25-150
STL00994	18O2 PFHxS	61		25-150
STL00991	13C4 PFOS	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_038.d
Lims ID: 320-24060-A-3-A
Client ID: DPT-16-22-GW-19-23
Sample Type: Client
Inject. Date: 27-Dec-2016 21:27:43 ALS Bottle#: 28 Worklist Smp#: 38
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:43:13 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:41:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.858	-0.006	1.000	10051468	35.8				
298.90 > 99.00	1.842	1.858	-0.016	0.995	4271251		2.35(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.451	2.462	-0.011		9364342	28.6		60.5	413749	
D 14 13C4 PFOA										
417.00 > 372.00	2.797	2.799	-0.002		7695322	33.4		66.8	352025	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.797	2.799	-0.002	1.000	13654509	88.4			107171	M
413.00 > 169.00	2.774	2.799	-0.025	0.991	9345848		1.46(0.90-1.10)		136925	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	2.991	3.067	-0.076	1.000	87237194	384.6			52353	E
499.00 > 99.00	3.165	3.067	0.098	1.058	16240895		5.37(0.90-1.10)		456127	
D 17 13C4 PFOS										
503.00 > 80.00	3.165	3.175	-0.010		10901351	43.8		91.6	190873	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

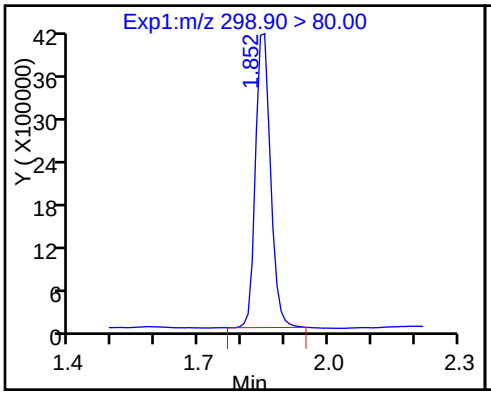
Report Date: 29-Dec-2016 09:43:43 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

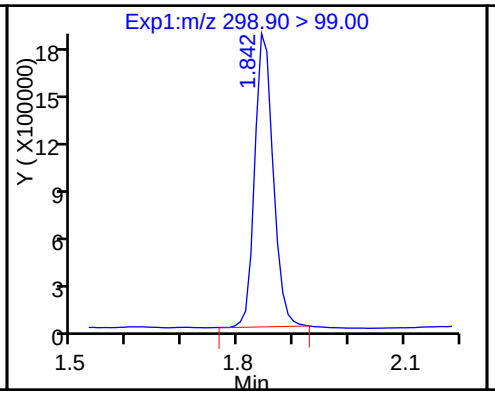
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_038.d

Injection Date:	27-Dec-2016 21:27:43	Instrument ID:	A8_N		
Lims ID:	320-24060-A-3-A	Lab Sample ID:	320-24060-3		
Client ID:	DPT-16-22-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	28	Worklist Smp#:	38
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

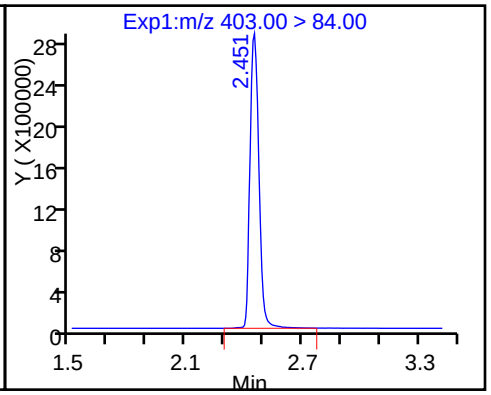
5 Perfluorobutanesulfonic acid



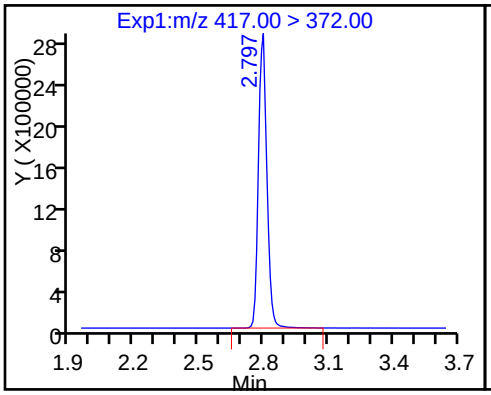
5 Perfluorobutanesulfonic acid



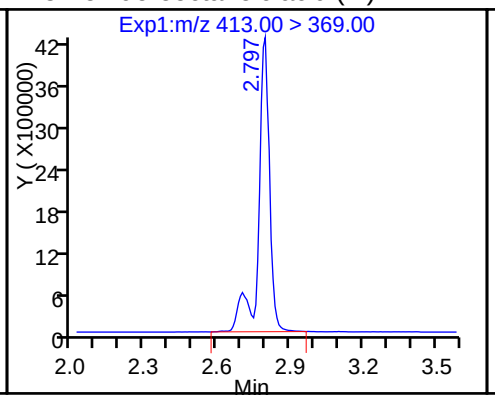
D 10 18O2 PFHxS



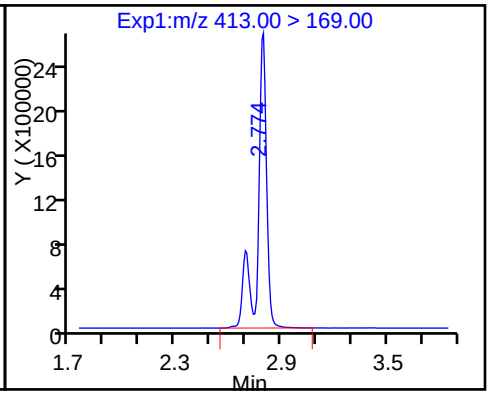
D 14 13C4 PFOA



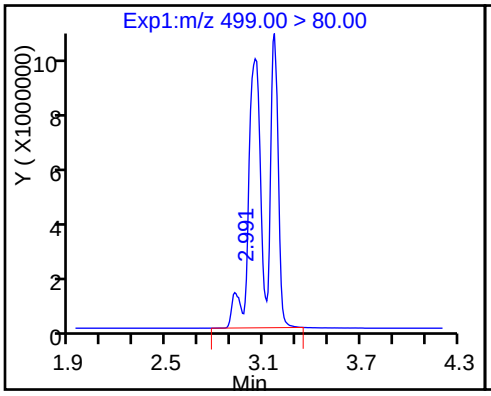
15 Perfluorooctanoic acid (M)



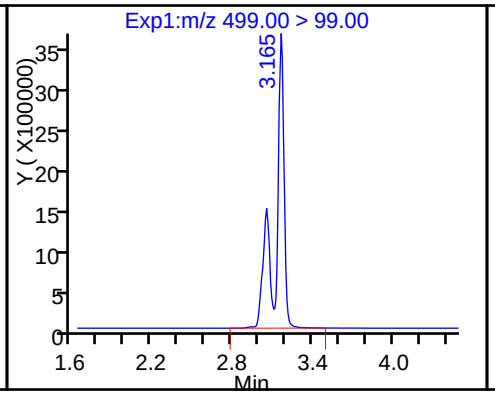
15 Perfluorooctanoic acid



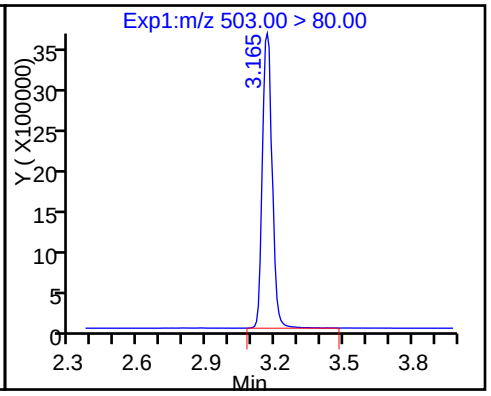
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

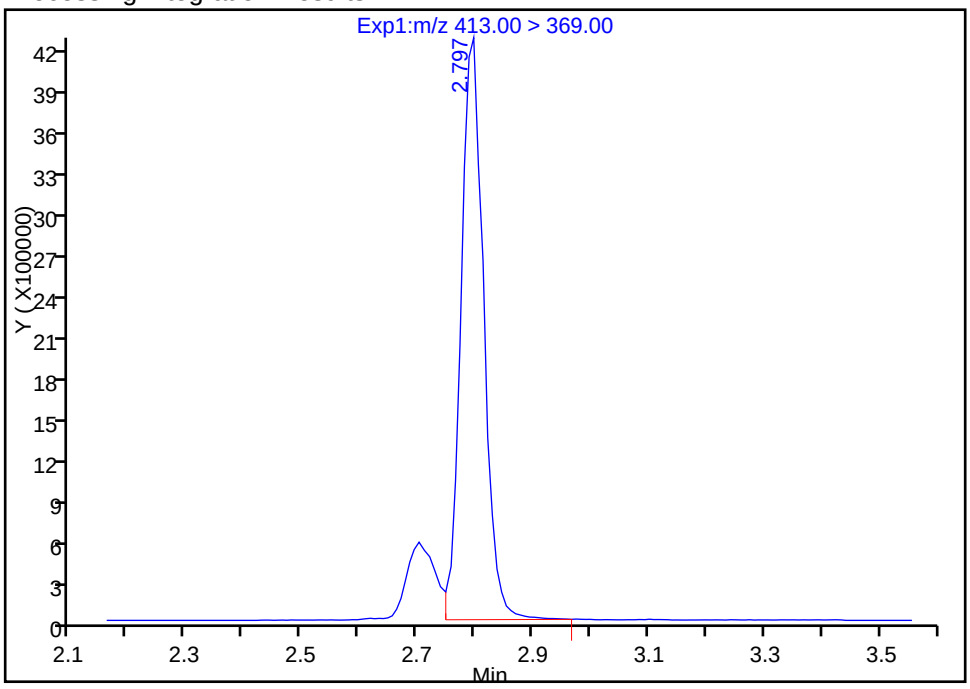
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_038.d				
Injection Date:	27-Dec-2016 21:27:43	Instrument ID:	A8_N		
Lims ID:	320-24060-A-3-A	Lab Sample ID:	320-24060-3		
Client ID:	DPT-16-22-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	28	Worklist Smp#:	38
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

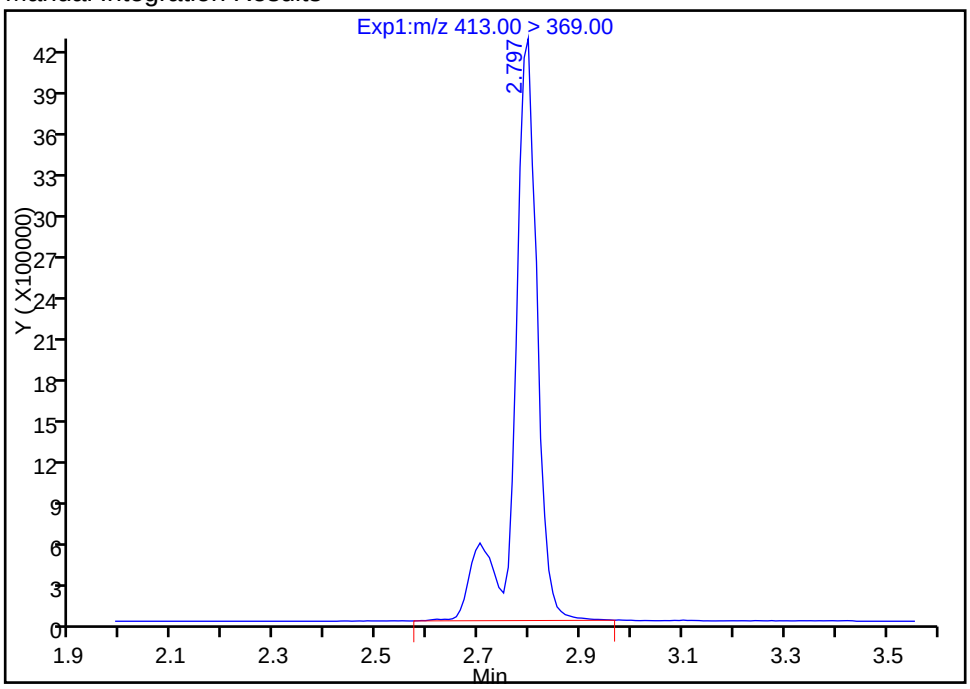
Processing Integration Results

RT: 2.80
Area: 11687792
Amount: 75.702928
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 13654509
Amount: 88.441539
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:41:26

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-22-GW-19-23 DL Lab Sample ID: 320-24060-3 DL

Matrix: Water Lab File ID: 29DEC2016C_010.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 09:55

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 254.7(mL) Date Analyzed: 12/29/2016 14:34

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.18*	*D*	*0.025*	0.020	*0.0073*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.046*	*D*	*0.025*	0.020	*0.0090*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.82	D	0.039	0.029	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	81		25-150
STL00994	18O2 PFHxS	102		25-150
STL00991	13C4 PFOS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_010.d
Lims ID: 320-24060-A-3-A
Client ID: DPT-16-22-GW-19-23
Sample Type: Client
Inject. Date: 29-Dec-2016 14:34:38 ALS Bottle#: 24 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-3-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.848	0.004	1.000	1108152	2.34				
298.90 > 99.00	1.852	1.848	0.004	1.000	459679		2.41(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.443	0.001		1584136	4.84		10.2	151753	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.790	2.781	0.009	1.000	1695701	9.01			26009	
413.00 > 169.00	2.687	2.781	-0.094	0.963	1082478		1.57(0.90-1.10)		11880	
D 14 13C4 PFOA										
417.00 > 372.00	2.782	2.789	-0.007		938308	4.07		8.1	73033	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.037	3.157	-0.120	1.000	10727856	41.7			270394	
499.00 > 99.00	3.158	3.157	0.001	1.040	1717447		6.25(0.90-1.10)		69921	
D 17 13C4 PFOS										
503.00 > 80.00	3.158	3.157	0.001		1235109	4.96		10.4	65413	

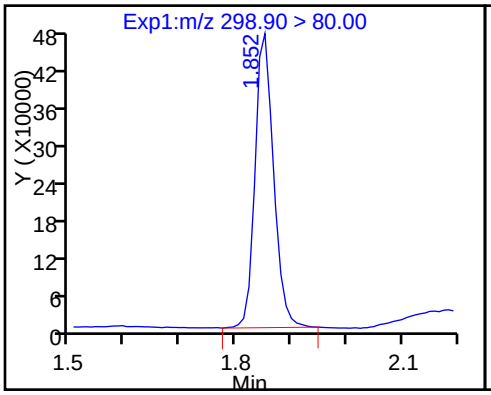
Report Date: 03-Jan-2017 08:08:46 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

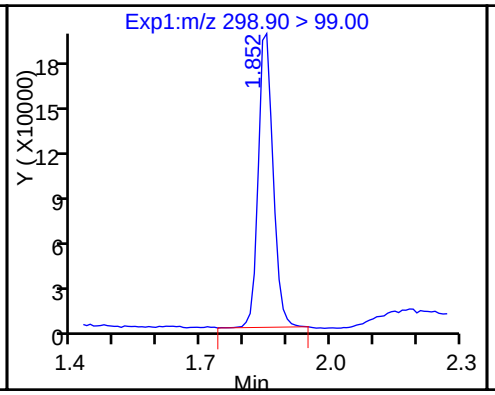
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_010.d

Injection Date:	29-Dec-2016 14:34:38	Instrument ID:	A8_N		
Lims ID:	320-24060-A-3-A	Lab Sample ID:	320-24060-3		
Client ID:	DPT-16-22-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	24	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

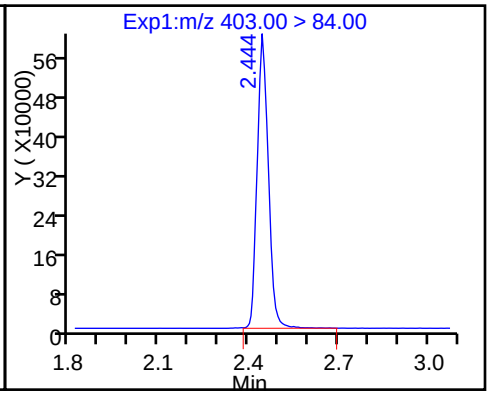
5 Perfluorobutanesulfonic acid



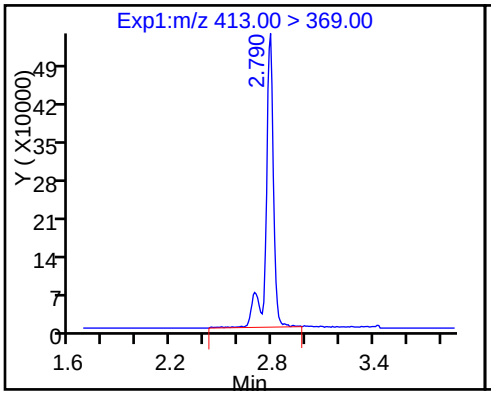
5 Perfluorobutanesulfonic acid



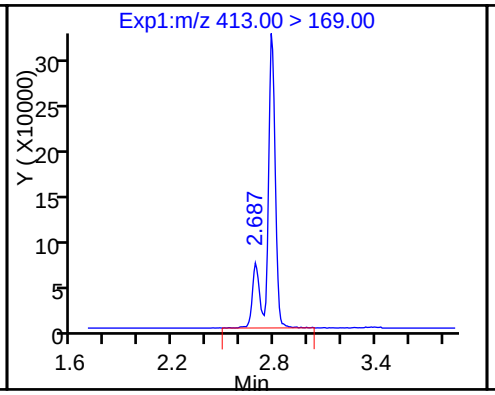
D 10 18O2 PFHxS



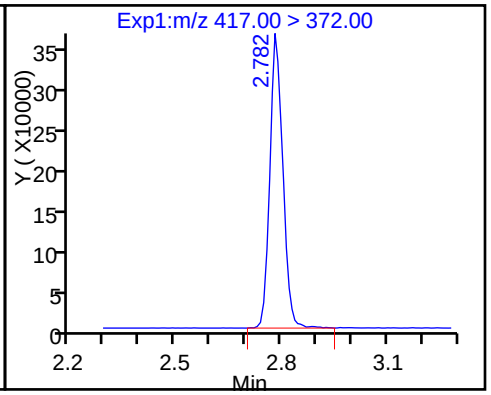
15 Perfluorooctanoic acid



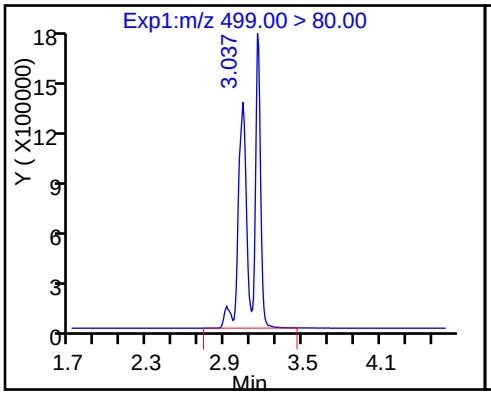
15 Perfluorooctanoic acid



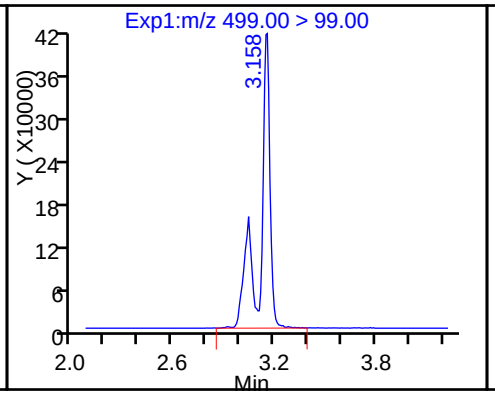
D 14 13C4 PFOA



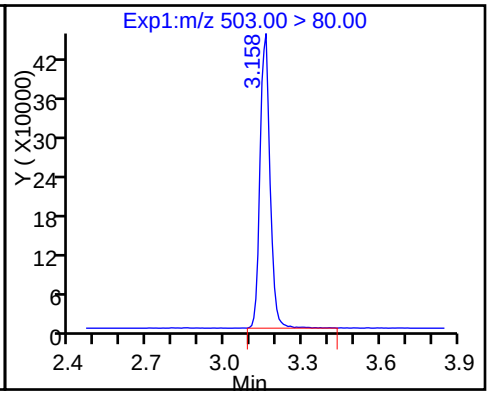
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-33-GW-31-35 Lab Sample ID: 320-24060-4

Matrix: Water Lab File ID: 27DEC2016A_039.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 10:55

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 253.5(mL) Date Analyzed: 12/27/2016 21:35

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.75*	*E M*	*0.0025*	0.0020	*0.00074*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.15		0.0025	0.0020	0.00091
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1.1*	*E*	*0.0039*	0.0030	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	61		25-150
STL00994	18O2 PFHxS	54		25-150
STL00991	13C4 PFOS	77		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_039.d
Lims ID: 320-24060-A-4-A
Client ID: DPT-16-33-GW-31-35
Sample Type: Client
Inject. Date: 27-Dec-2016 21:35:12 ALS Bottle#: 29 Worklist Smp#: 39
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:43:13 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:42:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.858	-0.006	1.000	19019976	75.4				
298.90 > 99.00	1.842	1.858	-0.016	0.995	8604558		2.21(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.454	2.462	-0.008		8425642	25.8		54.5	316563	
D 14 13C4 PFOA										
417.00 > 372.00	2.799	2.799	0.0		7044155	30.6		61.2	469061	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.799	2.799	0.0	1.000	54023120	382.3			246905	EM
413.00 > 169.00	2.799	2.799	0.0	1.000	43730778		1.24(0.90-1.10)		1048047	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.038	3.067	-0.029	1.000	108643157	569.9			331921	E
499.00 > 99.00	3.167	3.067	0.100	1.042	27395463		3.97(0.90-1.10)		568605	
D 17 13C4 PFOS										
503.00 > 80.00	3.167	3.175	-0.008		9163367	36.8		77.0	141252	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

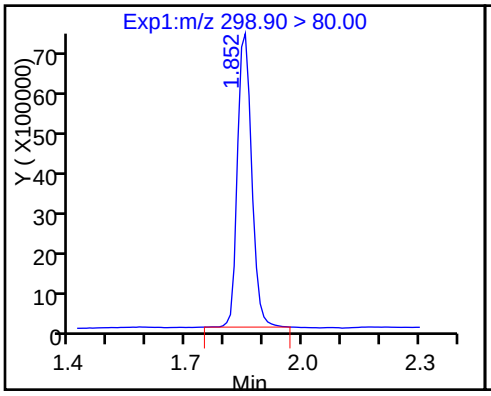
Report Date: 29-Dec-2016 09:43:44 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

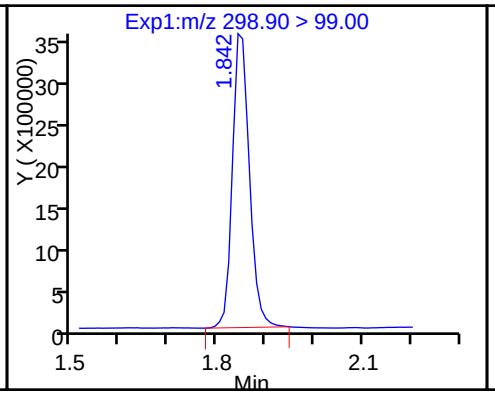
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_039.d

Injection Date:	27-Dec-2016 21:35:12	Instrument ID:	A8_N		
Lims ID:	320-24060-A-4-A	Lab Sample ID:	320-24060-4		
Client ID:	DPT-16-33-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	29	Worklist Smp#:	39
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

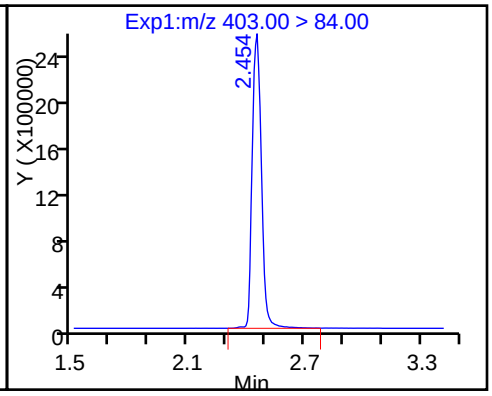
5 Perfluorobutanesulfonic acid



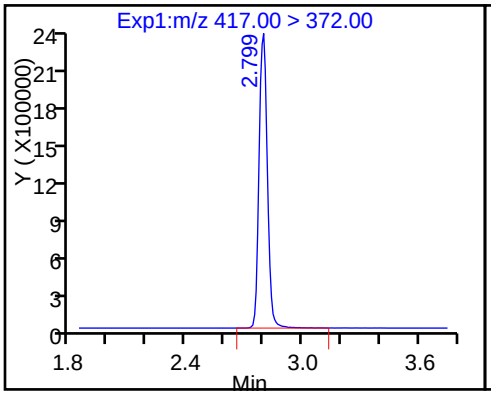
5 Perfluorobutanesulfonic acid



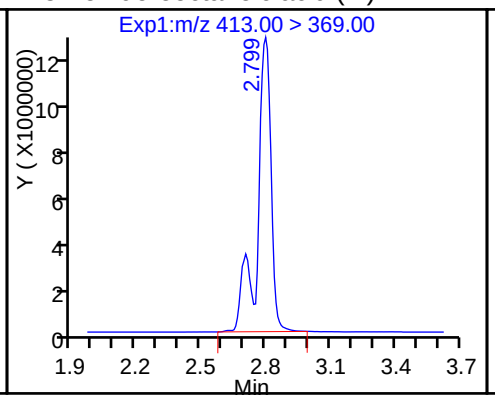
D 10 18O2 PFHxS



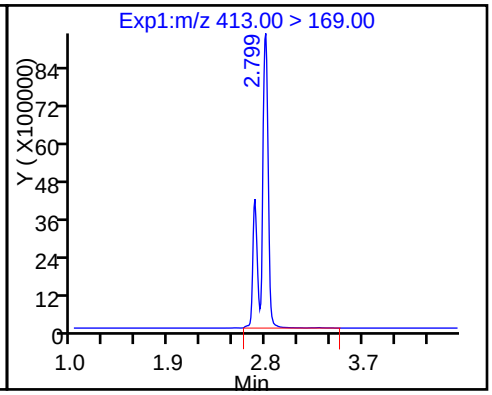
D 14 13C4 PFOA



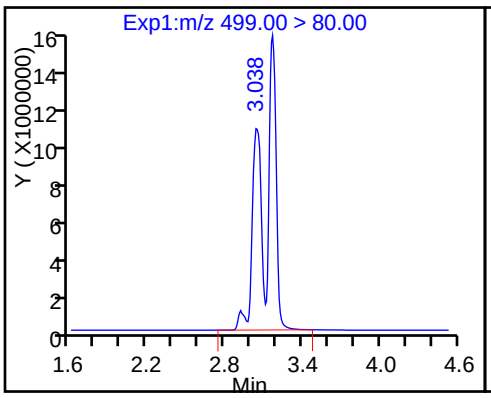
15 Perfluorooctanoic acid (M)



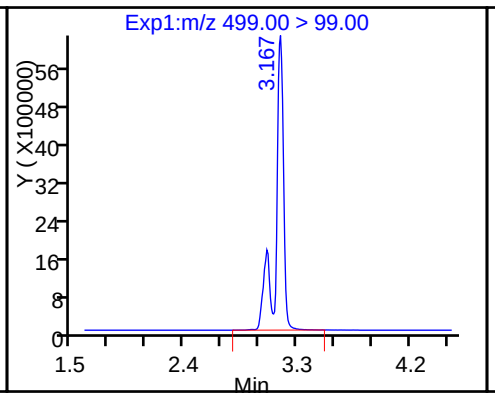
15 Perfluorooctanoic acid



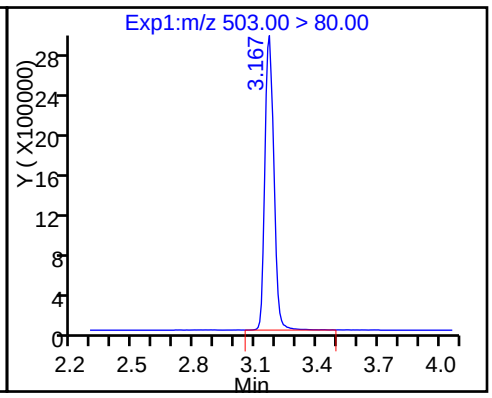
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

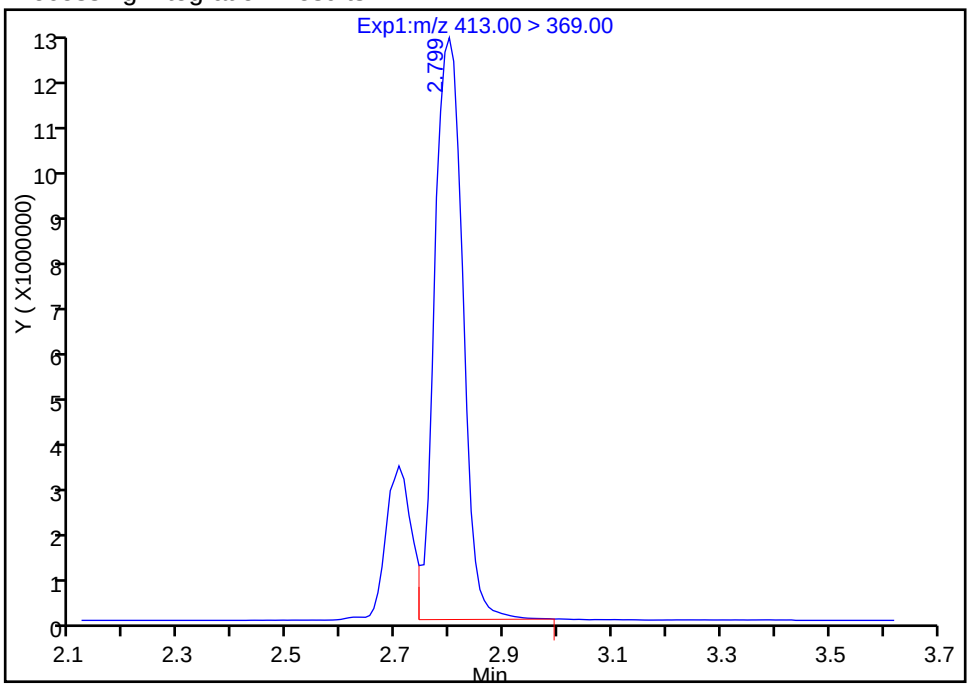
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_039.d				
Injection Date:	27-Dec-2016 21:35:12	Instrument ID:	A8_N		
Lims ID:	320-24060-A-4-A	Lab Sample ID:	320-24060-4		
Client ID:	DPT-16-33-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	29	Worklist Smp#:	39
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

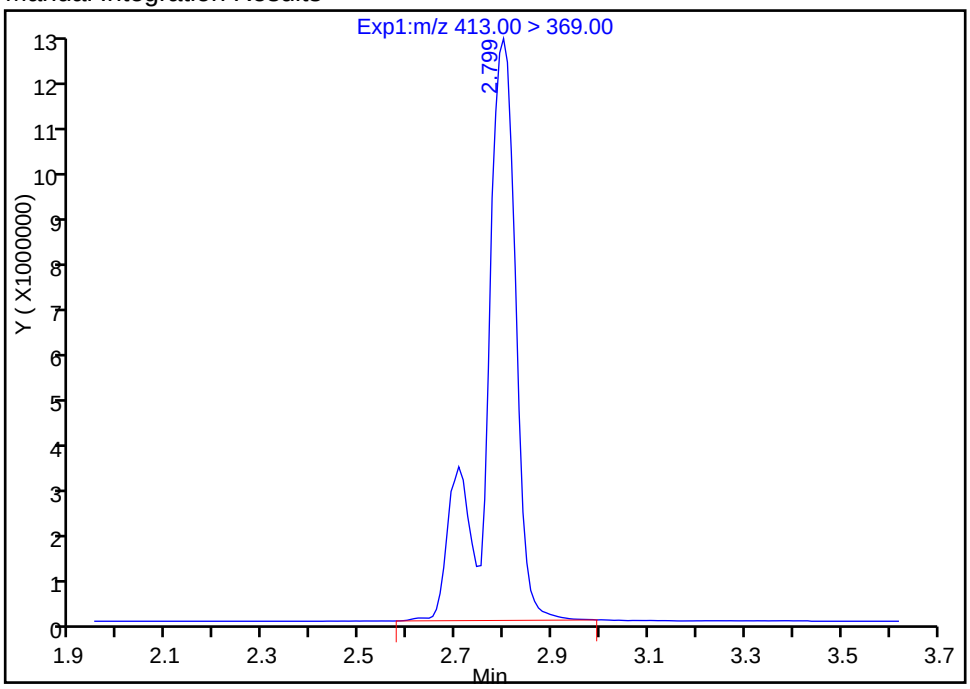
Processing Integration Results

RT: 2.80
Area: 43737966
Amount: 309.4829
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 54023120
Amount: 382.2590
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:42:01

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-33-GW-31-35 DL Lab Sample ID: 320-24060-4 DL

Matrix: Water Lab File ID: 29DEC2016C_011.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 10:55

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 253.5(mL) Date Analyzed: 12/29/2016 14:42

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.96	D	0.025	0.020	0.0074
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.11*	*D*	*0.025*	0.020	*0.0091*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.3	D	0.039	0.030	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	93		25-150
STL00994	18O2 PFHxS	106		25-150
STL00991	13C4 PFOS	105		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_011.d
Lims ID: 320-24060-A-4-A
Client ID: DPT-16-33-GW-31-35
Sample Type: Client
Inject. Date: 29-Dec-2016 14:42:07 ALS Bottle#: 25 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-4-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

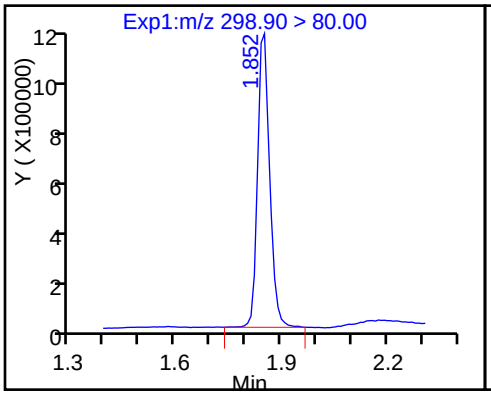
Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.848	0.004	1.000	2624057	5.33				
298.90 > 99.00	1.852	1.848	0.004	1.000	1068801		2.46(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.443	0.001		1644237	5.03		10.6	198903	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.790	2.781	0.009	1.000	10476840	48.6			118692	
413.00 > 169.00	2.687	2.781	-0.094	0.963	6942039		1.51(0.90-1.10)		39148	
D 14 13C4 PFOA										
417.00 > 372.00	2.790	2.789	0.001		1074003	4.66		9.3	94822	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.150	3.157	-0.007	1.000	17417102	66.9			512424	
499.00 > 99.00	3.150	3.157	-0.007	1.000	3631035		4.80(0.90-1.10)		139409	
D 17 13C4 PFOS										
503.00 > 80.00	3.150	3.157	-0.007		1251712	5.03		10.5	57688	

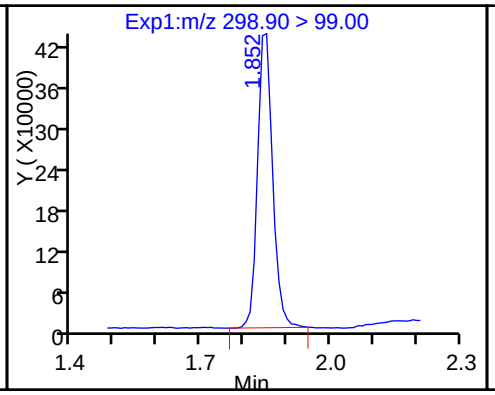
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_011.d
Injection Date: 29-Dec-2016 14:42:07 Instrument ID: A8_N
Lims ID: 320-24060-A-4-A Lab Sample ID: 320-24060-4
Client ID: DPT-16-33-GW-31-35
Operator ID: A8-PC\A8 ALS Bottle#: 25 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL

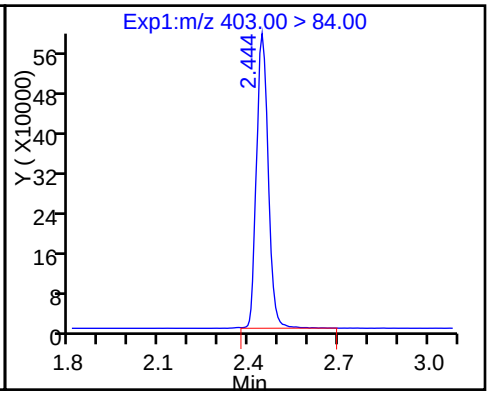
5 Perfluorobutanesulfonic acid



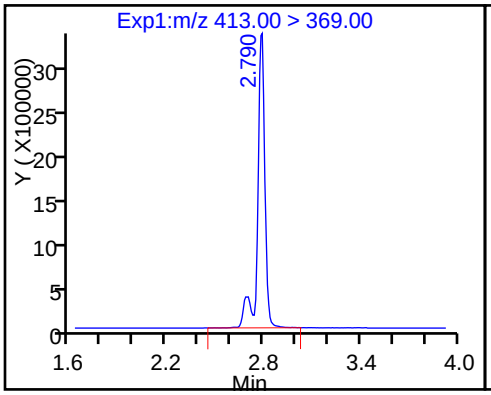
5 Perfluorobutanesulfonic acid



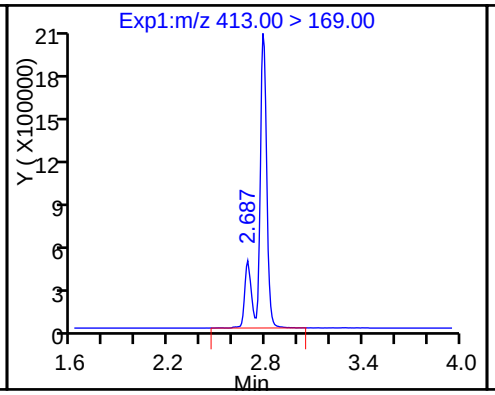
D 10 18O2 PFHxS



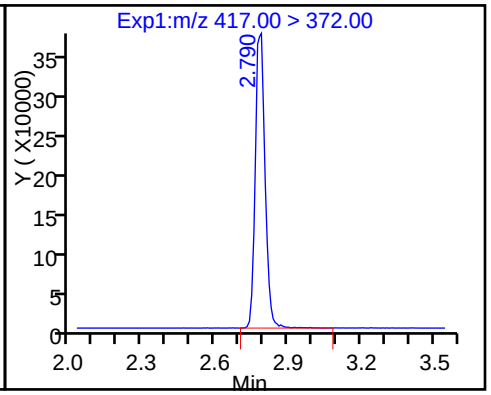
15 Perfluorooctanoic acid



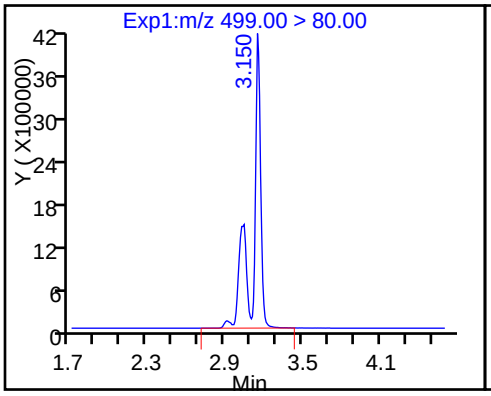
15 Perfluorooctanoic acid



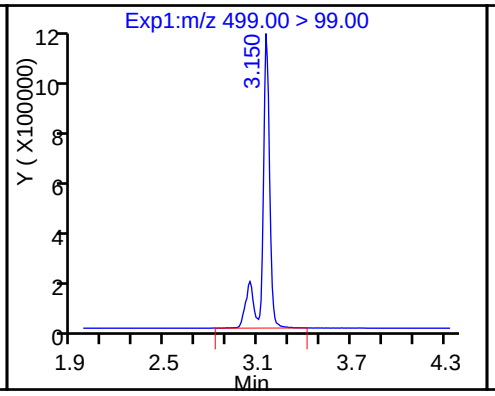
D 14 13C4 PFOA



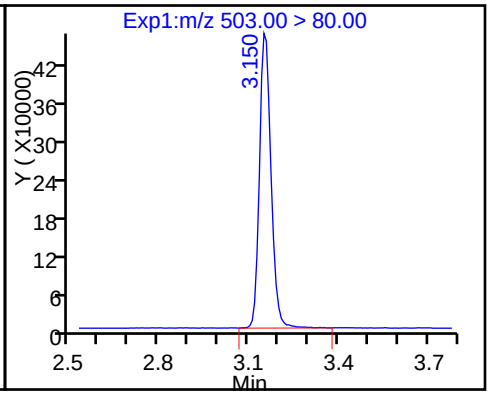
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-33-GW-19-23 Lab Sample ID: 320-24060-5

Matrix: Water Lab File ID: 27DEC2016A_040.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 11:10

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 254.7(mL) Date Analyzed: 12/27/2016 21:42

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*2.0*	*E M*	*0.0025*	0.0020	*0.00073*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.82*	*E*	*0.0025*	0.0020	*0.00090*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*5.4*	*E*	*0.0039*	0.0029	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	41		25-150
STL00994	18O2 PFHxS	19	Q	25-150
STL00991	13C4 PFOS	35		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_040.d
Lims ID: 320-24060-A-5-A
Client ID: DPT-16-33-GW-19-23
Sample Type: Client
Inject. Date: 27-Dec-2016 21:42:43 ALS Bottle#: 30 Worklist Smp#: 40
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:43:13 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:42:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.852	1.858	-0.006	1.000	36866130	416.7				E
298.90 > 99.00	1.852	1.858	-0.006	1.000	19004459		1.94(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.449	2.462	-0.013		2953661	9.03		19.1	30575	
D 14 13C4 PFOA										
417.00 > 372.00	2.802	2.799	0.003		4779460	20.7		41.5	246644	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.802	2.799	0.003	1.000	95362227	994.5			247569	EM
413.00 > 169.00	2.802	2.799	0.003	1.000	82628312		1.15(0.90-1.10)		113109	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.072	3.067	0.005	1.000	235372036	2732.0			153639	E
499.00 > 99.00	3.167	3.067	0.100	1.031	72318787		3.25(0.90-1.10)		511421	
D 17 13C4 PFOS										
503.00 > 80.00	3.167	3.175	-0.008		4141149	16.6		34.8	43778	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

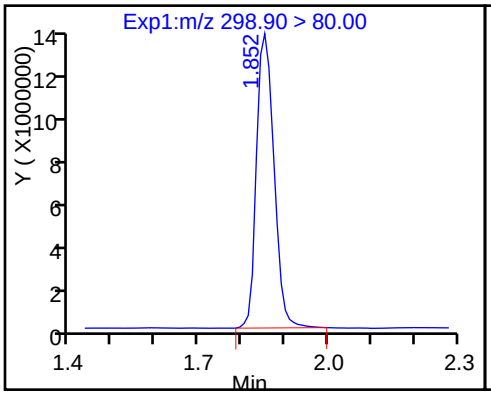
Report Date: 29-Dec-2016 09:43:45 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

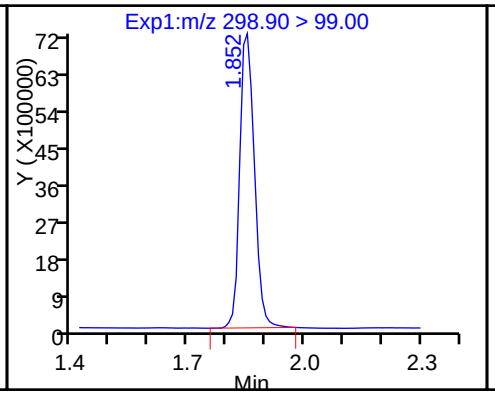
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_040.d

Injection Date:	27-Dec-2016 21:42:43	Instrument ID:	A8_N		
Lims ID:	320-24060-A-5-A	Lab Sample ID:	320-24060-5		
Client ID:	DPT-16-33-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	30	Worklist Smp#:	40
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

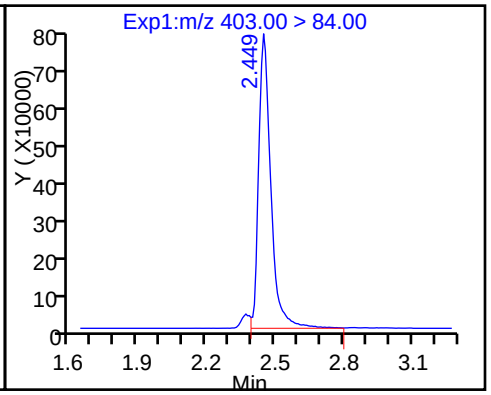
5 Perfluorobutanesulfonic acid



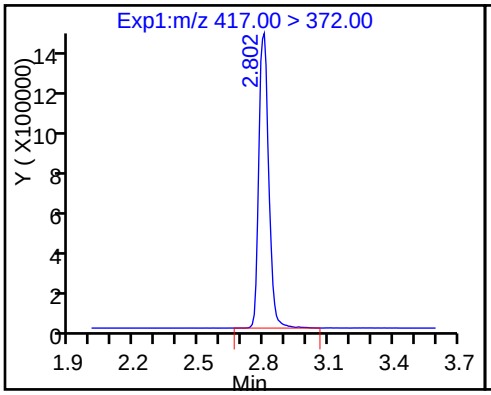
5 Perfluorobutanesulfonic acid



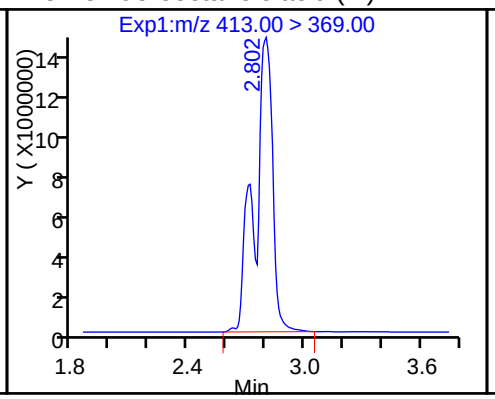
D 10 18O2 PFHxS



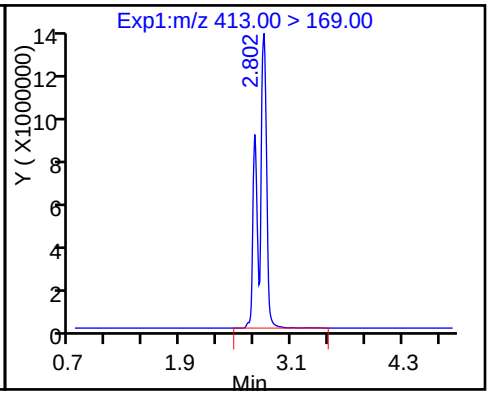
D 14 13C4 PFOA



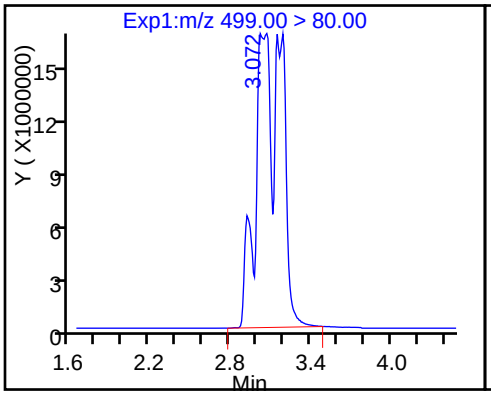
15 Perfluorooctanoic acid (M)



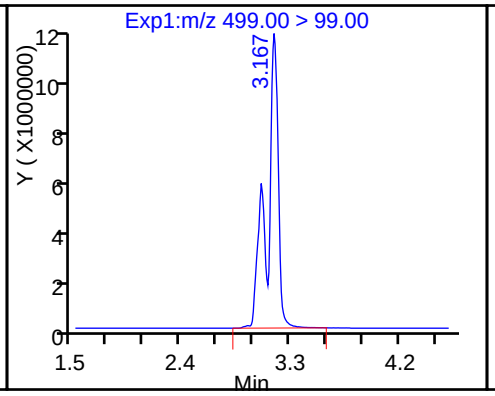
15 Perfluorooctanoic acid



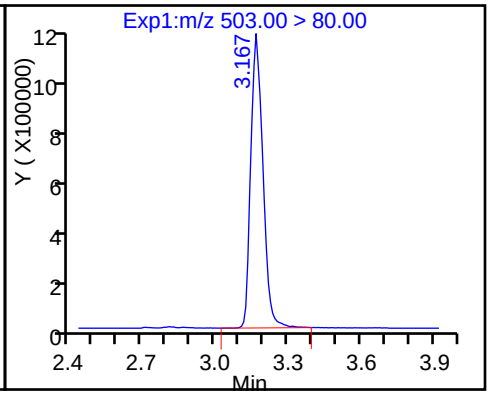
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

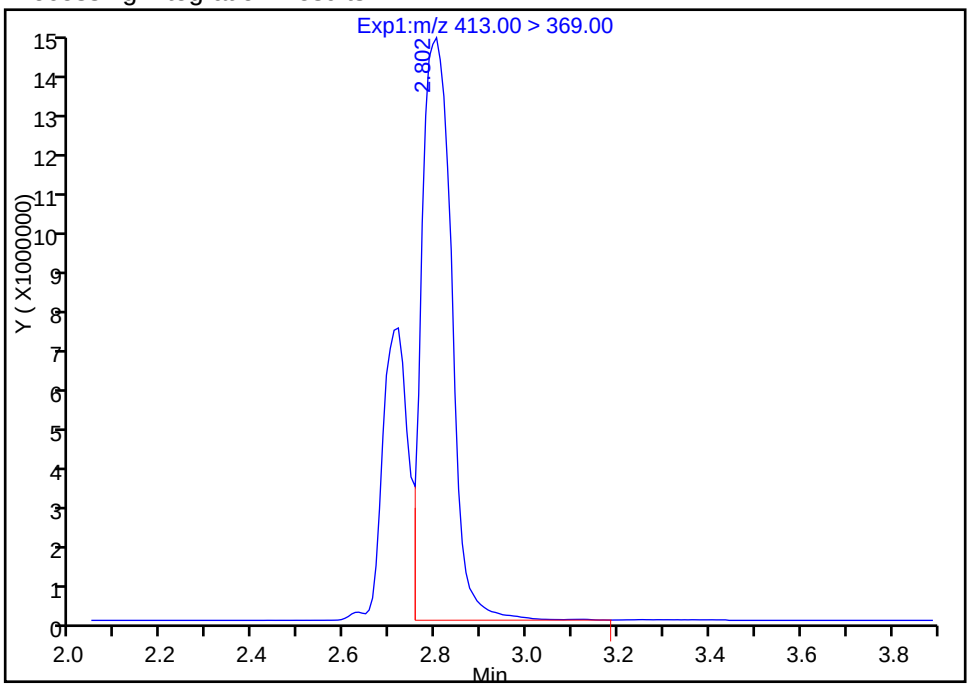
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_040.d				
Injection Date:	27-Dec-2016 21:42:43	Instrument ID:	A8_N		
Lims ID:	320-24060-A-5-A	Lab Sample ID:	320-24060-5		
Client ID:	DPT-16-33-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	30	Worklist Smp#:	40
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

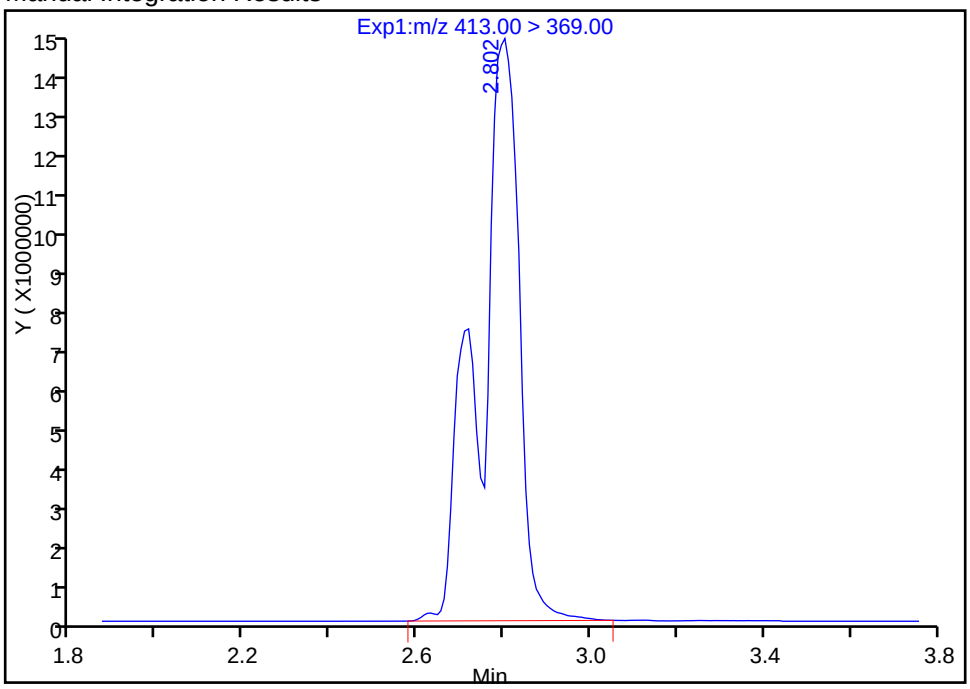
Processing Integration Results

RT: 2.80
Area: 66944973
Amount: 698.1458
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 95362227
Amount: 994.4995
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:42:49

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-33-GW-19-23 DL Lab Sample ID: 320-24060-5 DL

Matrix: Water Lab File ID: 29DEC2016C_003.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 11:10

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 254.7(mL) Date Analyzed: 12/29/2016 13:42

Con. Extract Vol.: 0.5(mL) Dilution Factor: 100

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.8	D	0.25	0.20	0.073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.23	J D	0.25	0.20	0.090
1763-23-1	Perfluorooctane Sulfonate (PFOS)	8.3	D	0.39	0.29	0.13

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	105		25-150
STL00994	18O2 PFHxS	107		25-150
STL00991	13C4 PFOS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_003.d
Lims ID: 320-24060-A-5-A
Client ID: DPT-16-33-GW-19-23
Sample Type: Client
Inject. Date: 29-Dec-2016 13:42:09 ALS Bottle#: 17 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 100.0000
Sample Info: 320-24060-a-5-a 100X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 03-Jan-2017 08:01:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.848	0.004	1.000	567783	1.15				
298.90 > 99.00	1.852	1.848	0.004	1.000	235020		2.42(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.446	2.443	0.003		164877	0.5042		1.1	21263	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.790	2.781	0.009	1.000	3525712	14.5			56617	
413.00 > 169.00	2.790	2.781	0.009	1.000	2438960		1.45(0.90-1.10)		84584	
D 14 13C4 PFOA										
417.00 > 372.00	2.790	2.789	0.001		121299	0.5266		1.1	16044	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.047	3.157	-0.110	1.000	10213848	42.2			115899	
499.00 > 99.00	3.135	3.157	-0.022	1.029	1922351		5.31(0.90-1.10)		51220	
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.157	-0.006		116367	0.4676		1.0	13879	

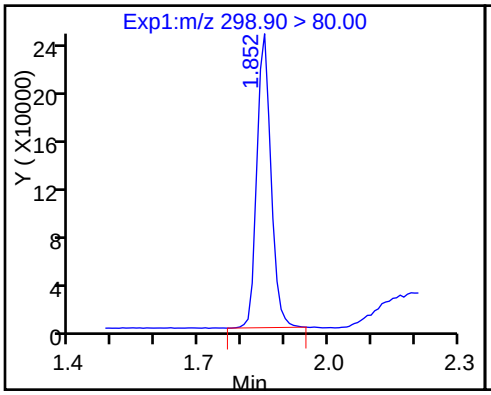
Report Date: 03-Jan-2017 08:08:37 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

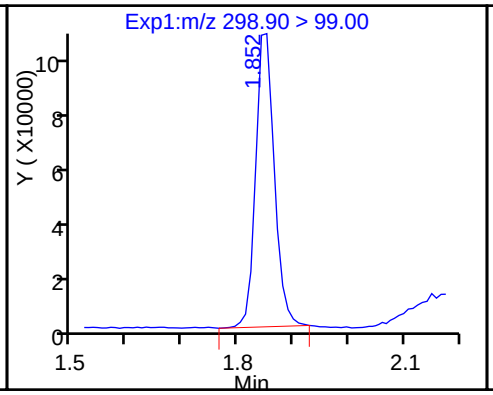
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_003.d

Injection Date:	29-Dec-2016 13:42:09	Instrument ID:	A8_N		
Lims ID:	320-24060-A-5-A	Lab Sample ID:	320-24060-5		
Client ID:	DPT-16-33-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	17	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	100.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

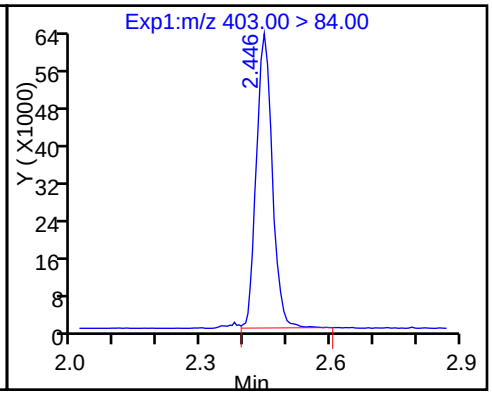
5 Perfluorobutanesulfonic acid



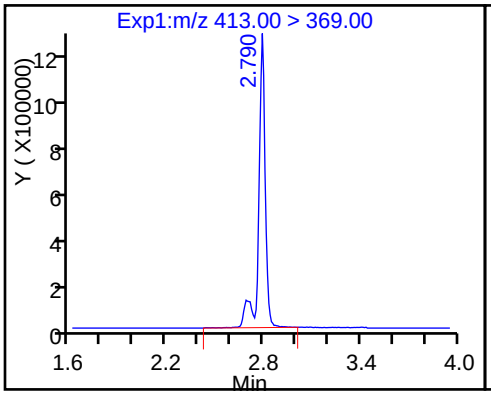
5 Perfluorobutanesulfonic acid



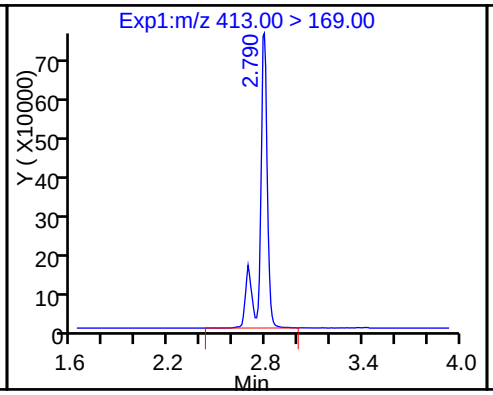
D 10 18O2 PFHxS



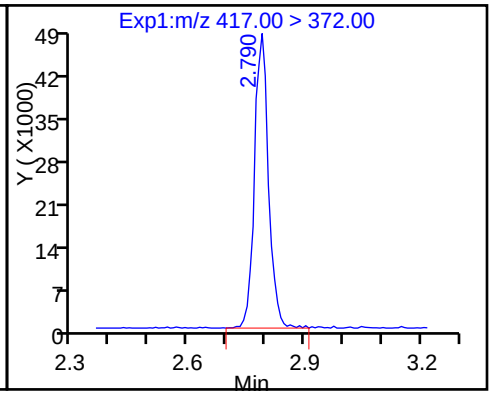
15 Perfluorooctanoic acid



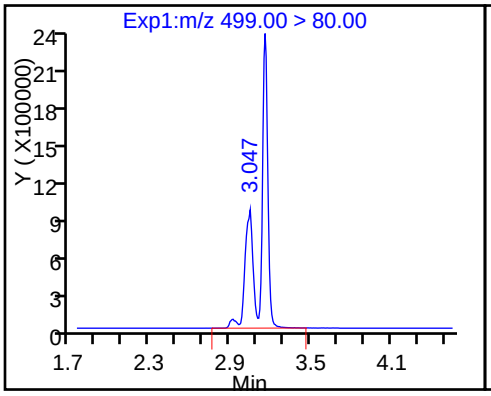
15 Perfluorooctanoic acid



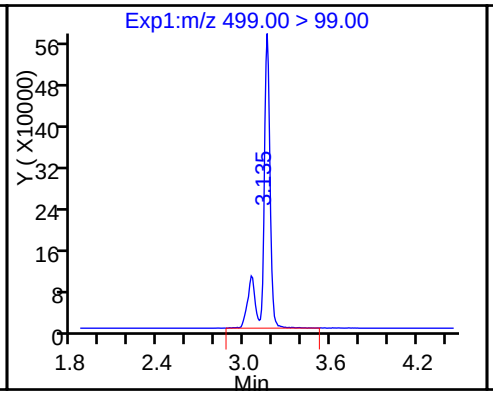
D 14 13C4 PFOA



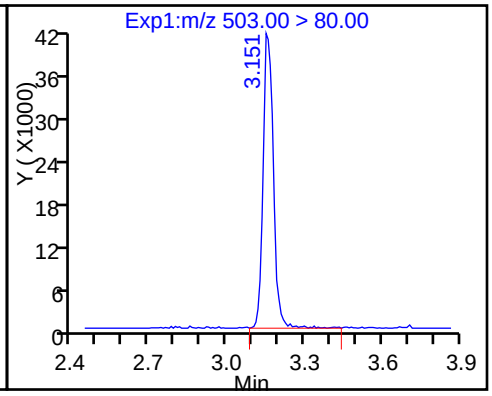
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: SW-16-01-SW Lab Sample ID: 320-24060-6

Matrix: Water Lab File ID: 27DEC2016A_044.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 11:30

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 257.4(mL) Date Analyzed: 12/27/2016 22:12

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	M	0.0024	0.0019	0.00073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.020		0.0024	0.0019	0.00089
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.27		0.0039	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	83		25-150
STL00994	18O2 PFHxS	82		25-150
STL00991	13C4 PFOS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_044.d
Lims ID: 320-24060-A-6-A
Client ID: SW-16-01-SW
Sample Type: Client
Inject. Date: 27-Dec-2016 22:12:41 ALS Bottle#: 31 Worklist Smp#: 44
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:43:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.842	0.006	1.000	3936490	10.4				
298.90 > 99.00	1.848	1.842	0.006	1.000	1623511		2.42(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.441	0.011		12628520	38.6		81.7	548886	
D 14 13C4 PFOA										
417.00 > 372.00	2.796	2.785	0.011		9570976	41.5		83.1	446698	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.796	2.785	0.011	1.000	2307294	12.0			3288	M
413.00 > 169.00	2.695	2.785	-0.090	0.964	1671768		1.38(0.90-1.10)		22674	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.164	3.051	0.113	1.000	32301142	139.8			623086	
499.00 > 99.00	3.164	3.051	0.113	1.000	6688794		4.83(0.90-1.10)		250666	
D 17 13C4 PFOS										
503.00 > 80.00	3.164	3.154	0.010		11105441	44.6		93.4	115485	

QC Flag Legend

Review Flags
M - Manually Integrated

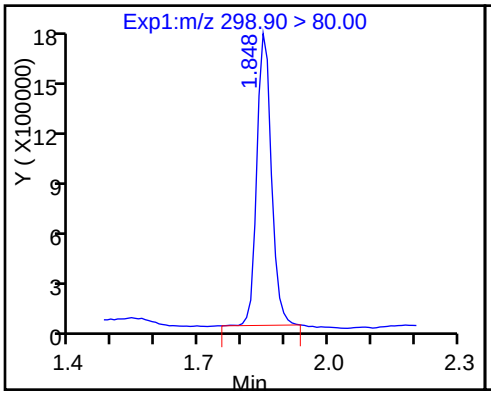
Report Date: 29-Dec-2016 09:53:52 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

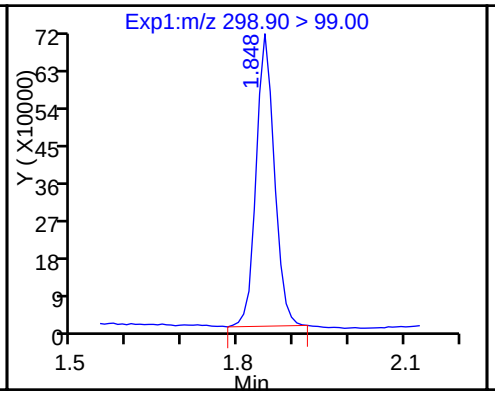
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_044.d

Injection Date:	27-Dec-2016 22:12:41	Instrument ID:	A8_N		
Lims ID:	320-24060-A-6-A	Lab Sample ID:	320-24060-6		
Client ID:	SW-16-01-SW				
Operator ID:	A8-PC\A8	ALS Bottle#:	31	Worklist Smp#:	44
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

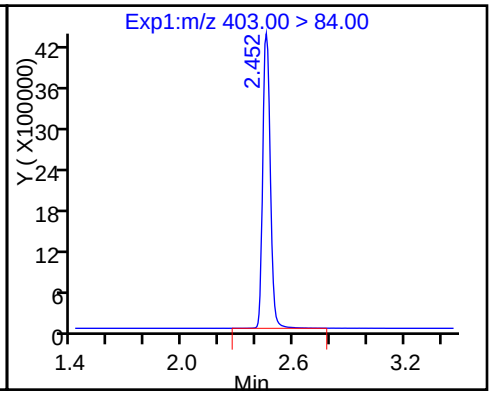
5 Perfluorobutanesulfonic acid



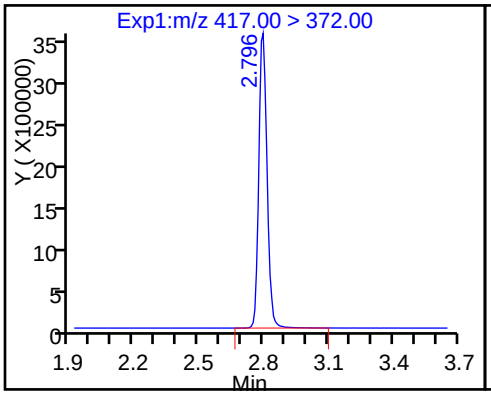
5 Perfluorobutanesulfonic acid



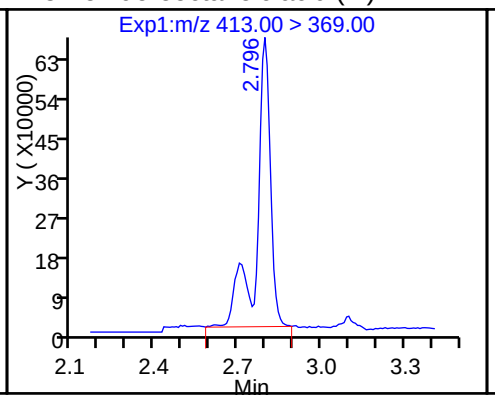
D 10 18O2 PFHxS



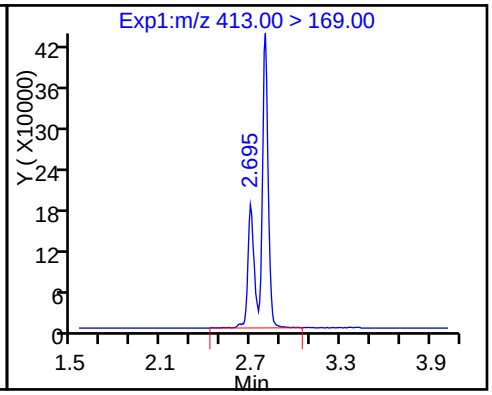
D 14 13C4 PFOA



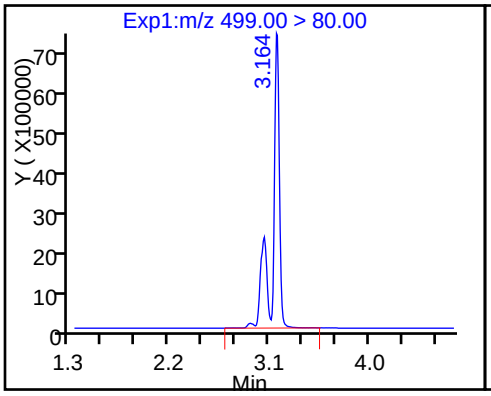
15 Perfluorooctanoic acid (M)



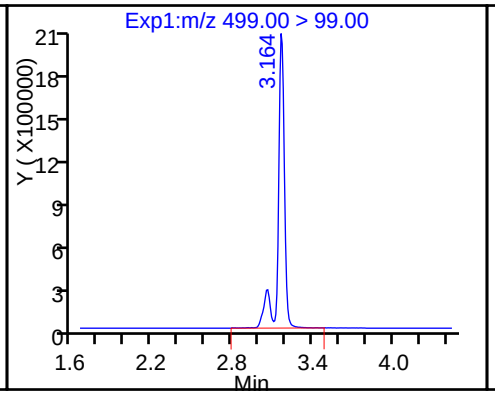
15 Perfluorooctanoic acid



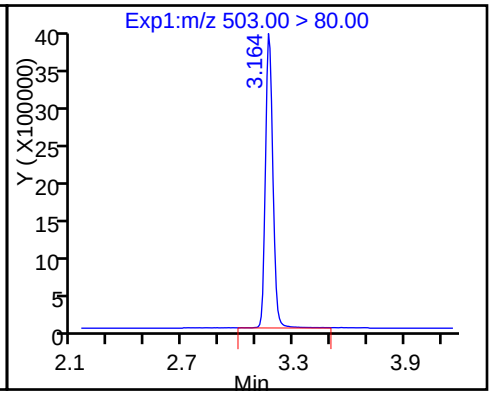
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

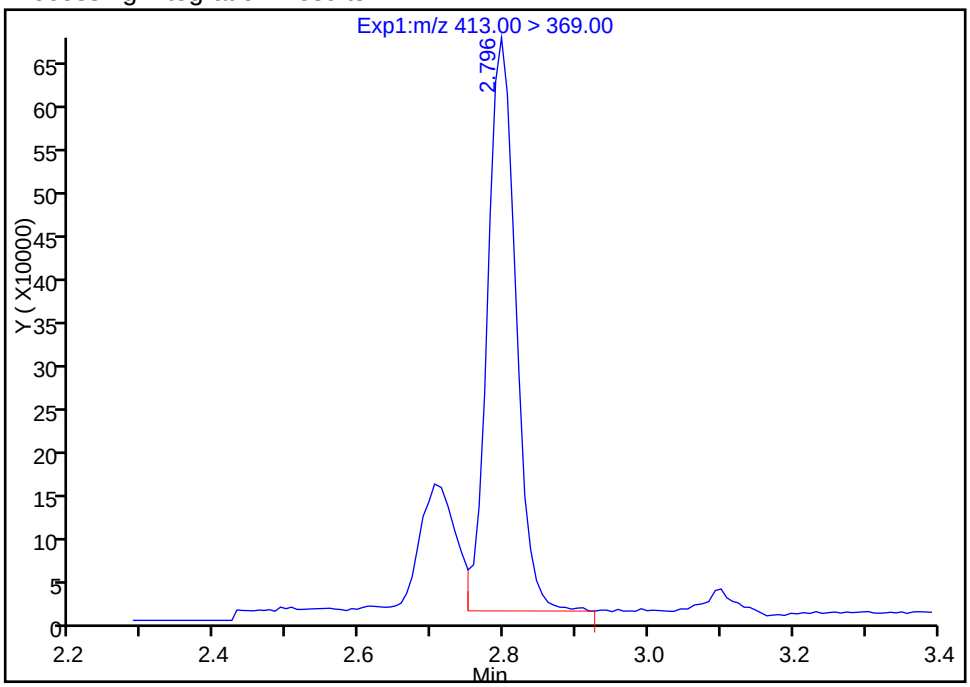
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_044.d				
Injection Date:	27-Dec-2016 22:12:41	Instrument ID:	A8_N		
Lims ID:	320-24060-A-6-A	Lab Sample ID:	320-24060-6		
Client ID:	SW-16-01-SW				
Operator ID:	A8-PC\A8	ALS Bottle#:	31	Worklist Smp#:	44
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

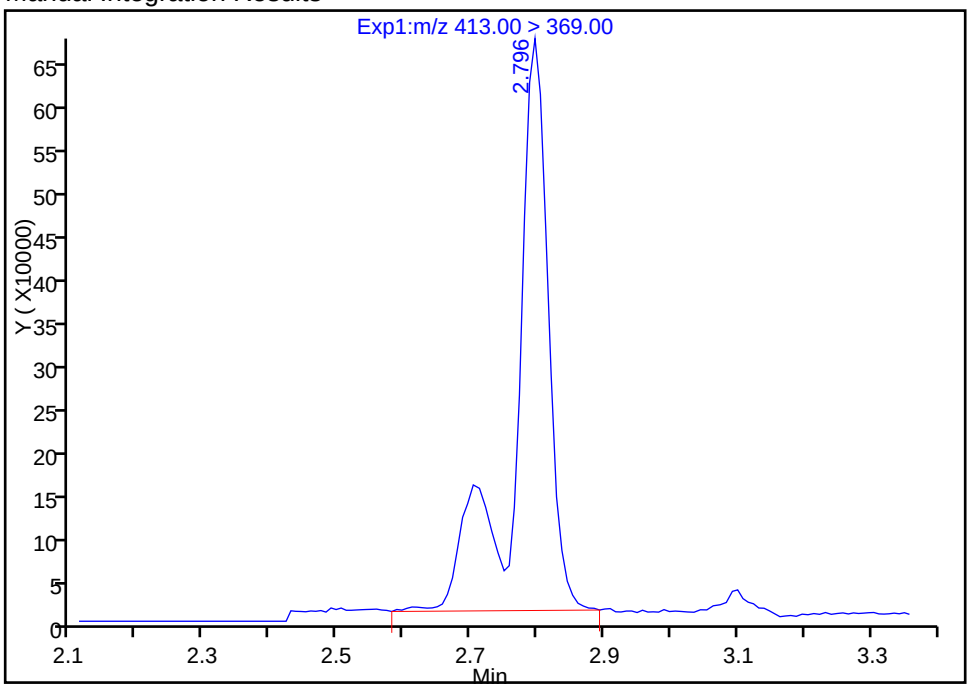
Processing Integration Results

RT: 2.80
Area: 1813929
Amount: 9.446503
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 2307294
Amount: 12.015828
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:43:33

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-14-GW-31-35 Lab Sample ID: 320-24060-7

Matrix: Water Lab File ID: 27DEC2016A_045.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 12:00

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 249(mL) Date Analyzed: 12/27/2016 22:20

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.57*	*E M*	*0.0025*	0.0020	*0.00075*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.20		0.0025	0.0020	0.00092
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*3.7*	*E M*	*0.0040*	0.0030	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	59		25-150
STL00994	18O2 PFHxS	49		25-150
STL00991	13C4 PFOS	44		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_045.d
Lims ID: 320-24060-A-7-A
Client ID: DPT-16-14-GW-31-35
Sample Type: Client
Inject. Date: 27-Dec-2016 22:20:11 ALS Bottle#: 32 Worklist Smp#: 45
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:45:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.842	0.006	1.000	22239891	97.2				
298.90 > 99.00	1.848	1.842	0.006	1.000	10298335		2.16(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.448	2.441	0.007		7638739	23.4		49.4	719207	
D 14 13C4 PFOA										
417.00 > 372.00	2.793	2.785	0.008		6812684	29.6		59.1	296754	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.793	2.785	0.008	1.000	38721544	283.3			228082	EM
413.00 > 169.00	2.793	2.785	0.008	1.000	28408583		1.36(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										EM
499.00 > 80.00	3.186	3.051	0.135	1.000	199913261	1821.4			183246	EM
499.00 > 99.00	3.161	3.051	0.110	0.992	71886289		2.78(0.90-1.10)		1112853	
D 17 13C4 PFOS										
503.00 > 80.00	3.161	3.154	0.007		5275690	21.2		44.4	64279	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

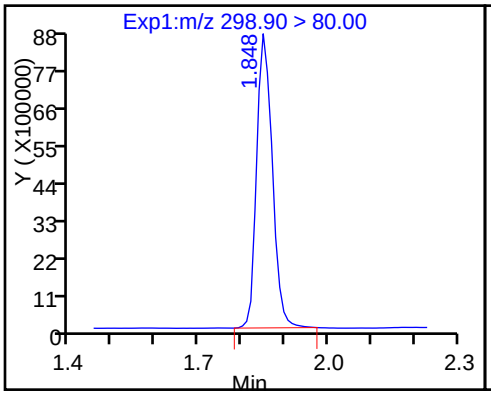
Report Date: 29-Dec-2016 09:53:54 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

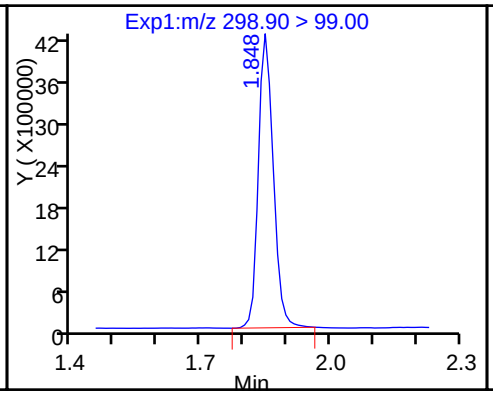
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_045.d

Injection Date:	27-Dec-2016 22:20:11	Instrument ID:	A8_N		
Lims ID:	320-24060-A-7-A	Lab Sample ID:	320-24060-7		
Client ID:	DPT-16-14-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	32	Worklist Smp#:	45
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

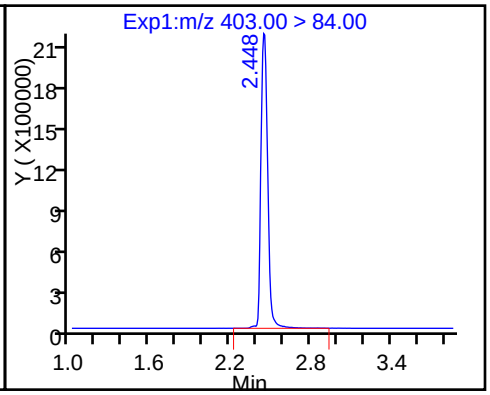
5 Perfluorobutanesulfonic acid



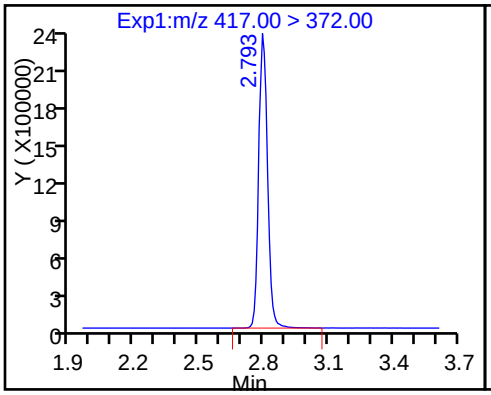
5 Perfluorobutanesulfonic acid



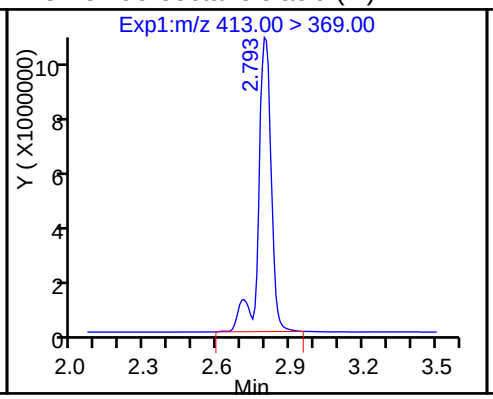
D 10 18O2 PFHxS



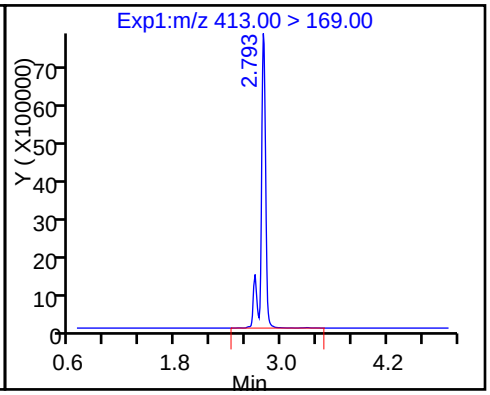
D 14 13C4 PFOA



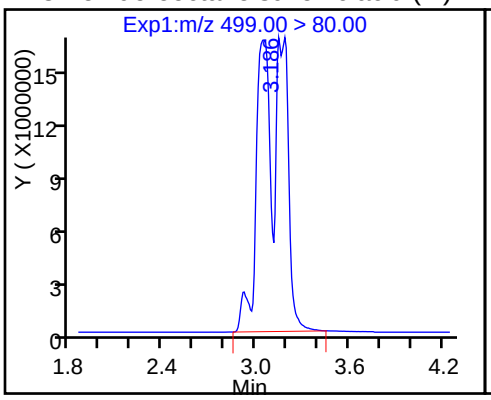
15 Perfluorooctanoic acid (M)



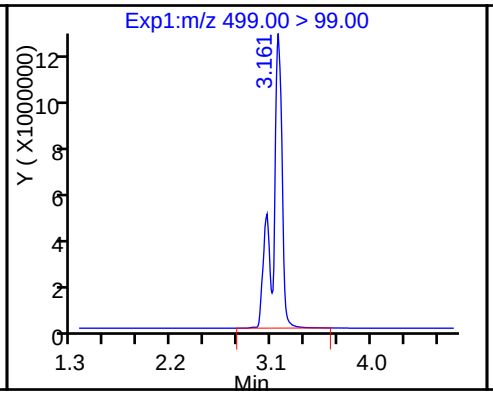
15 Perfluorooctanoic acid



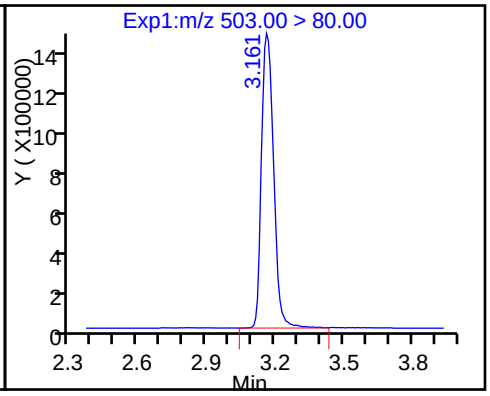
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

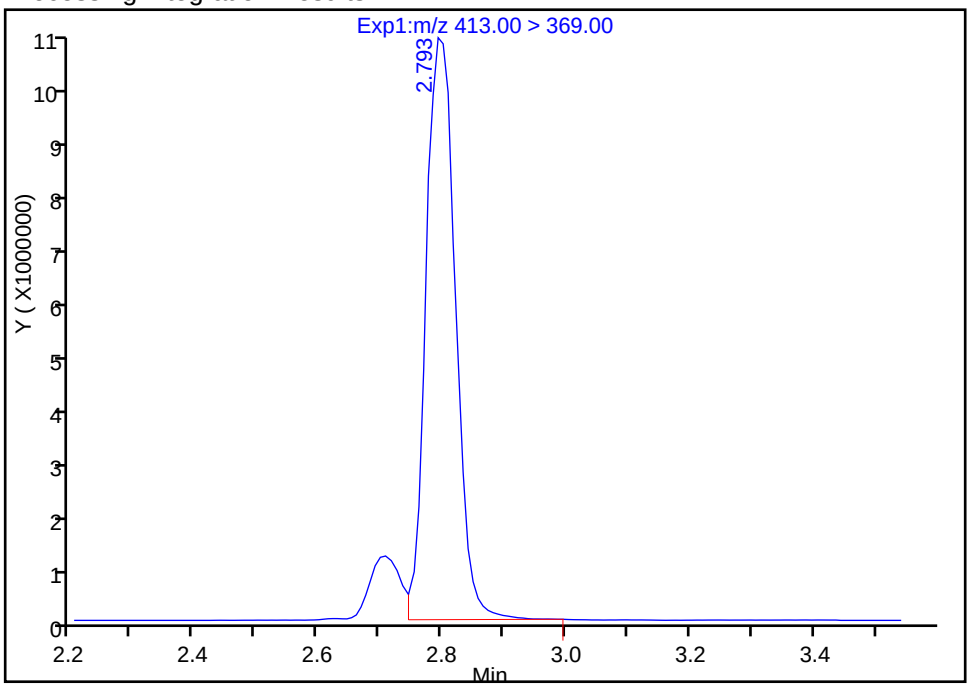
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_045.d				
Injection Date:	27-Dec-2016 22:20:11	Instrument ID:	A8_N		
Lims ID:	320-24060-A-7-A	Lab Sample ID:	320-24060-7		
Client ID:	DPT-16-14-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	32	Worklist Smp#:	45
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

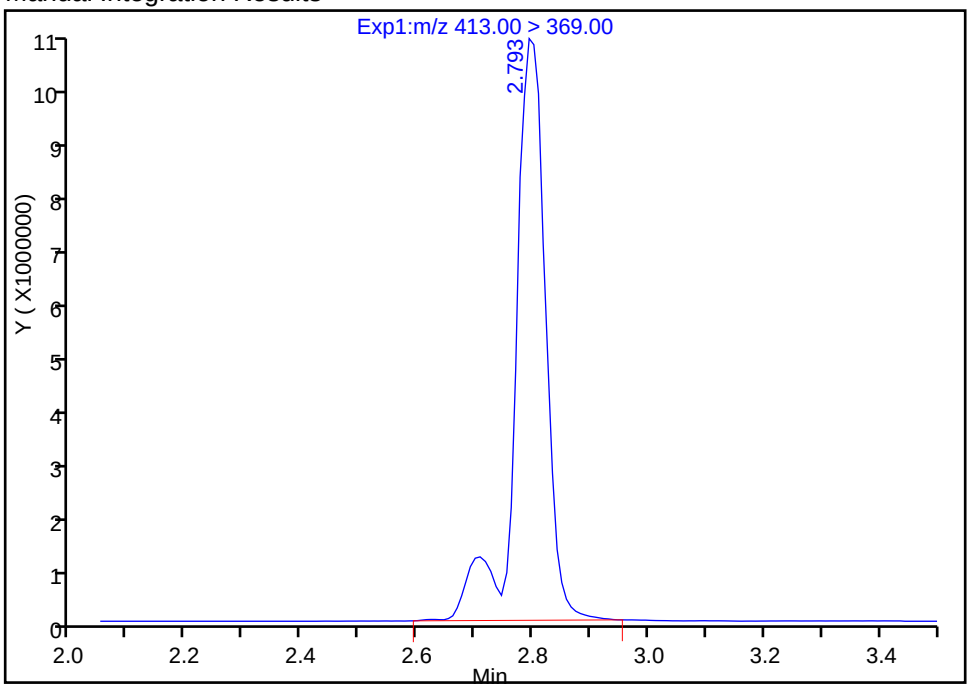
Processing Integration Results

RT: 2.79
Area: 34859264
Amount: 255.0392
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 38721544
Amount: 283.2966
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:45:29

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

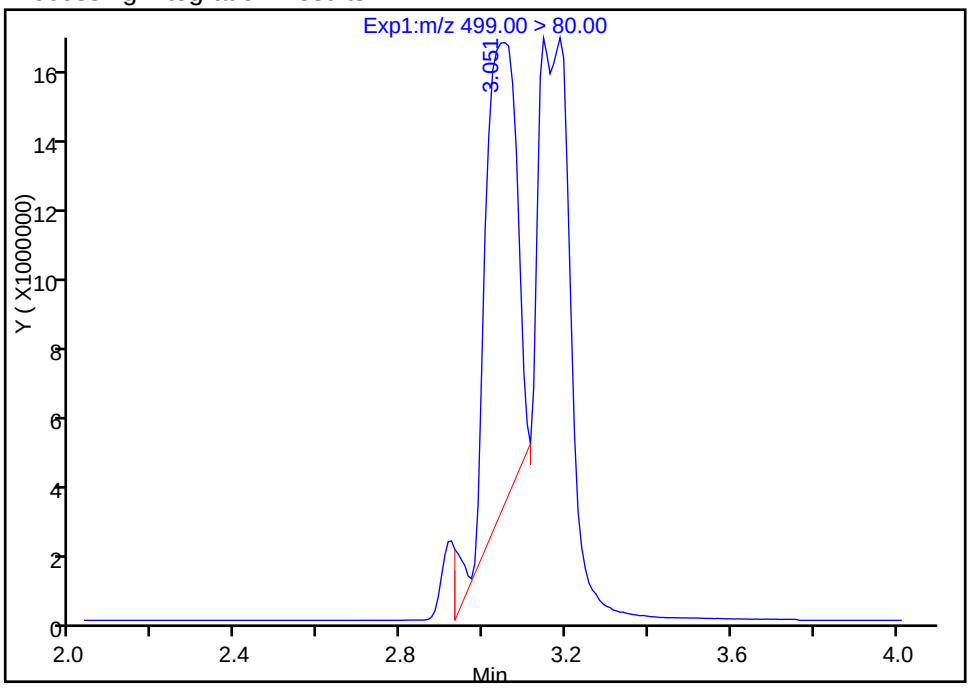
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_045.d				
Injection Date:	27-Dec-2016 22:20:11	Instrument ID:	A8_N		
Lims ID:	320-24060-A-7-A	Lab Sample ID:	320-24060-7		
Client ID:	DPT-16-14-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	32	Worklist Smp#:	45
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

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

Signal: 1

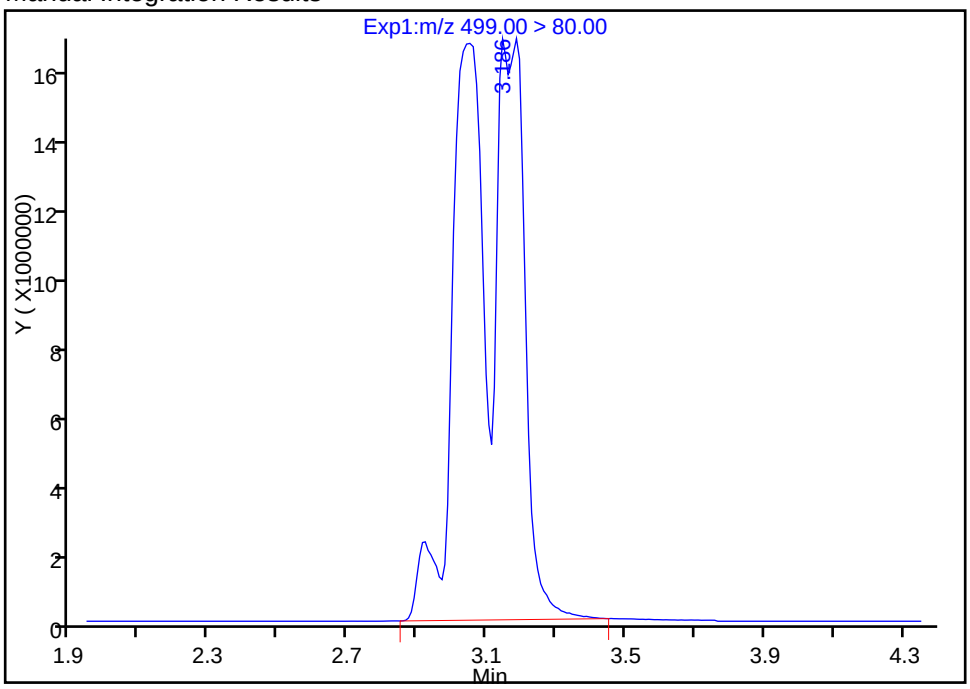
Processing Integration Results

RT: 3.05
Area: 73130406
Amount: 666.2886
Amount Units: ng/ml



Manual Integration Results

RT: 3.19
Area: 199913261
Amount: 1821.4028
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:45:29

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-14-GW-31-35 DL Lab Sample ID: 320-24060-7 DL

Matrix: Water Lab File ID: 29DEC2016C_005.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 12:00

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 249(mL) Date Analyzed: 12/29/2016 13:57

Con. Extract Vol.: 0.5(mL) Dilution Factor: 20

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.67	D	0.050	0.040	0.015
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.11*	*D*	*0.050*	0.040	*0.018*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	5.4	D	0.080	0.060	0.026

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	96		25-150
STL00994	18O2 PFHxS	106		25-150
STL00991	13C4 PFOS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_005.d
Lims ID: 320-24060-A-7-A
Client ID: DPT-16-14-GW-31-35
Sample Type: Client
Inject. Date: 29-Dec-2016 13:57:09 ALS Bottle#: 19 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 20.0000
Sample Info: 320-24060-a-7-a 20X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 03-Jan-2017 08:02:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.848	0.004	1.000	1340315	2.72				
298.90 > 99.00	1.852	1.848	0.004	1.000	561437		2.39(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.443	2.443	0.0		823230	2.52		5.3	100651	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.788	2.781	0.007	1.000	3672261	16.6			52810	
413.00 > 169.00	2.788	2.781	0.007	1.000	2291695		1.60(0.90-1.10)		94513	
D 14 13C4 PFOA										
417.00 > 372.00	2.788	2.789	-0.001		550052	2.39		4.8	110740	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.034	3.157	-0.123	1.000	32496254	134.5			210414	
499.00 > 99.00	3.155	3.157	-0.002	1.040	8015326		4.05(0.90-1.10)		204477	
D 17 13C4 PFOS										
503.00 > 80.00	3.155	3.157	-0.002		580555	2.33		4.9	31009	

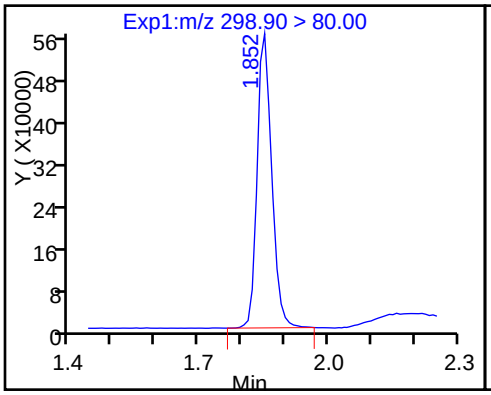
Report Date: 03-Jan-2017 08:08:39 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

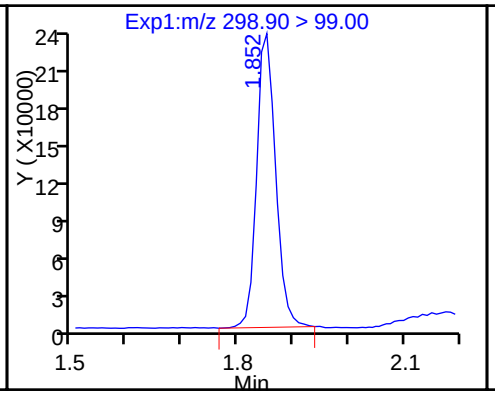
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_005.d

Injection Date:	29-Dec-2016 13:57:09	Instrument ID:	A8_N		
Lims ID:	320-24060-A-7-A	Lab Sample ID:	320-24060-7		
Client ID:	DPT-16-14-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	19	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	20.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

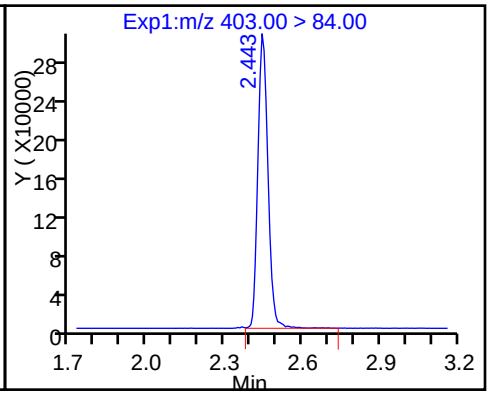
5 Perfluorobutanesulfonic acid



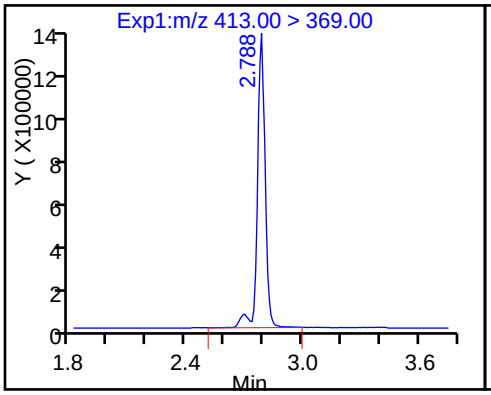
5 Perfluorobutanesulfonic acid



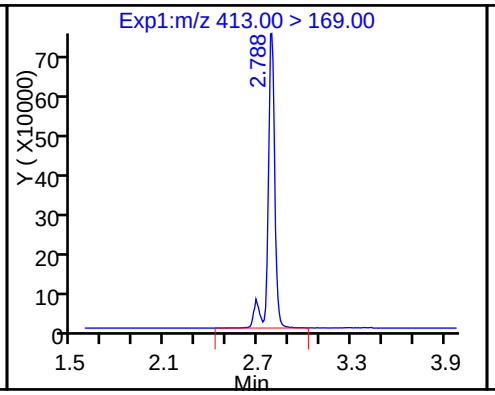
D 10 18O2 PFHxS



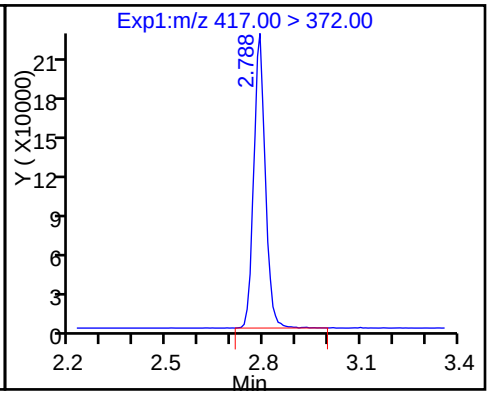
15 Perfluorooctanoic acid



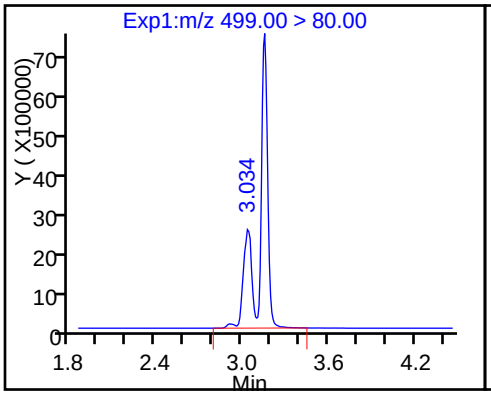
15 Perfluorooctanoic acid



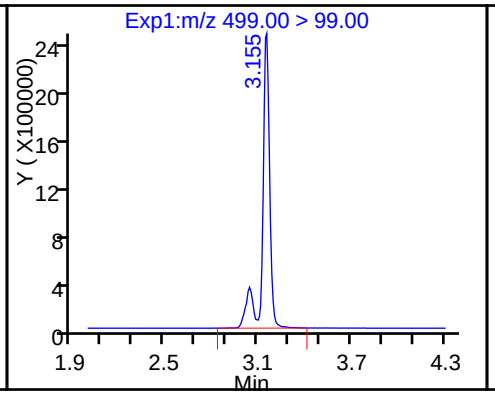
D 14 13C4 PFOA



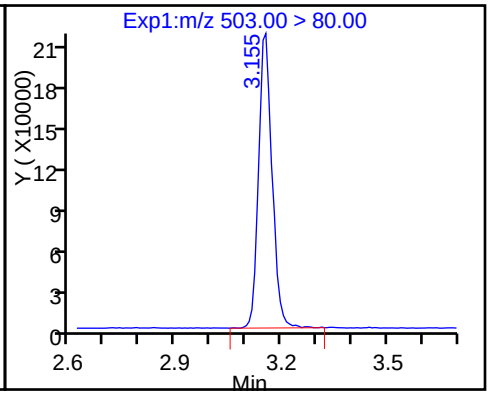
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: SW-16-02-SW Lab Sample ID: 320-24060-8

Matrix: Water Lab File ID: 27DEC2016A_046.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 12:15

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 252.4(mL) Date Analyzed: 12/27/2016 22:27

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.042	M	0.0025	0.0020	0.00074
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0084		0.0025	0.0020	0.00091
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	77		25-150
STL00994	18O2 PFHxS	84		25-150
STL00991	13C4 PFOS	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_046.d
Lims ID: 320-24060-A-8-A
Client ID: SW-16-02-SW
Sample Type: Client
Inject. Date: 27-Dec-2016 22:27:41 ALS Bottle#: 33 Worklist Smp#: 46
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:46:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.842	-0.003	1.000	1647993	4.24				
298.90 > 99.00	1.839	1.842	-0.003	1.000	675961		2.44(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.448	2.441	0.007		12969680	39.7		83.9	935568	
D 14 13C4 PFOA										
417.00 > 372.00	2.784	2.785	-0.001		8875838	38.5		77.1	518306	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.792	2.785	0.007	1.000	3819249	21.4			19390	M
413.00 > 169.00	2.792	2.785	0.007	1.000	2570058		1.49(0.90-1.10)		95382	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.050	3.051	-0.001	1.000	14072196	61.5			90193	
499.00 > 99.00	3.050	3.051	-0.001	1.000	3035875		4.64(0.90-1.10)		8232	
D 17 13C4 PFOS										
503.00 > 80.00	3.161	3.154	0.007		10991739	44.2		92.4	232457	

QC Flag Legend

Review Flags
M - Manually Integrated

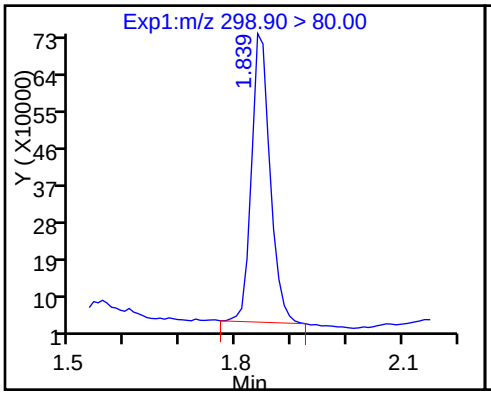
Report Date: 29-Dec-2016 09:53:55 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

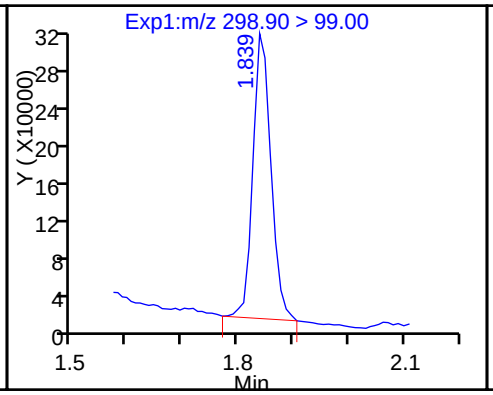
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_046.d

Injection Date:	27-Dec-2016 22:27:41	Instrument ID:	A8_N		
Lims ID:	320-24060-A-8-A	Lab Sample ID:	320-24060-8		
Client ID:	SW-16-02-SW				
Operator ID:	A8-PC\A8	ALS Bottle#:	33	Worklist Smp#:	46
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

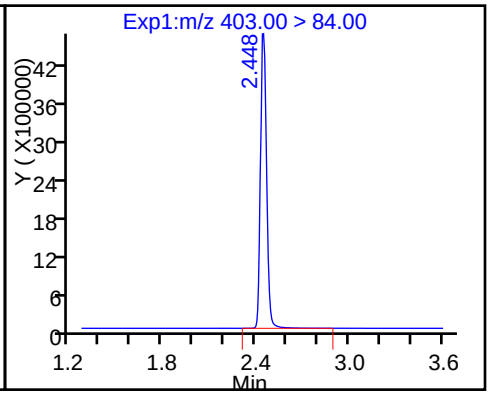
5 Perfluorobutanesulfonic acid



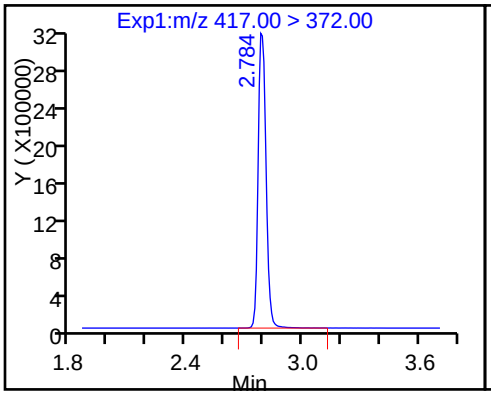
5 Perfluorobutanesulfonic acid



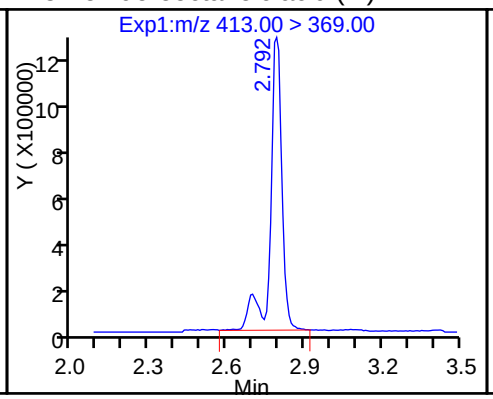
D 10 18O2 PFHxS



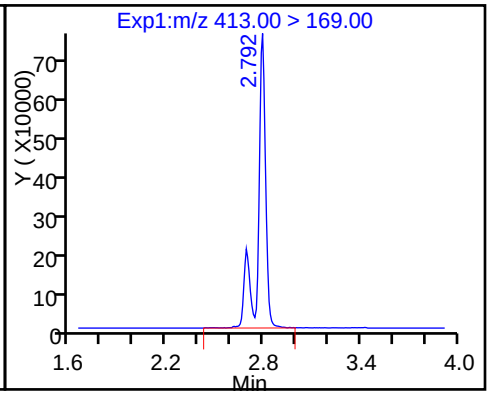
D 14 13C4 PFOA



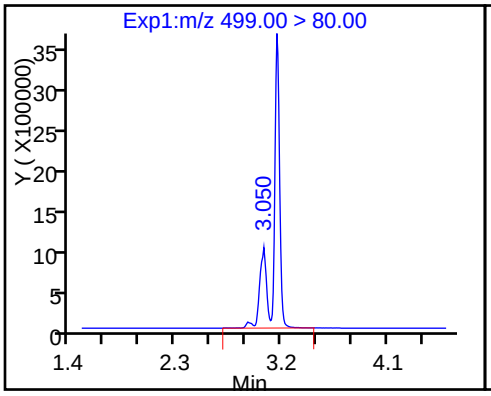
15 Perfluorooctanoic acid (M)



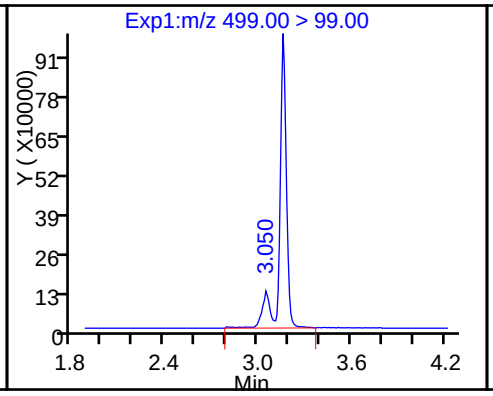
15 Perfluorooctanoic acid



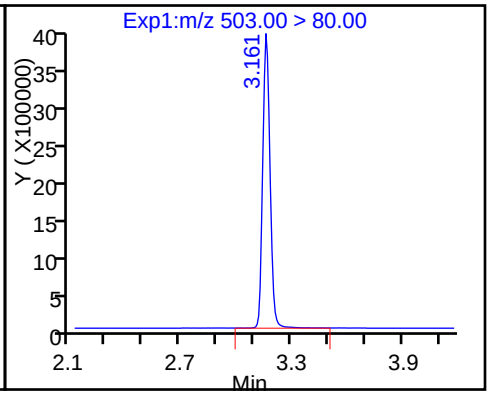
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

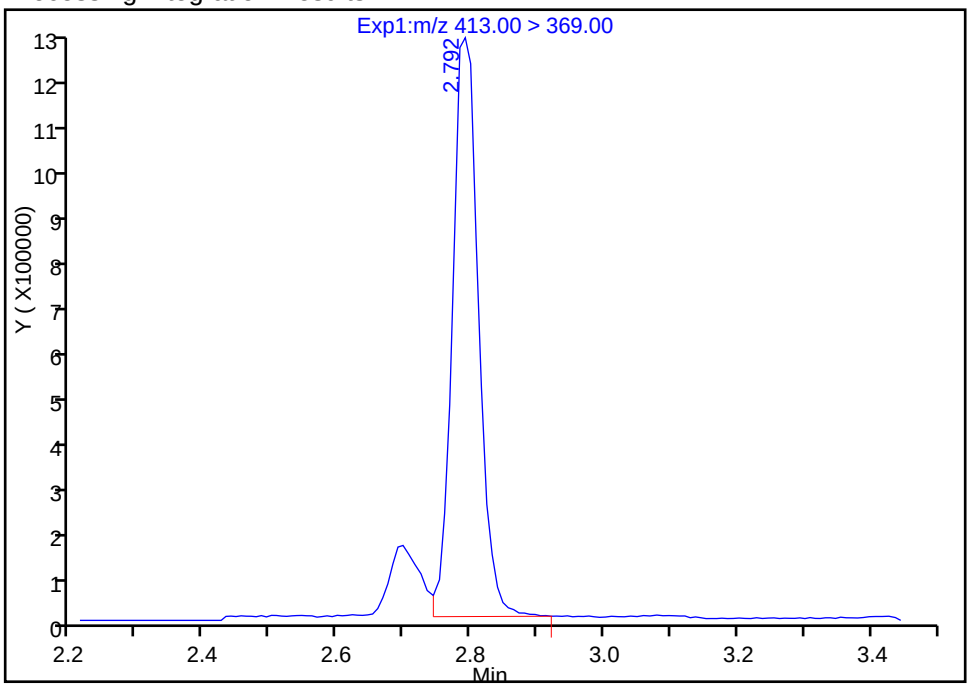
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_046.d				
Injection Date:	27-Dec-2016 22:27:41	Instrument ID:	A8_N		
Lims ID:	320-24060-A-8-A	Lab Sample ID:	320-24060-8		
Client ID:	SW-16-02-SW				
Operator ID:	A8-PC\A8	ALS Bottle#:	33	Worklist Smp#:	46
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

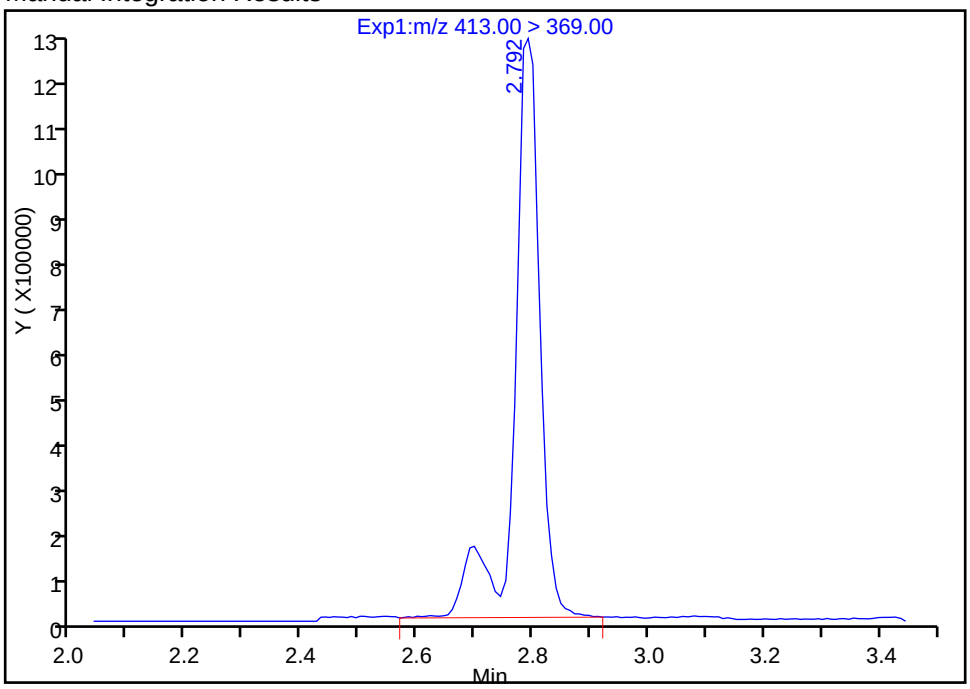
Processing Integration Results

RT: 2.79
Area: 3328819
Amount: 18.693379
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 3819249
Amount: 21.447447
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:46:09

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: SW-16-02-SW-DUP Lab Sample ID: 320-24060-9

Matrix: Water Lab File ID: 27DEC2016A_047.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 12:15

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 247.2(mL) Date Analyzed: 12/27/2016 22:35

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.041	M	0.0025	0.0020	0.00076
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0089		0.0025	0.0020	0.00093
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.12		0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	82		25-150
STL00994	18O2 PFHxS	88		25-150
STL00991	13C4 PFOS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_047.d
Lims ID: 320-24060-A-9-A
Client ID: SW-16-02-SW-DUP
Sample Type: Client
Inject. Date: 27-Dec-2016 22:35:11 ALS Bottle#: 34 Worklist Smp#: 47
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:46:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.842	0.006	1.000	1787367	4.39				
298.90 > 99.00	1.848	1.842	0.006	1.000	706520		2.53(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.441	0.011		13604634	41.6		88.0	1004057	
D 14 13C4 PFOA										
417.00 > 372.00	2.790	2.785	0.005		9477783	41.1		82.3	390157	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.782	2.785	-0.003	1.000	3868199	20.3			18929	M
413.00 > 169.00	2.790	2.785	0.005	1.003	2730196		1.42(0.90-1.10)		103019	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.134	3.051	0.083	1.000	14724002	60.5			98448	
499.00 > 99.00	3.056	3.051	0.005	0.975	3054625		4.82(0.90-1.10)		15181	
D 17 13C4 PFOS										
503.00 > 80.00	3.158	3.154	0.004		11698869	47.0		98.4	213082	

QC Flag Legend

Review Flags
M - Manually Integrated

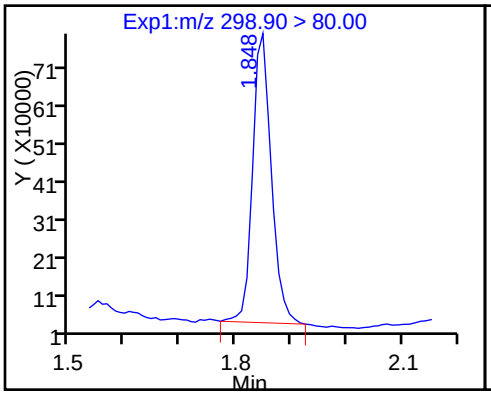
Report Date: 29-Dec-2016 09:53:56 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

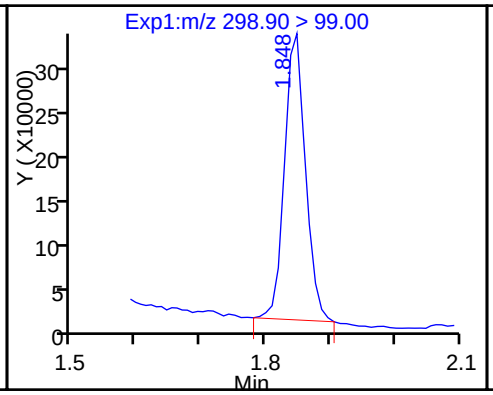
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_047.d

Injection Date:	27-Dec-2016 22:35:11	Instrument ID:	A8_N		
Lims ID:	320-24060-A-9-A	Lab Sample ID:	320-24060-9		
Client ID:	SW-16-02-SW-DUP				
Operator ID:	A8-PC\A8	ALS Bottle#:	34	Worklist Smp#:	47
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

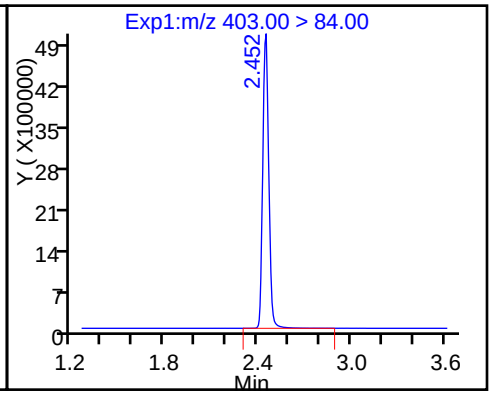
5 Perfluorobutanesulfonic acid



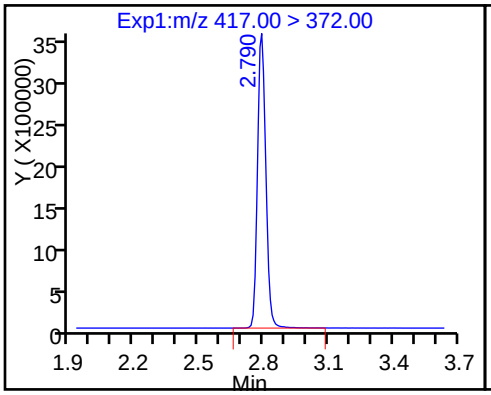
5 Perfluorobutanesulfonic acid



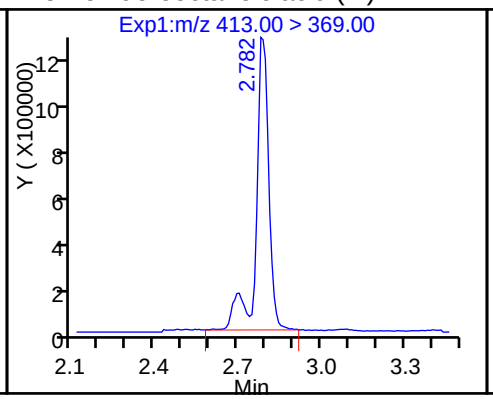
D 10 18O2 PFHxS



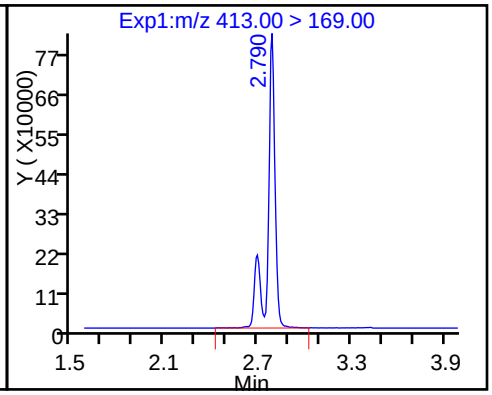
D 14 13C4 PFOA



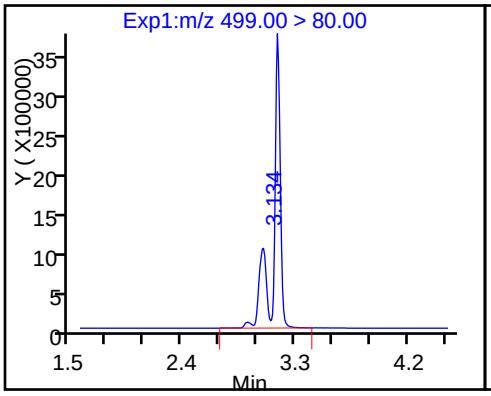
15 Perfluorooctanoic acid (M)



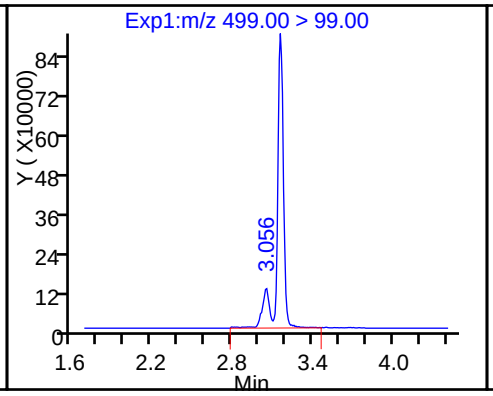
15 Perfluorooctanoic acid



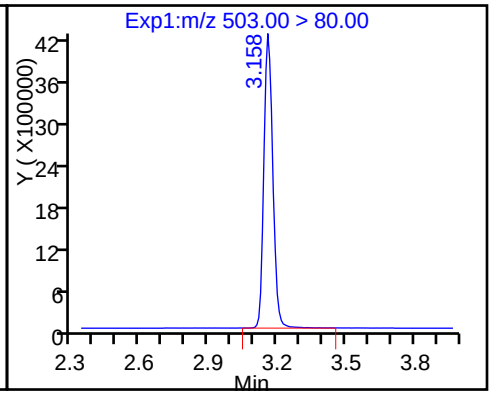
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

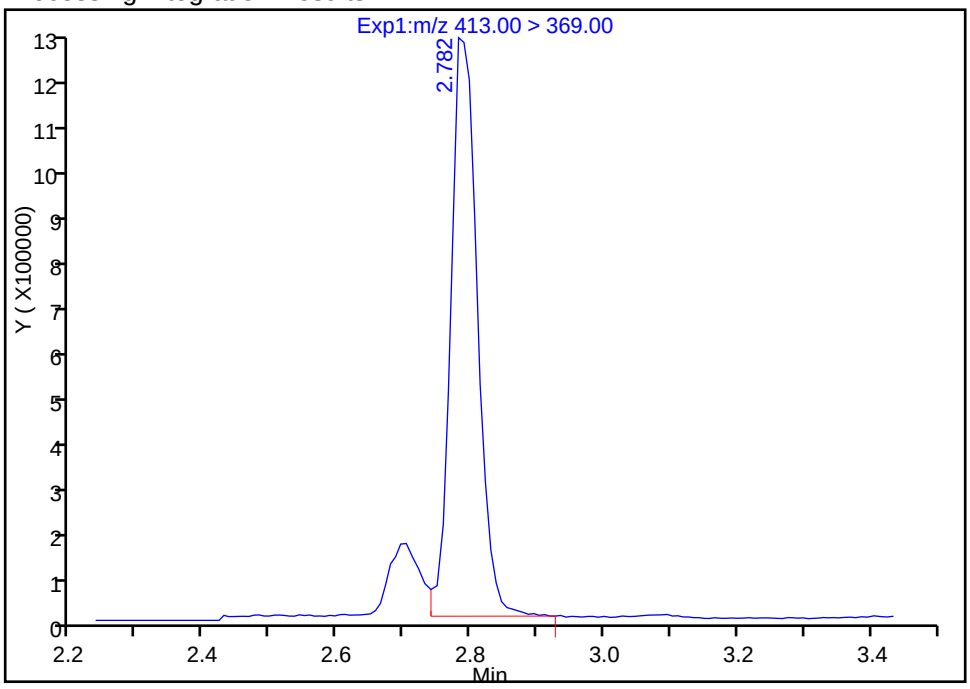
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_047.d				
Injection Date:	27-Dec-2016 22:35:11	Instrument ID:	A8_N		
Lims ID:	320-24060-A-9-A	Lab Sample ID:	320-24060-9		
Client ID:	SW-16-02-SW-DUP				
Operator ID:	A8-PC\A8	ALS Bottle#:	34	Worklist Smp#:	47
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

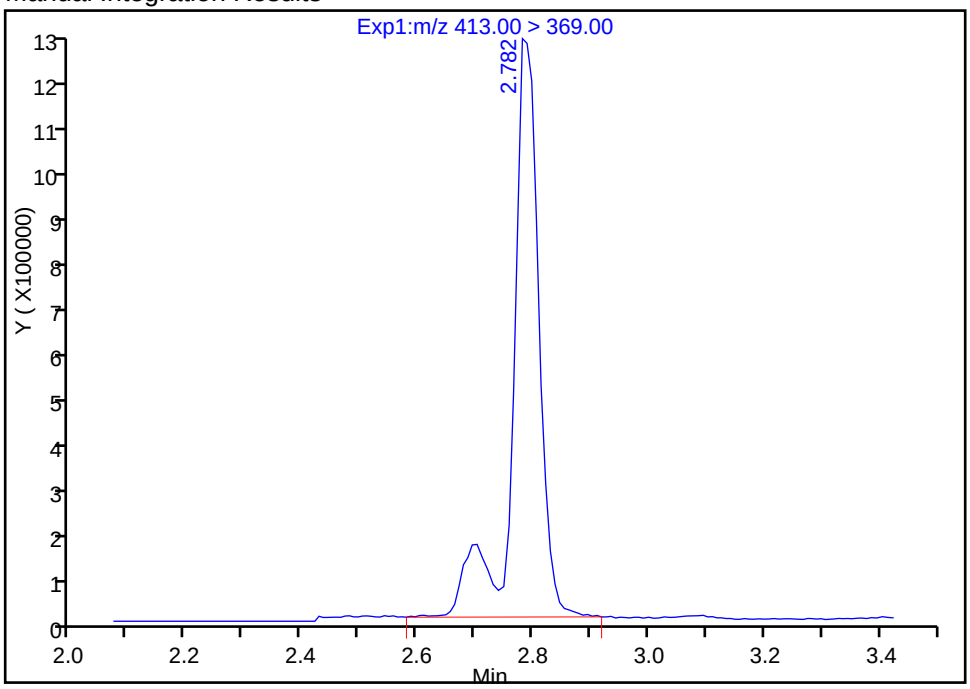
Processing Integration Results

RT: 2.78
Area: 3372343
Amount: 17.735032
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 3868199
Amount: 20.342721
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:46:35

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-14-GW-19-23 | Lab Sample ID: 320-24060-10

Matrix: Water | Lab File ID: 27DEC2016A_048.d

Analysis Method: 537 (Modified) | Date Collected: 12/05/2016 12:45

Extraction Method: 3535 | Date Extracted: 12/17/2016 13:28

Sample wt/vol: 256.3(mL) | Date Analyzed: 12/27/2016 22:42

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.78*	*E M*	*0.0024*	0.0020	*0.00073*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.35*	*E*	*0.0024*	0.0020	*0.00090*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*4.1*	*E*	*0.0039*	0.0029	*0.0012*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	61		25-150
STL00994	18O2 PFHxS	30		25-150
STL00991	13C4 PFOS	34		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_048.d
Lims ID: 320-24060-A-10-A
Client ID: DPT-16-14-GW-19-23
Sample Type: Client
Inject. Date: 27-Dec-2016 22:42:41 ALS Bottle#: 35 Worklist Smp#: 48
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:48:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.848	1.842	0.006	1.000	25234159	180.1				E
298.90 > 99.00	1.848	1.842	0.006	1.000	11772923		2.14(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.457	2.441	0.016		4676741	14.3		30.2	102786	
D 14 13C4 PFOA										
417.00 > 372.00	2.794	2.785	0.009		7012345	30.4		60.9	488109	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.794	2.785	0.009	1.000	56307861	400.2			287298	EM
413.00 > 169.00	2.794	2.785	0.009	1.000	46282467		1.22(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.138	3.051	0.087	1.000	176145589	2099.9			129300	E
499.00 > 99.00	3.162	3.051	0.111	1.008	56845996		3.10(0.90-1.10)		675027	
D 17 13C4 PFOS										
503.00 > 80.00	3.162	3.154	0.008		4032028	16.2		33.9	62459	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

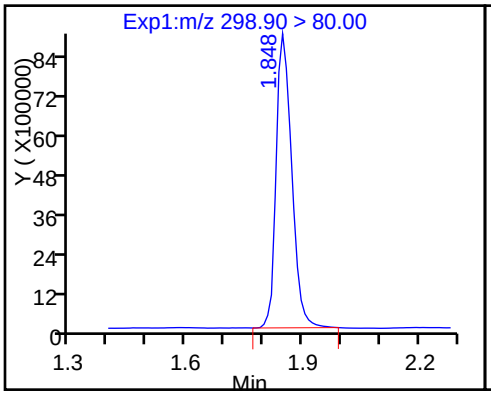
Report Date: 29-Dec-2016 09:53:58 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

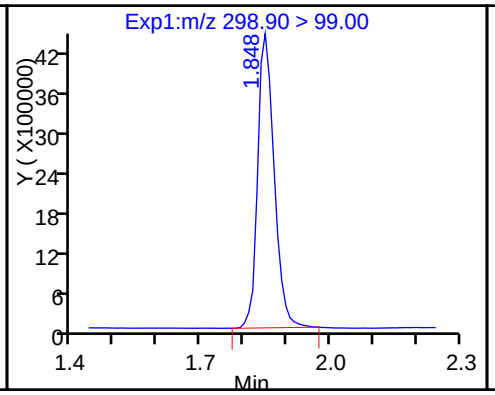
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_048.d

Injection Date:	27-Dec-2016 22:42:41	Instrument ID:	A8_N		
Lims ID:	320-24060-A-10-A	Lab Sample ID:	320-24060-10		
Client ID:	DPT-16-14-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	35	Worklist Smp#:	48
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

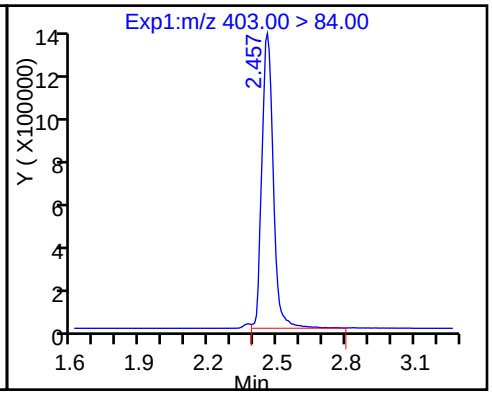
5 Perfluorobutanesulfonic acid



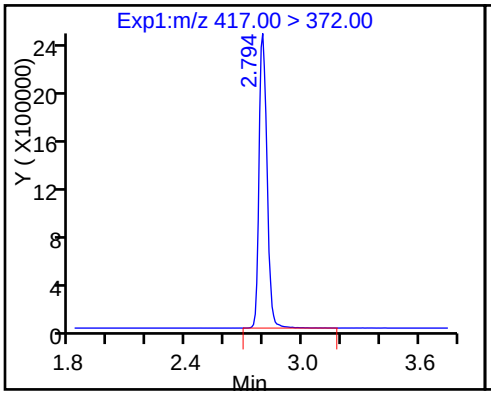
5 Perfluorobutanesulfonic acid



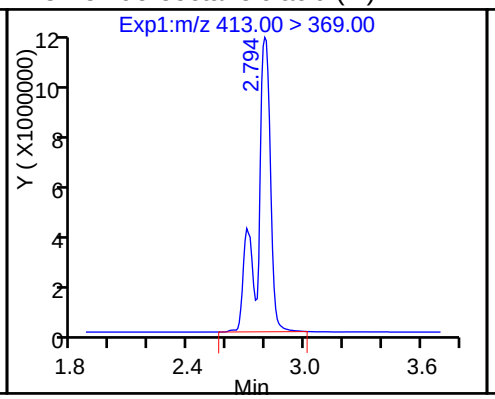
D 10 18O2 PFHxS



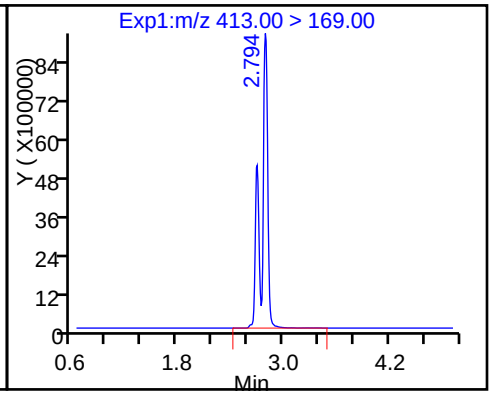
D 14 13C4 PFOA



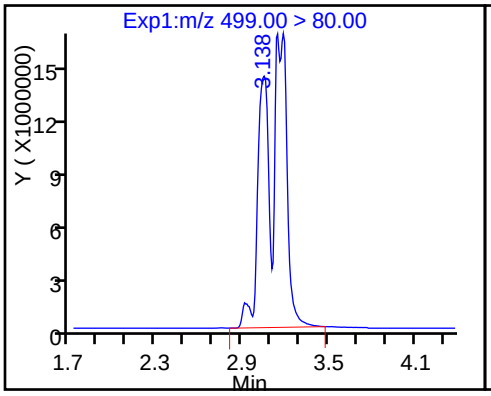
15 Perfluorooctanoic acid (M)



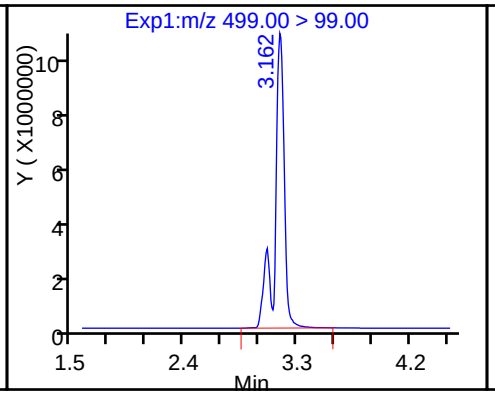
15 Perfluorooctanoic acid



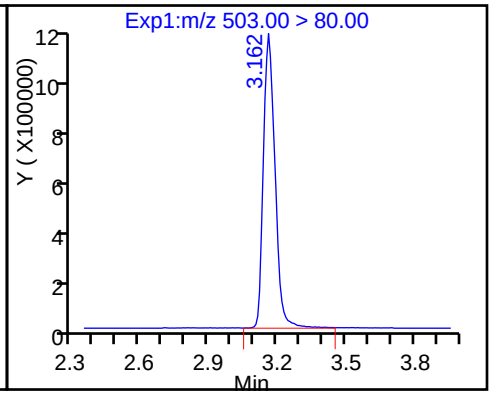
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

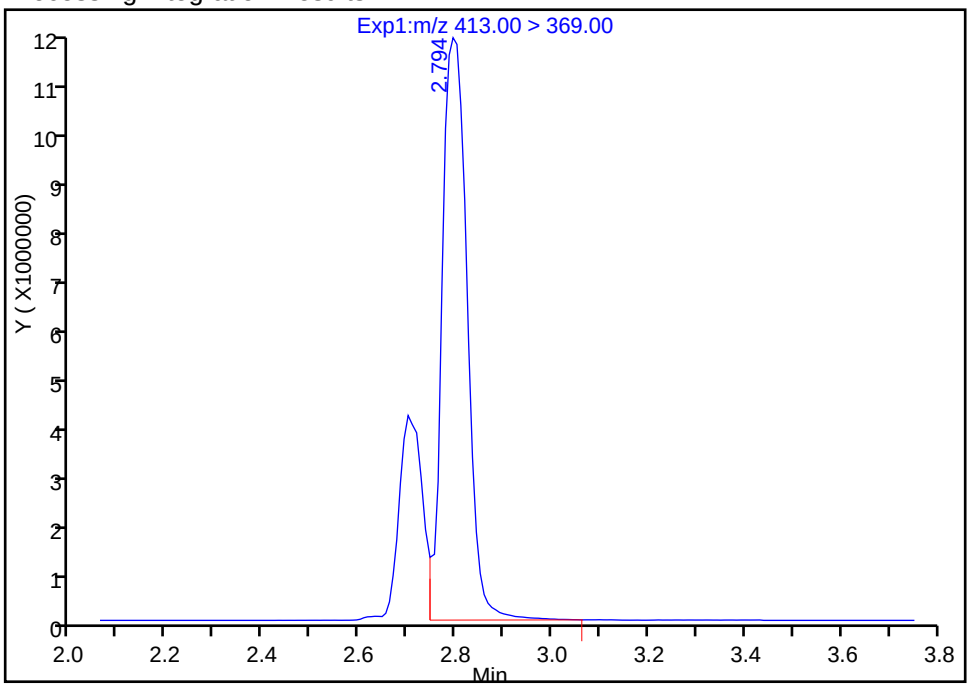
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_048.d				
Injection Date:	27-Dec-2016 22:42:41	Instrument ID:	A8_N		
Lims ID:	320-24060-A-10-A	Lab Sample ID:	320-24060-10		
Client ID:	DPT-16-14-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	35	Worklist Smp#:	48
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

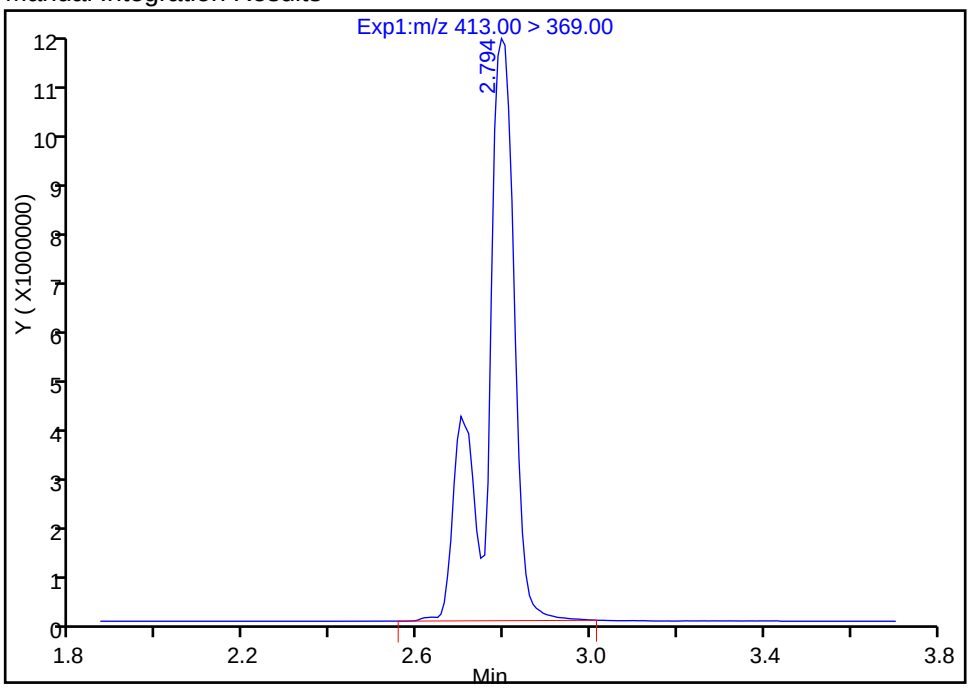
Processing Integration Results

RT: 2.79
Area: 42572934
Amount: 302.6058
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 56307861
Amount: 400.2329
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:48:33

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-14-GW-19-23 DL Lab Sample ID: 320-24060-10 DL

Matrix: Water Lab File ID: 29DEC2016C_004.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 12:45

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 256.3(mL) Date Analyzed: 12/29/2016 13:49

Con. Extract Vol.: 0.5(mL) Dilution Factor: 50

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.0	D	0.12	0.098	0.036
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.15	D	0.12	0.098	0.045
1763-23-1	Perfluorooctane Sulfonate (PFOS)	6.4	D	0.20	0.15	0.062

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	103		25-150
STL00994	18O2 PFHxS	106		25-150
STL00991	13C4 PFOS	87		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_004.d
Lims ID: 320-24060-A-10-A
Client ID: DPT-16-14-GW-19-23
Sample Type: Client
Inject. Date: 29-Dec-2016 13:49:38 ALS Bottle#: 18 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 50.0000
Sample Info: 320-24060-a-10-a 50X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 03-Jan-2017 08:02:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.850	1.848	0.002	1.000	777649	1.59				
298.90 > 99.00	1.850	1.848	0.002	1.000	330425		2.35(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.446	2.443	0.003		327013	1.00		2.1	65514	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.759	2.781	-0.022	1.000	2421462	10.2			4403	
413.00 > 169.00	2.689	2.781	-0.092	0.975	1586624		1.53(0.90-1.10)		14692	
D 14 13C4 PFOA										
417.00 > 372.00	2.790	2.789	0.001		236367	1.03		2.1	46561	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.047	3.157	-0.110	1.000	14031731	65.5			75490	
499.00 > 99.00	3.159	3.157	0.002	1.037	3124588		4.49(0.90-1.10)		177955	
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.157	-0.006		206044	0.8280		1.7	14694	

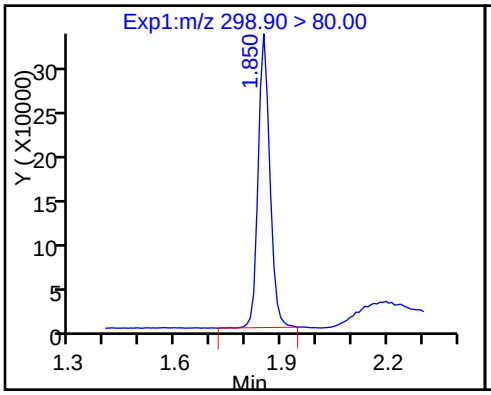
Report Date: 03-Jan-2017 08:08:38 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

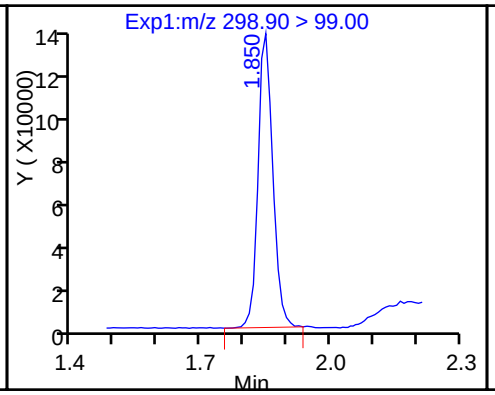
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_004.d

Injection Date:	29-Dec-2016 13:49:38	Instrument ID:	A8_N		
Lims ID:	320-24060-A-10-A	Lab Sample ID:	320-24060-10		
Client ID:	DPT-16-14-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	18	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	50.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

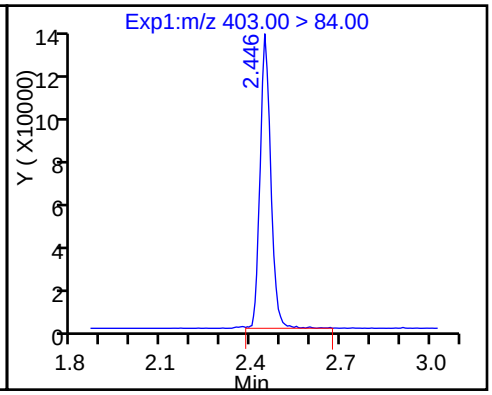
5 Perfluorobutanesulfonic acid



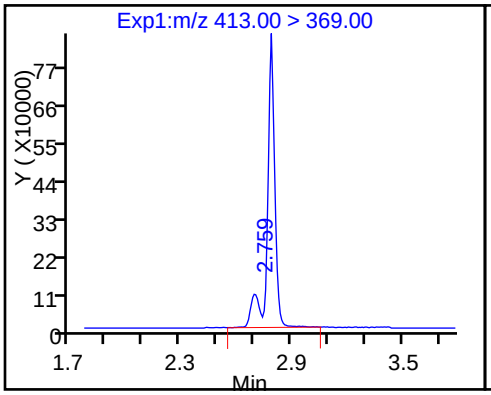
5 Perfluorobutanesulfonic acid



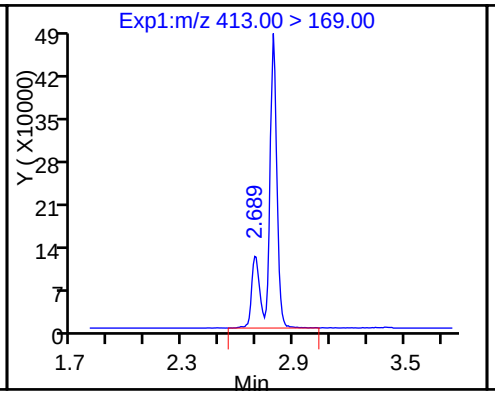
D 10 18O2 PFHxS



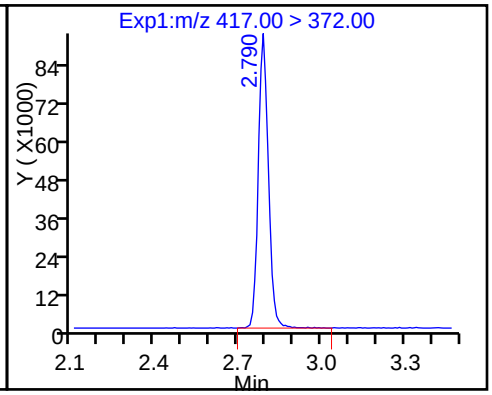
15 Perfluorooctanoic acid



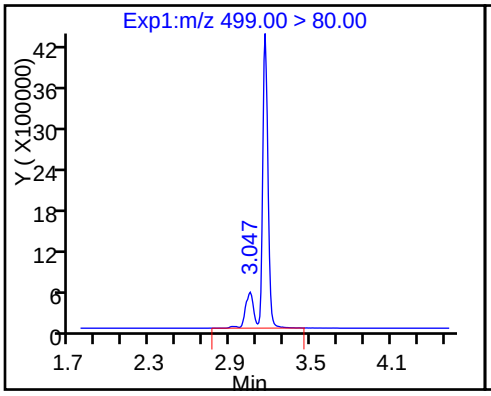
15 Perfluorooctanoic acid



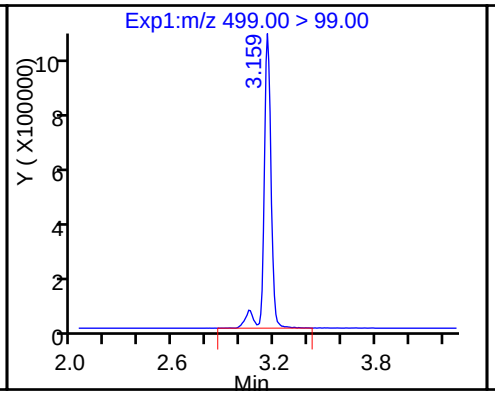
D 14 13C4 PFOA



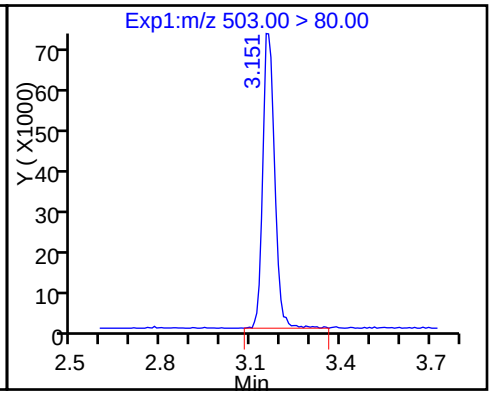
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-12-GW-31-35 Lab Sample ID: 320-24060-11

Matrix: Water Lab File ID: 27DEC2016A_049.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 13:35

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 250.4(mL) Date Analyzed: 12/27/2016 22:50

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.24	M	0.0025	0.0020	0.00075
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.0020	0.00092
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.63*	*E*	*0.0040*	0.0030	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	64		25-150
STL00994	18O2 PFHxS	69		25-150
STL00991	13C4 PFOS	81		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_049.d
Lims ID: 320-24060-A-11-A
Client ID: DPT-16-12-GW-31-35
Sample Type: Client
Inject. Date: 27-Dec-2016 22:50:10 ALS Bottle#: 36 Worklist Smp#: 49
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-11-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:49:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.842	0.006	1.000	9543400	30.1				
298.90 > 99.00	1.848	1.842	0.006	1.000	4126397		2.31(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.451	2.441	0.010		10600535	32.4		68.5	493051	
D 14 13C4 PFOA										
417.00 > 372.00	2.796	2.785	0.011		7415314	32.2		64.4	390978	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.796	2.785	0.011	1.000	17606989	118.3			126593	M
413.00 > 169.00	2.796	2.785	0.011	1.000	11890462		1.48(0.90-1.10)		363277	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.054	3.051	0.003	1.000	63467403	315.1			261815	E
499.00 > 99.00	3.164	3.051	0.113	1.036	16274561		3.90(0.90-1.10)		411165	
D 17 13C4 PFOS										
503.00 > 80.00	3.164	3.154	0.010		9682450	38.9		81.4	277922	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

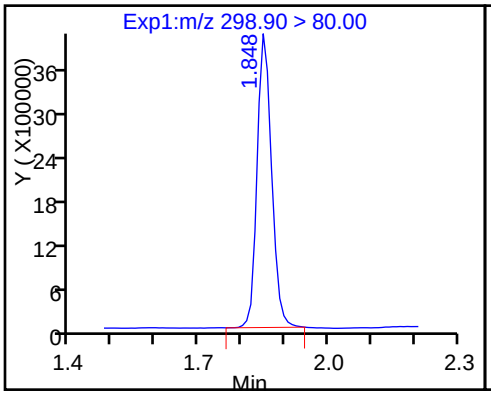
Report Date: 29-Dec-2016 09:53:59 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

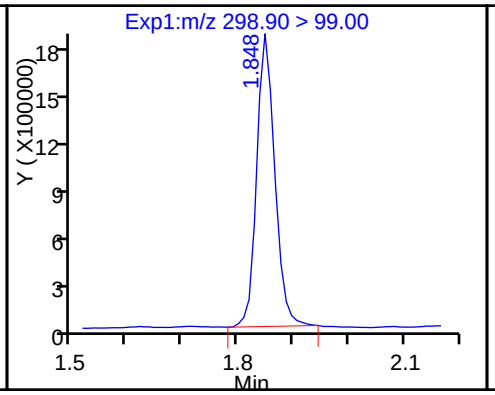
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_049.d

Injection Date:	27-Dec-2016 22:50:10	Instrument ID:	A8_N		
Lims ID:	320-24060-A-11-A	Lab Sample ID:	320-24060-11		
Client ID:	DPT-16-12-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	36	Worklist Smp#:	49
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

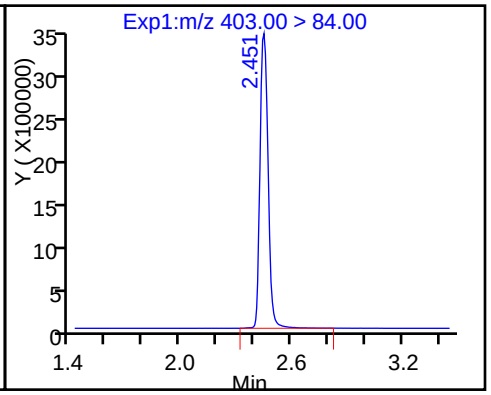
5 Perfluorobutanesulfonic acid



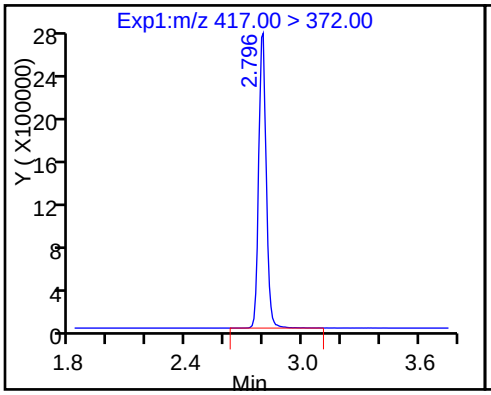
5 Perfluorobutanesulfonic acid



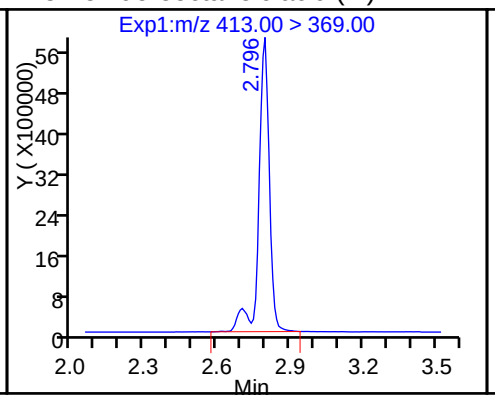
D 10 18O2 PFHxS



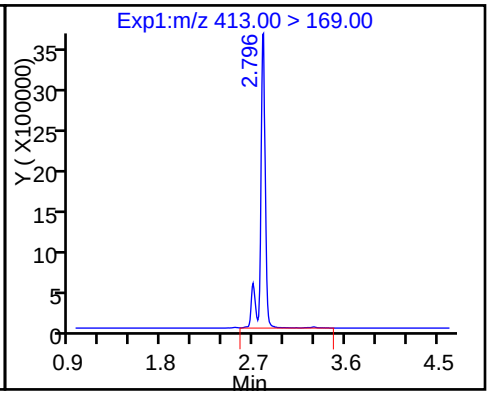
D 14 13C4 PFOA



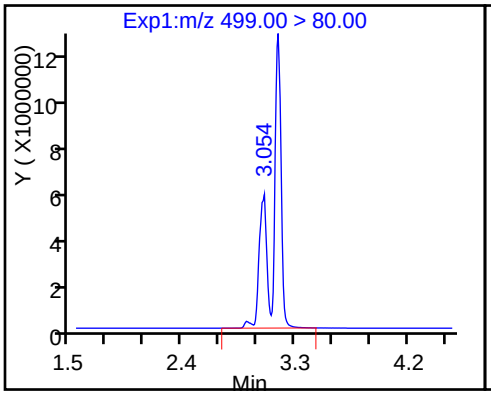
15 Perfluorooctanoic acid (M)



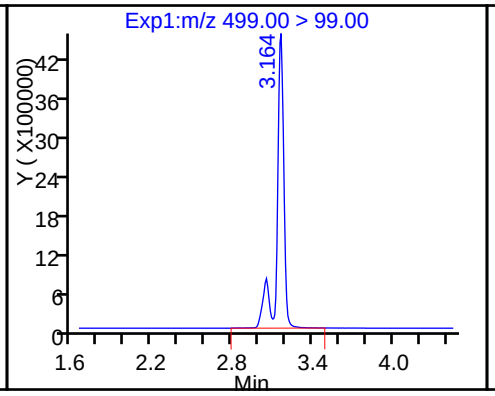
15 Perfluorooctanoic acid



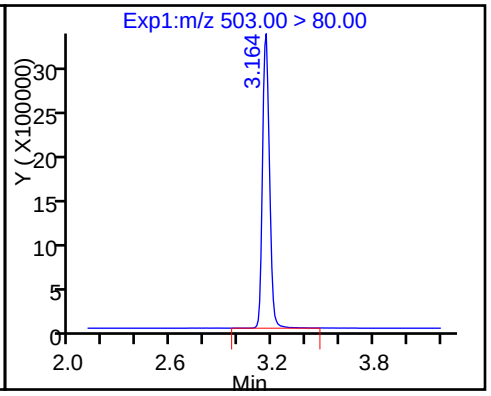
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

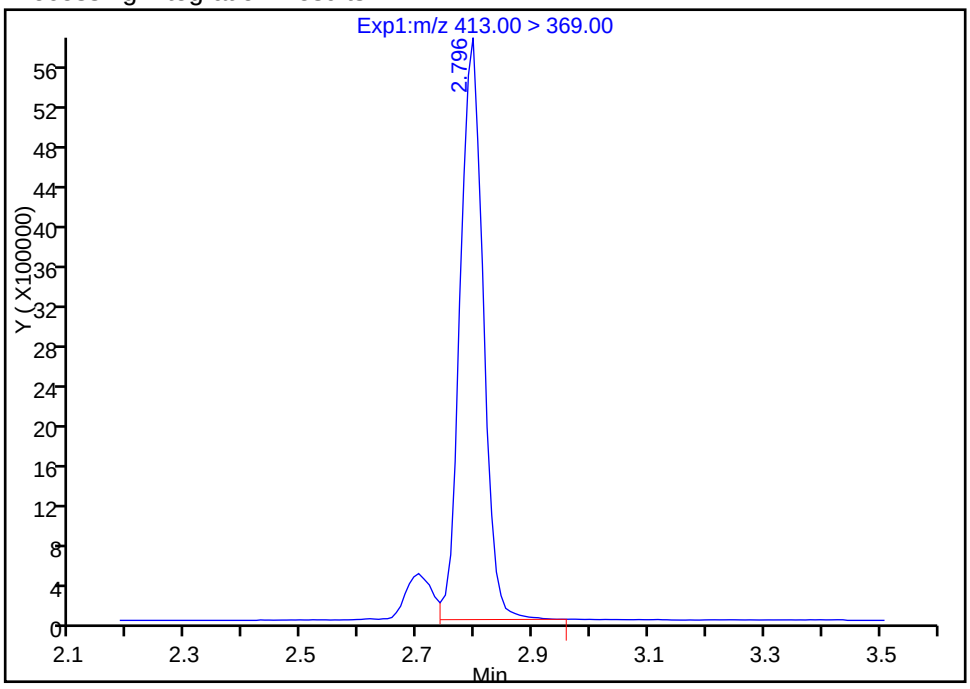
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_049.d				
Injection Date:	27-Dec-2016 22:50:10	Instrument ID:	A8_N		
Lims ID:	320-24060-A-11-A	Lab Sample ID:	320-24060-11		
Client ID:	DPT-16-12-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	36	Worklist Smp#:	49
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

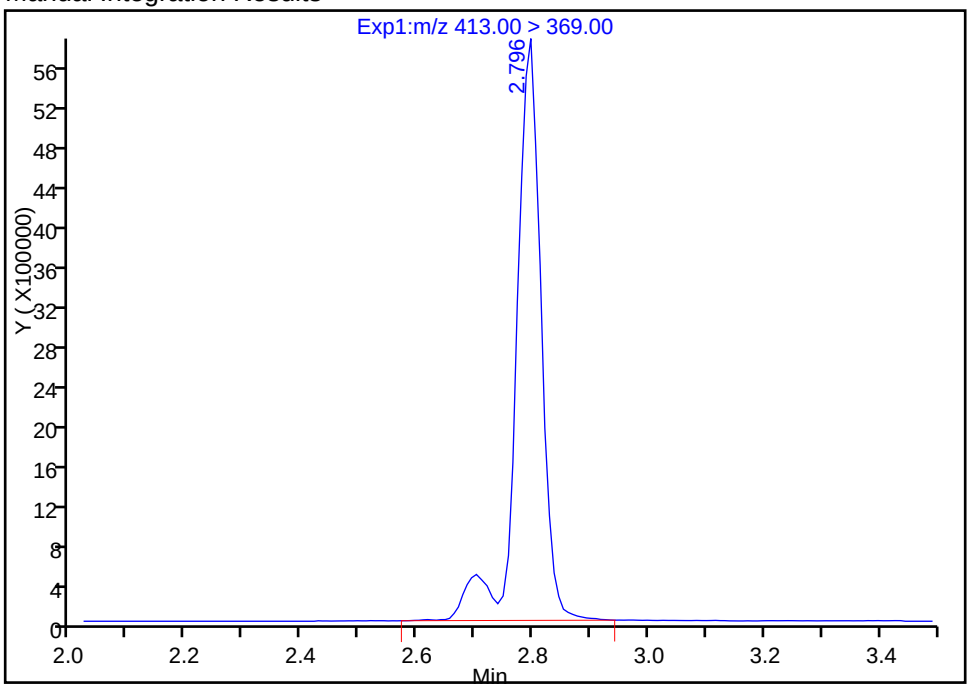
Processing Integration Results

RT: 2.80
Area: 16159330
Amount: 108.6178
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 17606989
Amount: 118.3484
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:49:50

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-12-GW-31-35 DL | Lab Sample ID: 320-24060-11 DL

Matrix: Water | Lab File ID: 29DEC2016C_012.d

Analysis Method: 537 (Modified) | Date Collected: 12/05/2016 13:35

Extraction Method: 3535 | Date Extracted: 12/17/2016 13:28

Sample wt/vol: 250.4(mL) | Date Analyzed: 12/29/2016 14:49

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 10

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.25*	*D*	*0.025*	0.020	*0.0075*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.044*	*D*	*0.025*	0.020	*0.0092*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.69	D	0.040	0.030	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	82		25-150
STL00994	18O2 PFHxS	109		25-150
STL00991	13C4 PFOS	100		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_012.d
Lims ID: 320-24060-A-11-A
Client ID: DPT-16-12-GW-31-35
Sample Type: Client
Inject. Date: 29-Dec-2016 14:49:37 ALS Bottle#: 26 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-11-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.848	-0.009	1.000	1106965	2.20				
298.90 > 99.00	1.839	1.848	-0.009	1.000	458295		2.42(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.438	2.443	-0.005		1680348	5.14		10.9	153756	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.781	2.781	0.0	1.000	2382272	12.6			40903	
413.00 > 169.00	2.673	2.781	-0.108	0.961	1490974		1.60(0.90-1.10)		5200	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.789	-0.008		946025	4.11		8.2	70055	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.142	3.157	-0.015	1.000	8545757	34.7			207892	
499.00 > 99.00	3.150	3.157	-0.007	1.003	1925030		4.44(0.90-1.10)		121320	
D 17 13C4 PFOS										
503.00 > 80.00	3.142	3.157	-0.015		1184915	4.76		10.0	43761	

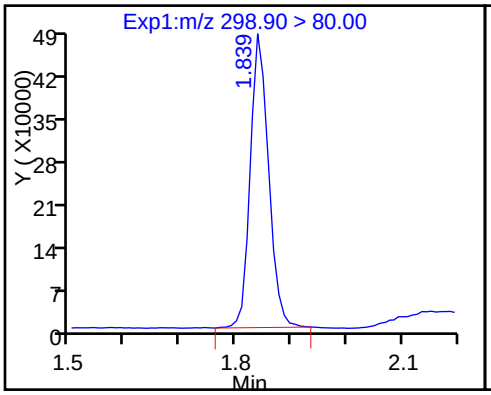
Report Date: 03-Jan-2017 08:08:48 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

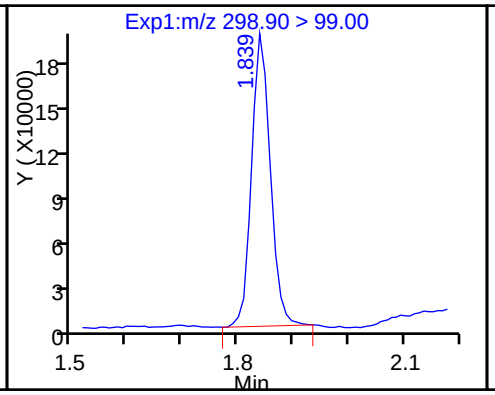
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_012.d

Injection Date:	29-Dec-2016 14:49:37	Instrument ID:	A8_N		
Lims ID:	320-24060-A-11-A	Lab Sample ID:	320-24060-11		
Client ID:	DPT-16-12-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	26	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

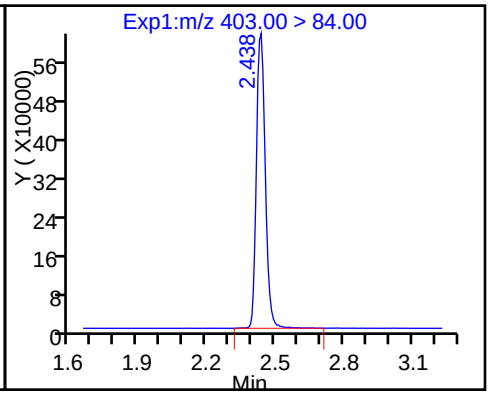
5 Perfluorobutanesulfonic acid



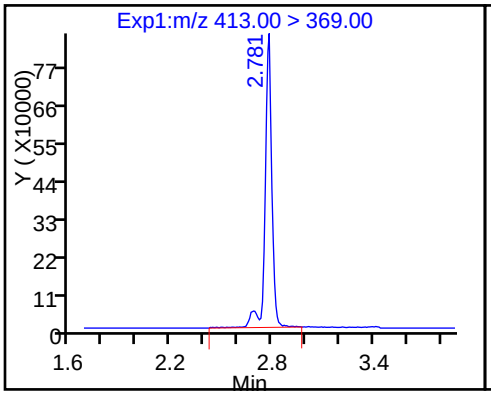
5 Perfluorobutanesulfonic acid



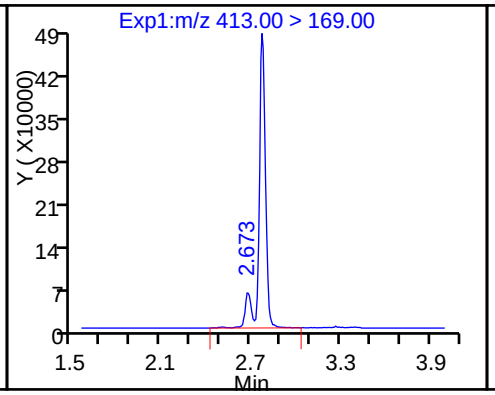
D 10 18O2 PFHxS



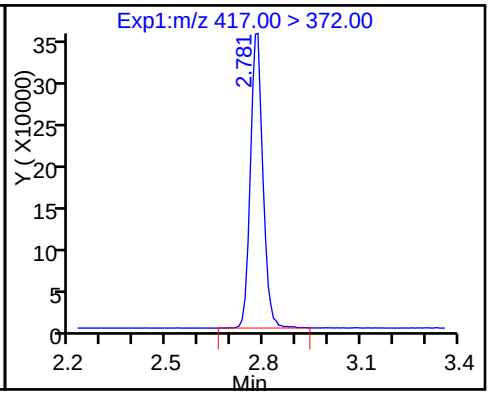
15 Perfluorooctanoic acid



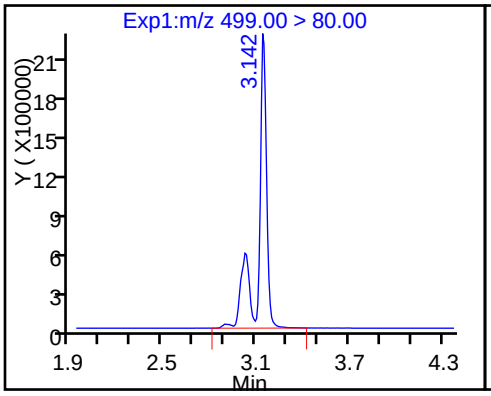
15 Perfluorooctanoic acid



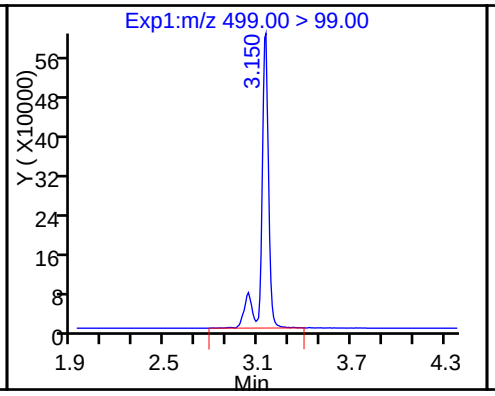
D 14 13C4 PFOA



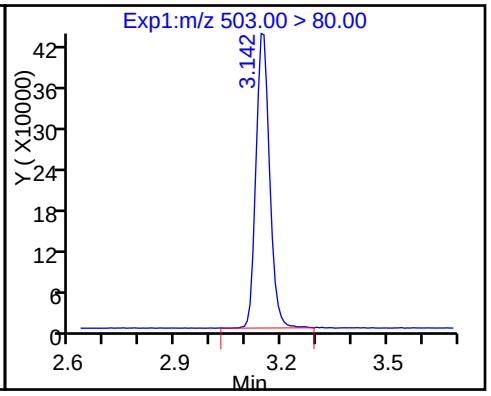
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-12-GW-19-23 | Lab Sample ID: 320-24060-12

Matrix: Water | Lab File ID: 27DEC2016A_050.d

Analysis Method: 537 (Modified) | Date Collected: 12/05/2016 13:50

Extraction Method: 3535 | Date Extracted: 12/17/2016 13:28

Sample wt/vol: 258.8(mL) | Date Analyzed: 12/27/2016 22:57

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*1.1*	*E M*	*0.0024*	0.0019	*0.00072*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.41*	*E*	*0.0024*	0.0019	*0.00089*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*3.3*	*E*	*0.0039*	0.0029	*0.0012*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	49		25-150
STL00994	18O2 PFHxS	31		25-150
STL00991	13C4 PFOS	48		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_050.d
Lims ID: 320-24060-A-12-A
Client ID: DPT-16-12-GW-19-23
Sample Type: Client
Inject. Date: 27-Dec-2016 22:57:39 ALS Bottle#: 37 Worklist Smp#: 50
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-12-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:50:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.839	1.842	-0.003	1.000	30141641	209.8				E
298.90 > 99.00	1.839	1.842	-0.003	1.000	14849407		2.03(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.448	2.441	0.007		4796977	14.7		31.0	84322	
D 14 13C4 PFOA										
417.00 > 372.00	2.793	2.785	0.008		5587786	24.3		48.5	265328	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.785	2.785	0.0	1.000	65867619	587.5			253925	EM
413.00 > 169.00	2.692	2.785	-0.093	0.966	53108379		1.24(0.90-1.10)		148222	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.042	3.051	-0.009	1.000	201597702	1712.8			373250	E
499.00 > 99.00	3.130	3.051	0.079	1.029	53111457		3.80(0.90-1.10)		407729	
D 17 13C4 PFOS										
503.00 > 80.00	3.154	3.154	0.0		5657379	22.7		47.6	102096	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

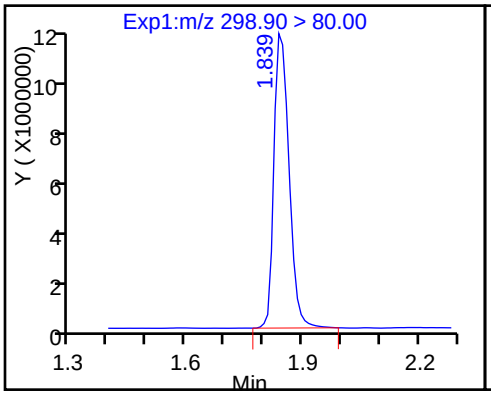
Report Date: 29-Dec-2016 09:54:00 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

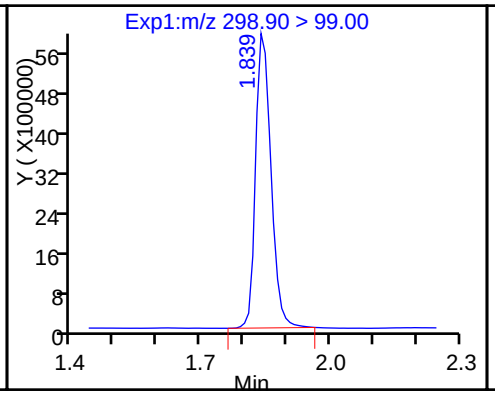
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_050.d

Injection Date:	27-Dec-2016 22:57:39	Instrument ID:	A8_N		
Lims ID:	320-24060-A-12-A	Lab Sample ID:	320-24060-12		
Client ID:	DPT-16-12-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	37	Worklist Smp#:	50
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

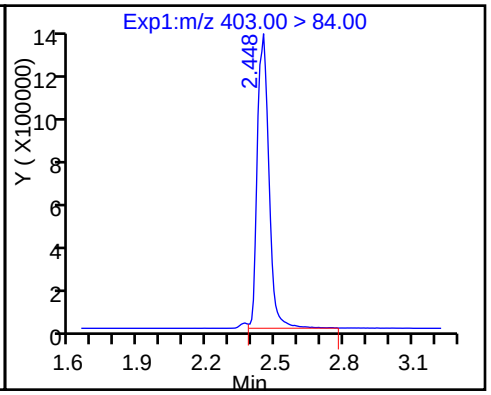
5 Perfluorobutanesulfonic acid



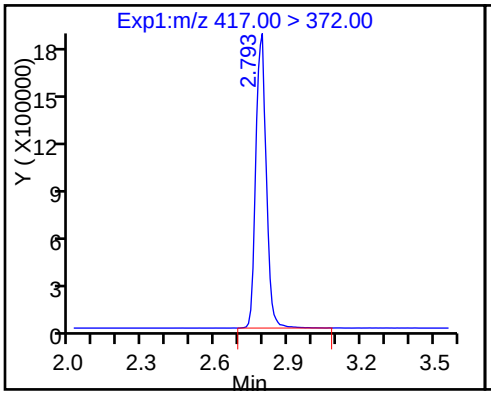
5 Perfluorobutanesulfonic acid



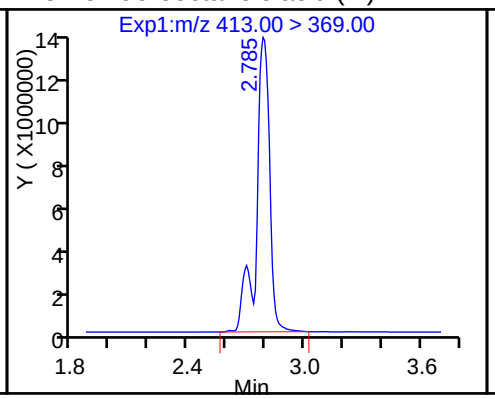
D 10 18O2 PFHxS



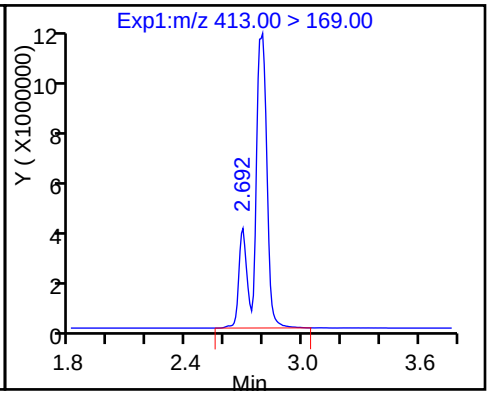
D 14 13C4 PFOA



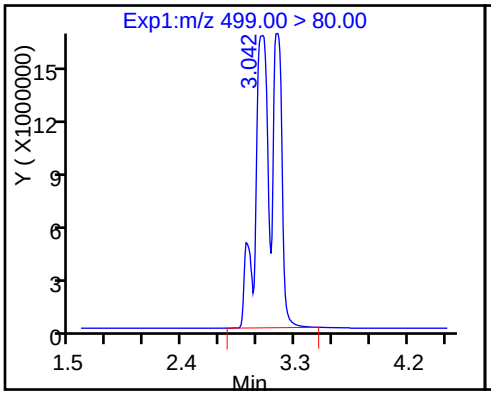
15 Perfluorooctanoic acid (M)



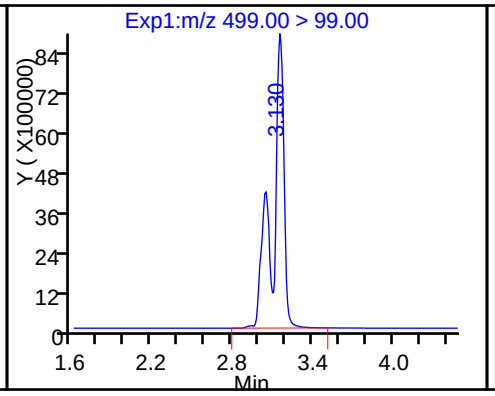
15 Perfluorooctanoic acid



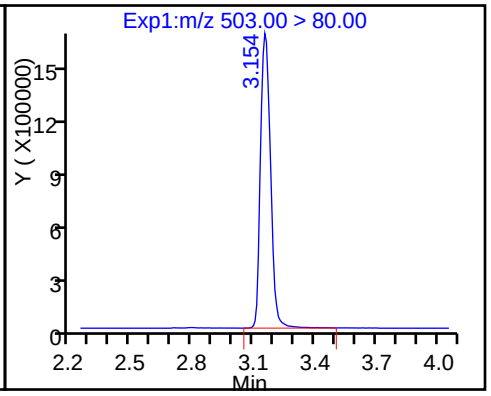
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

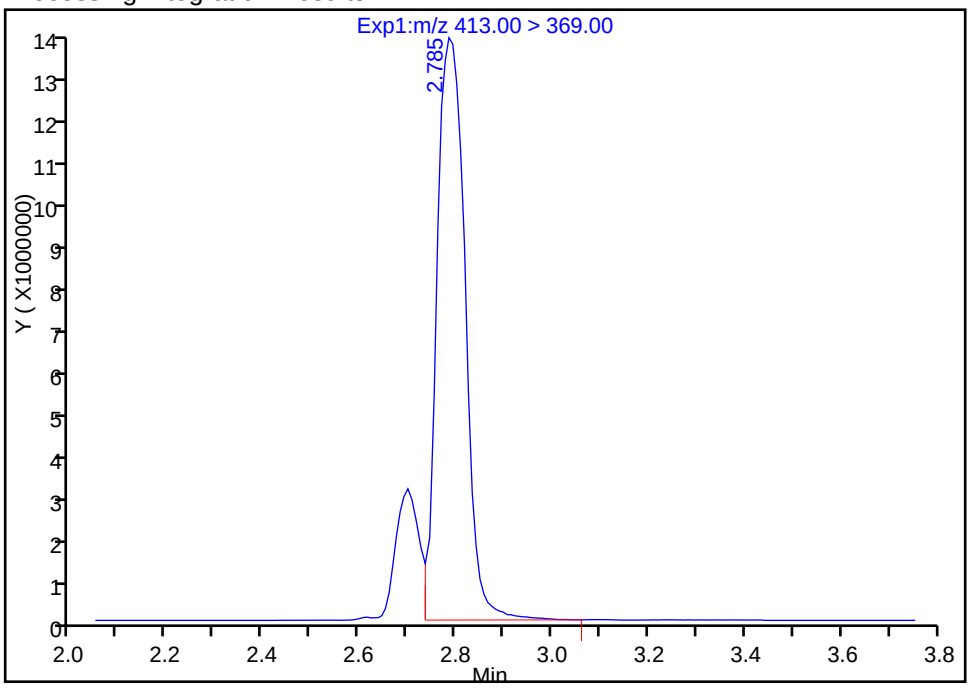
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_050.d				
Injection Date:	27-Dec-2016 22:57:39	Instrument ID:	A8_N		
Lims ID:	320-24060-A-12-A	Lab Sample ID:	320-24060-12		
Client ID:	DPT-16-12-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	37	Worklist Smp#:	50
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

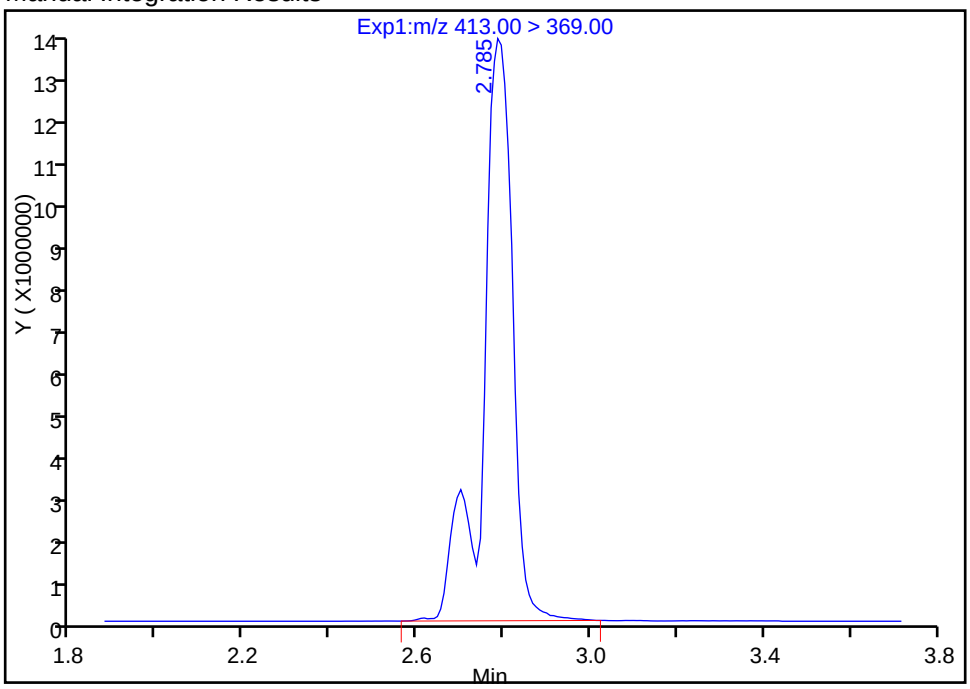
Processing Integration Results

RT: 2.79
Area: 55583240
Amount: 495.8052
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 65867619
Amount: 587.5424
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:50:44

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-12-GW-19-23 DL Lab Sample ID: 320-24060-12 DL

Matrix: Water Lab File ID: 29DEC2016C_006.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 13:50

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 258.8(mL) Date Analyzed: 12/29/2016 14:04

Con. Extract Vol.: 0.5(mL) Dilution Factor: 20

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.7	D	0.048	0.039	0.014
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.22	D	0.048	0.039	0.018
1763-23-1	Perfluorooctane Sulfonate (PFOS)	4.6	D	0.077	0.058	0.025

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	91		25-150
STL00994	18O2 PFHxS	92		25-150
STL00991	13C4 PFOS	91		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_006.d
Lims ID: 320-24060-A-12-A
Client ID: DPT-16-12-GW-19-23
Sample Type: Client
Inject. Date: 29-Dec-2016 14:04:39 ALS Bottle#: 20 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 20.0000
Sample Info: 320-24060-a-12-a 20X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.848	0.0	1.000	2370193	5.58				
298.90 > 99.00	1.839	1.848	-0.009	0.995	983364		2.41(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.435	2.443	-0.008		708585	2.17		4.6	63400	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.781	2.781	0.0	1.000	9365646	44.5			149722	
413.00 > 169.00	2.788	2.781	0.007	1.003	5885041		1.59(0.90-1.10)		318905	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.789	-0.008		524575	2.28		4.6	68171	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.974	3.157	-0.183	1.000	26497062	118.3			18311	
499.00 > 99.00	3.148	3.157	-0.009	1.059	4908246		5.40(0.90-1.10)		137204	
D 17 13C4 PFOS										
503.00 > 80.00	3.148	3.157	-0.009		538369	2.16		4.5	33359	

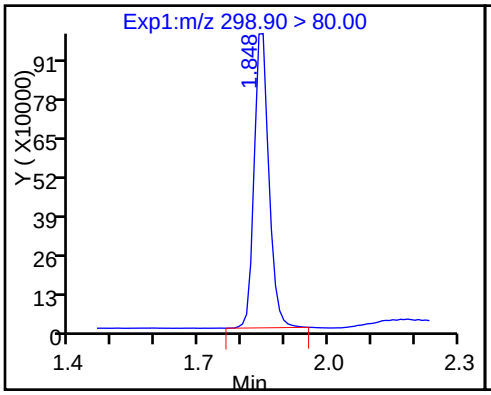
Report Date: 03-Jan-2017 08:08:40 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

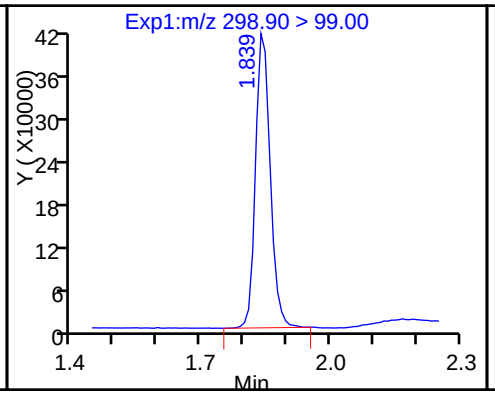
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_006.d

Injection Date:	29-Dec-2016 14:04:39	Instrument ID:	A8_N		
Lims ID:	320-24060-A-12-A	Lab Sample ID:	320-24060-12		
Client ID:	DPT-16-12-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	20	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	20.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

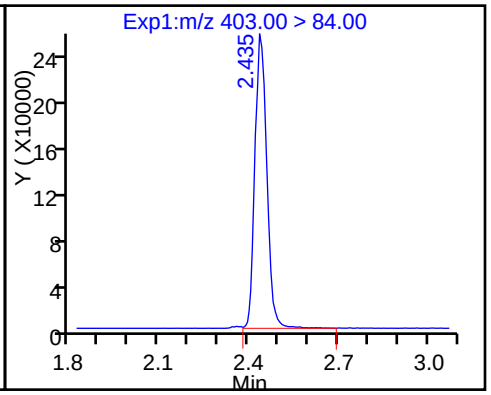
5 Perfluorobutanesulfonic acid



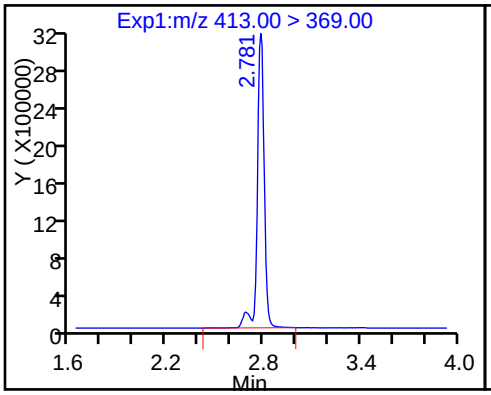
5 Perfluorobutanesulfonic acid



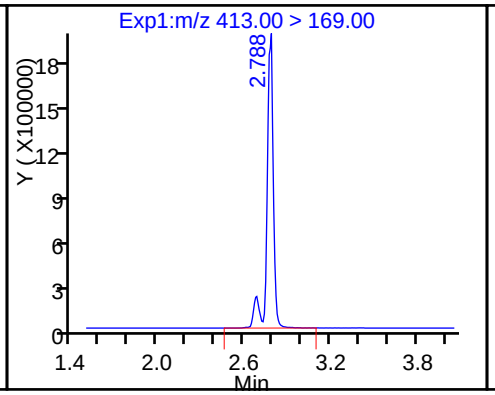
D 10 18O2 PFHxS



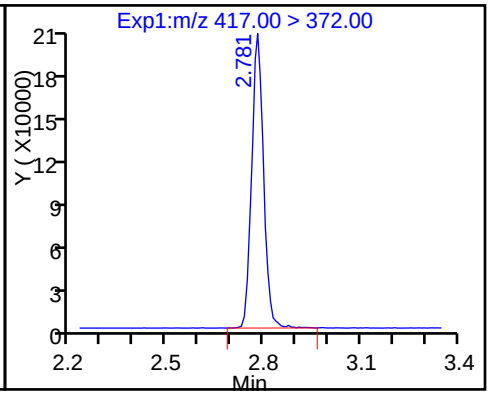
15 Perfluorooctanoic acid



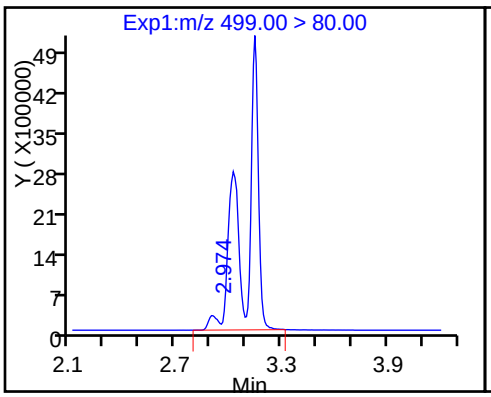
15 Perfluorooctanoic acid



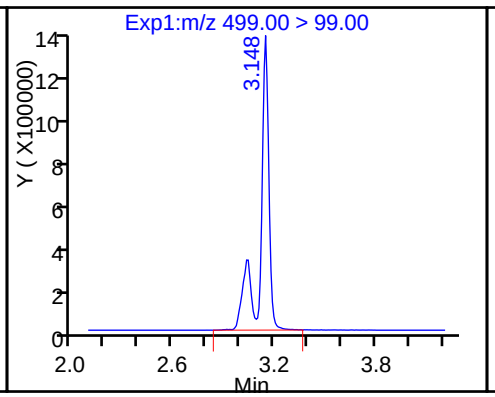
D 14 13C4 PFOA



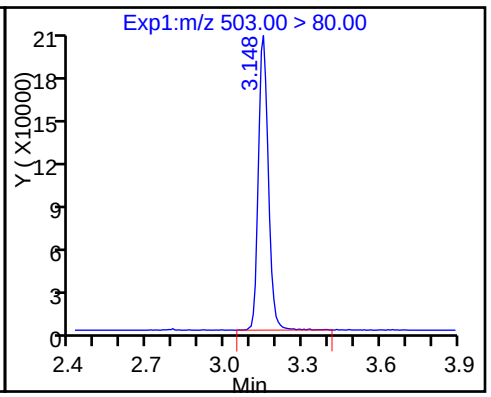
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-16-GW-31-35 Lab Sample ID: 320-24060-13

Matrix: Water Lab File ID: 27DEC2016A_051.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 14:40

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 244.2(mL) Date Analyzed: 12/27/2016 23:05

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*1.5*	*E M*	*0.0026*	0.0020	*0.00077*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.28		0.0026	0.0020	0.00094
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1.6*	*E*	*0.0041*	0.0031	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	48		25-150
STL00994	18O2 PFHxS	39		25-150
STL00991	13C4 PFOS	68		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_051.d
Lims ID: 320-24060-A-13-A
Client ID: DPT-16-16-GW-31-35
Sample Type: Client
Inject. Date: 27-Dec-2016 23:05:10 ALS Bottle#: 38 Worklist Smp#: 51
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-13-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:51:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.842	0.006	1.000	25099340	137.4				
298.90 > 99.00	1.848	1.842	0.006	1.000	11792506		2.13(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.446	2.441	0.005		6098101	18.7		39.4	102394	
D 14 13C4 PFOA										
417.00 > 372.00	2.782	2.785	-0.003		5576278	24.2		48.4	221190	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.790	2.785	0.005	1.000	83251548	744.1			265161	EM
413.00 > 169.00	2.790	2.785	0.005	1.000	70592107		1.18(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.047	3.051	-0.004	1.000	128498680	760.1			326958	E
499.00 > 99.00	3.047	3.051	-0.004	1.000	31369235		4.10(0.90-1.10)		169690	
D 17 13C4 PFOS										
503.00 > 80.00	3.159	3.154	0.005		8126363	32.7		68.3	134510	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

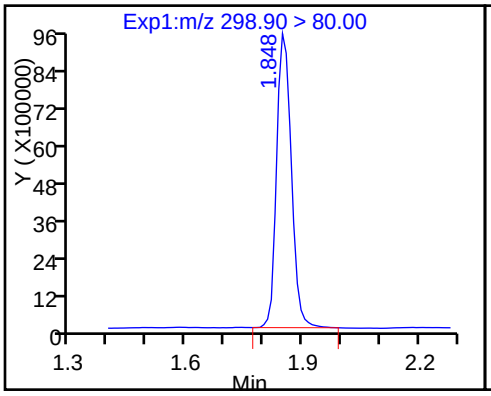
Report Date: 29-Dec-2016 09:54:01 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

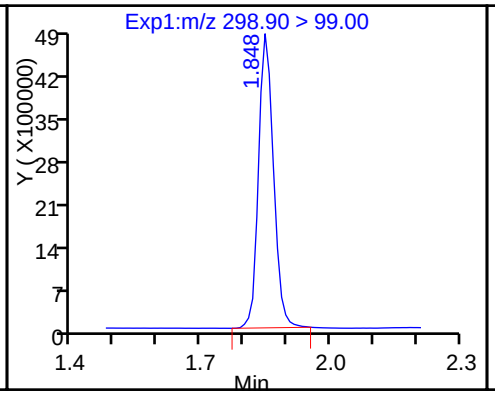
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_051.d

Injection Date:	27-Dec-2016 23:05:10	Instrument ID:	A8_N		
Lims ID:	320-24060-A-13-A	Lab Sample ID:	320-24060-13		
Client ID:	DPT-16-16-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	38	Worklist Smp#:	51
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

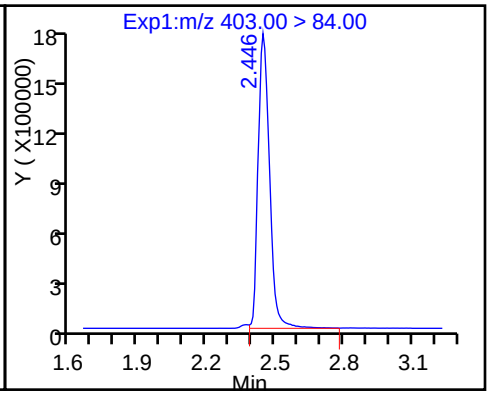
5 Perfluorobutanesulfonic acid



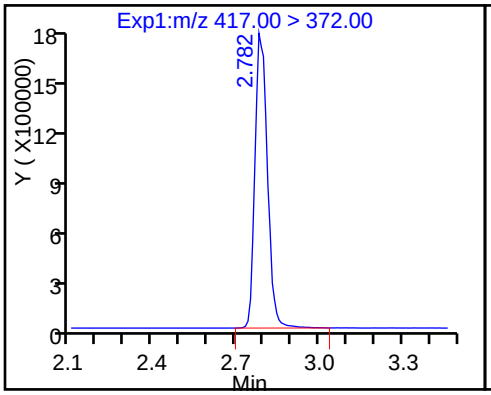
5 Perfluorobutanesulfonic acid



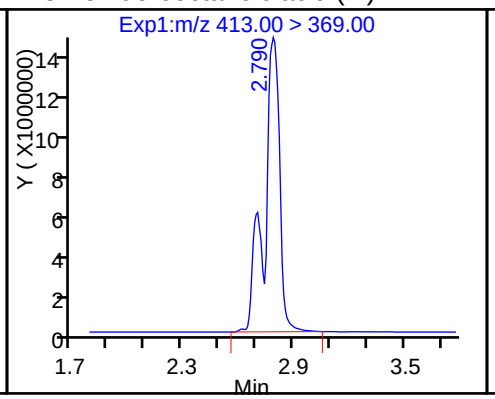
D 10 18O2 PFHxS



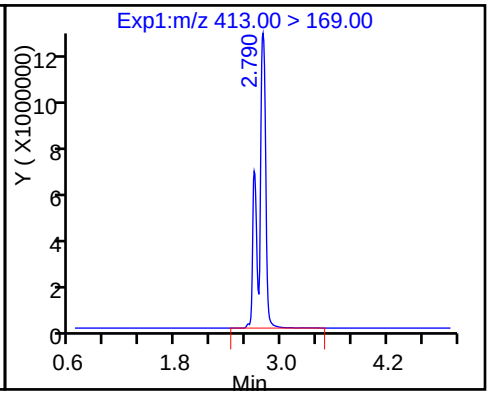
D 14 13C4 PFOA



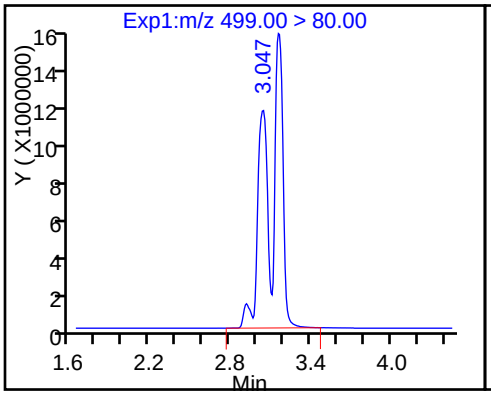
15 Perfluorooctanoic acid (M)



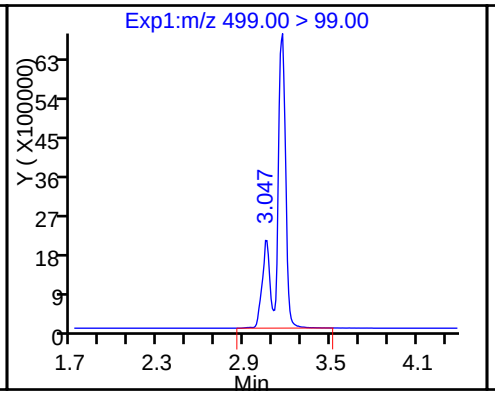
15 Perfluorooctanoic acid



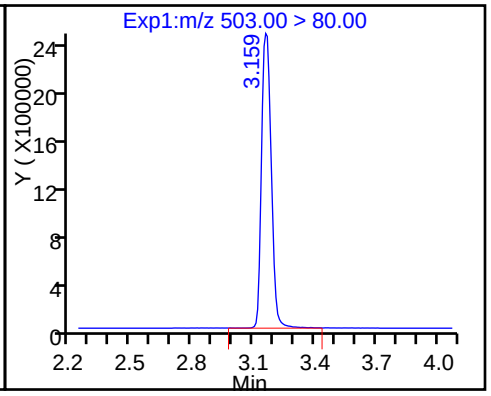
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

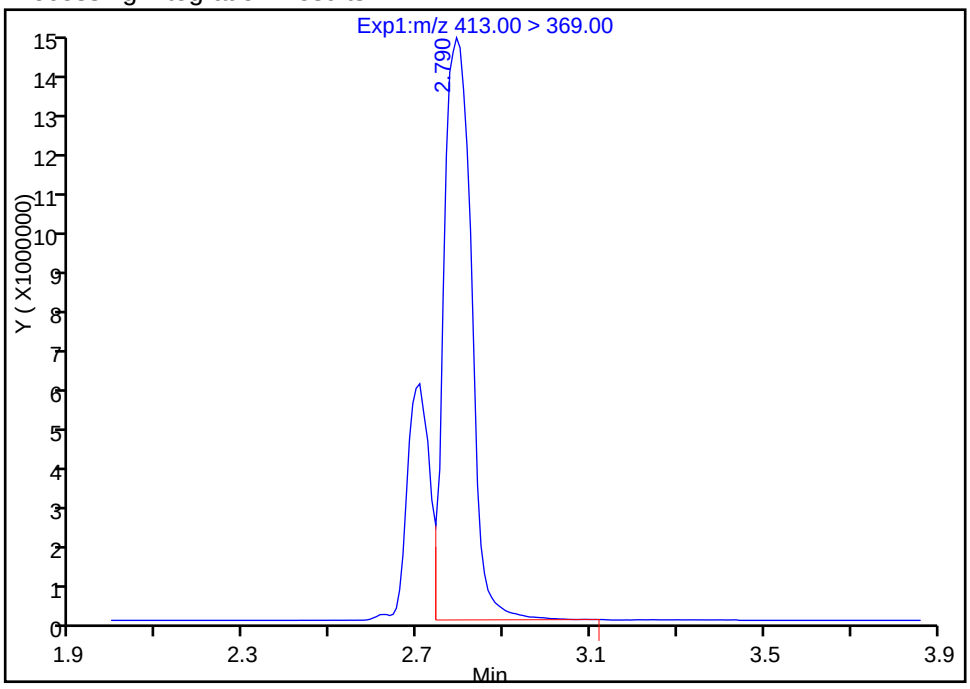
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_051.d				
Injection Date:	27-Dec-2016 23:05:10	Instrument ID:	A8_N		
Lims ID:	320-24060-A-13-A	Lab Sample ID:	320-24060-13		
Client ID:	DPT-16-16-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	38	Worklist Smp#:	51
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

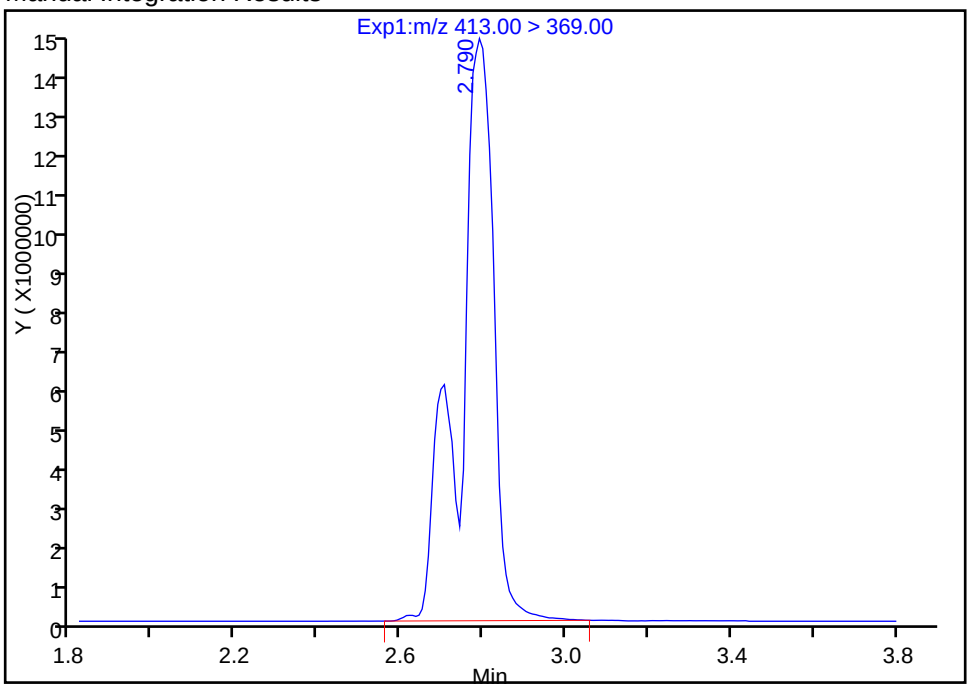
Processing Integration Results

RT: 2.79
Area: 62533907
Amount: 558.9567
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 83251548
Amount: 744.1404
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:51:20

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-16-GW-31-35 DL Lab Sample ID: 320-24060-13 DL

Matrix: Water Lab File ID: 29DEC2016C_015.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 14:40

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 244.2(mL) Date Analyzed: 12/29/2016 15:12

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.3	D	0.026	0.020	0.0077
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.16*	*D*	*0.026*	0.020	*0.0094*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.9	D	0.041	0.031	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	74		25-150
STL00994	18O2 PFHxS	88		25-150
STL00991	13C4 PFOS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_015.d
Lims ID: 320-24060-A-13-A
Client ID: DPT-16-16-GW-31-35
Sample Type: Client
Inject. Date: 29-Dec-2016 15:12:07 ALS Bottle#: 27 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-13-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:49 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.849	-0.007	1.000	3108651	7.65				
298.90 > 99.00	1.842	1.849	-0.007	1.000	1273703		2.44(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.432	2.448	-0.016		1355856	4.15		8.8	153678	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.776	2.784	-0.008	1.000	19082913	111.4			284774	
413.00 > 169.00	2.683	2.784	-0.101	0.967	12569740		1.52(0.90-1.10)		58165	
D 14 13C4 PFOA										
417.00 > 372.00	2.784	2.784	0.0		853928	3.71		7.4	101301	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.145	3.050	0.095	1.000	20800943	90.6			370777	
499.00 > 99.00	3.145	3.050	0.095	1.000	4067030		5.11(0.90-1.10)		152279	
D 17 13C4 PFOS										
503.00 > 80.00	3.145	3.153	-0.008		1103918	4.44		9.3	67715	

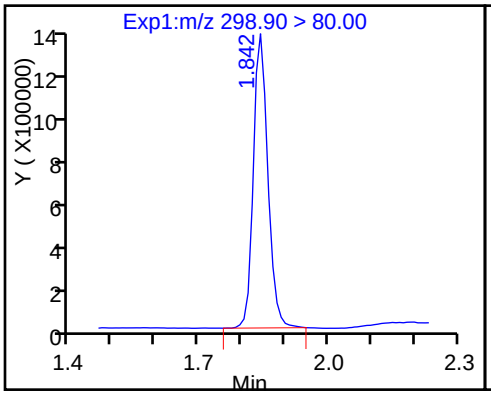
Report Date: 03-Jan-2017 08:08:54 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

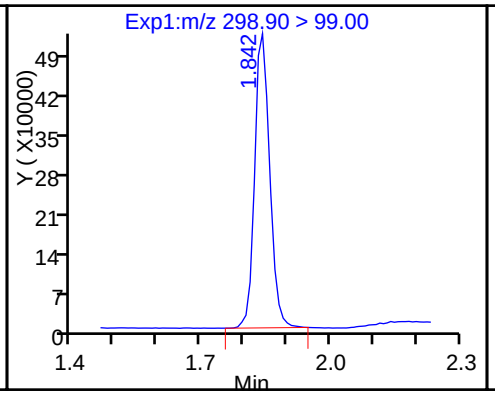
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_015.d

Injection Date:	29-Dec-2016 15:12:07	Instrument ID:	A8_N		
Lims ID:	320-24060-A-13-A	Lab Sample ID:	320-24060-13		
Client ID:	DPT-16-16-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	27	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

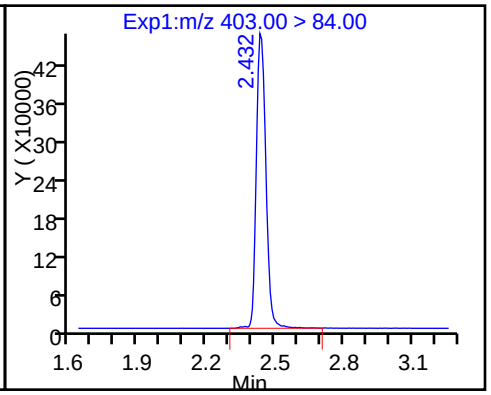
5 Perfluorobutanesulfonic acid



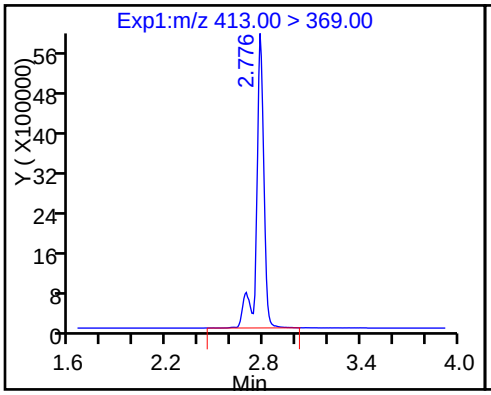
5 Perfluorobutanesulfonic acid



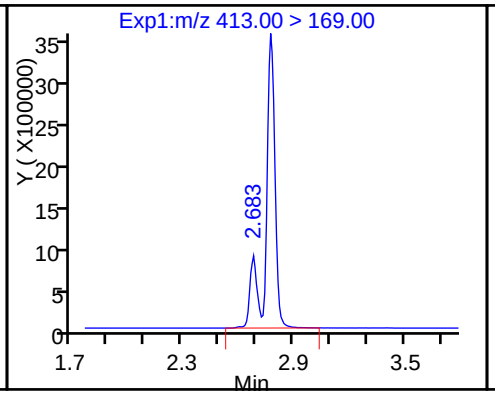
D 10 18O2 PFHxS



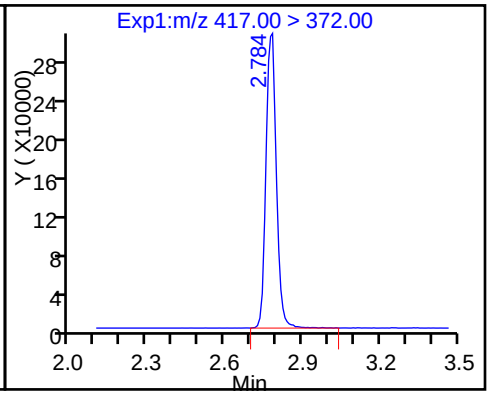
15 Perfluorooctanoic acid



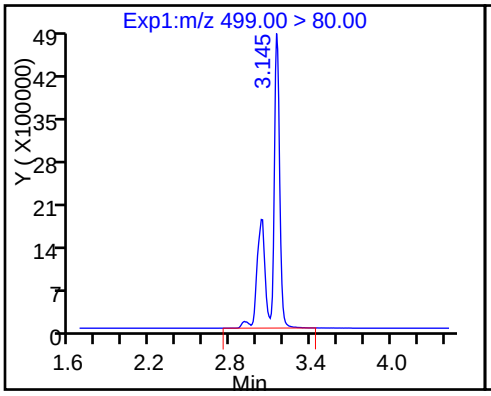
15 Perfluorooctanoic acid



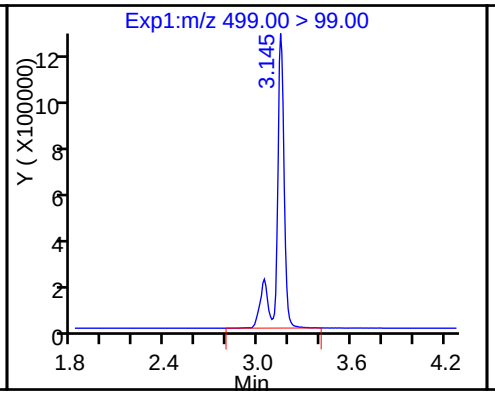
D 14 13C4 PFOA



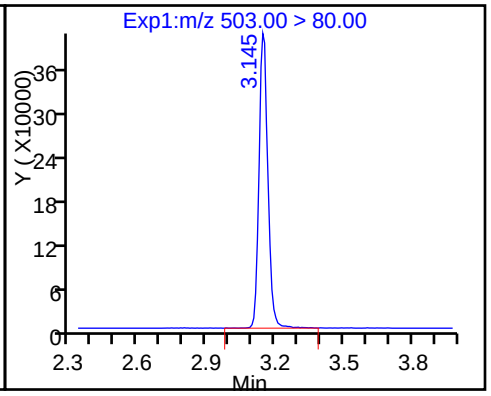
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-16-GW-19-23 | Lab Sample ID: 320-24060-14

Matrix: Water | Lab File ID: 27DEC2016A_052.d

Analysis Method: 537 (Modified) | Date Collected: 12/05/2016 14:50

Extraction Method: 3535 | Date Extracted: 12/17/2016 13:28

Sample wt/vol: 262.8(mL) | Date Analyzed: 12/27/2016 23:12

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.22	M	0.0024	0.0019	0.00071
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.0019	0.00087
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.76*	*E*	*0.0038*	0.0029	*0.0012*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	61		25-150
STL00994	18O2 PFHxS	68		25-150
STL00991	13C4 PFOS	74		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_052.d
Lims ID: 320-24060-A-14-A
Client ID: DPT-16-16-GW-19-23
Sample Type: Client
Inject. Date: 27-Dec-2016 23:12:40 ALS Bottle#: 39 Worklist Smp#: 52
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-14-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:51:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.842	0.010	1.000	9891115	31.6				
298.90 > 99.00	1.842	1.842	0.0	0.995	4186057		2.36(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.448	2.441	0.007		10442936	31.9		67.5	472251	
D 14 13C4 PFOA										
417.00 > 372.00	2.792	2.785	0.007		7006394	30.4		60.8	519335	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.784	2.785	-0.001	1.000	16409062	116.7			147765	M
413.00 > 169.00	2.691	2.785	-0.094	0.967	11616665		1.41(0.90-1.10)		93204	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.040	3.051	-0.011	1.000	73050015	400.2			293313	E
499.00 > 99.00	3.161	3.051	0.110	1.040	18147047		4.03(0.90-1.10)		503551	
D 17 13C4 PFOS										
503.00 > 80.00	3.161	3.154	0.007		8772723	35.3		73.8	208684	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

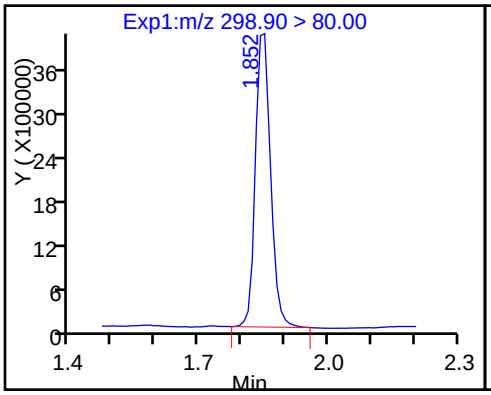
Report Date: 29-Dec-2016 09:54:02 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

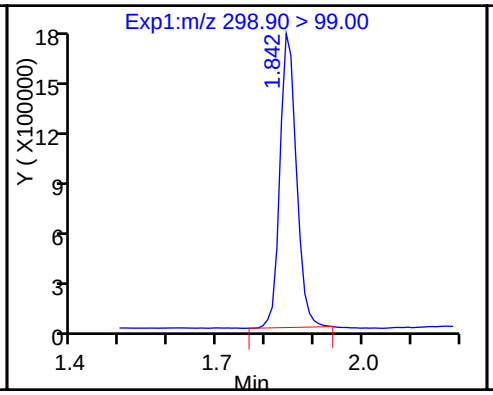
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_052.d

Injection Date:	27-Dec-2016 23:12:40	Instrument ID:	A8_N		
Lims ID:	320-24060-A-14-A	Lab Sample ID:	320-24060-14		
Client ID:	DPT-16-16-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	39	Worklist Smp#:	52
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

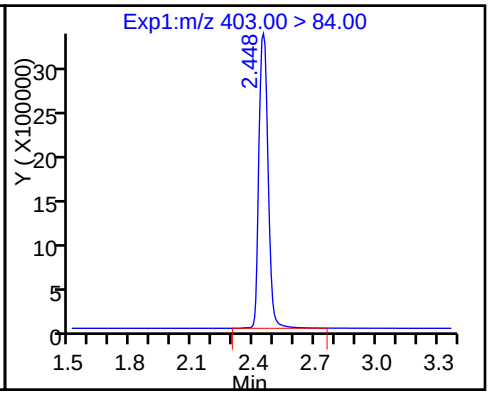
5 Perfluorobutanesulfonic acid



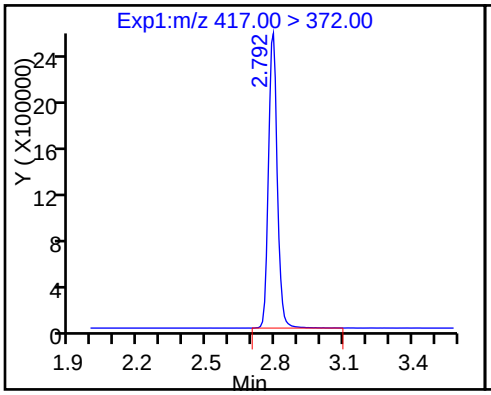
5 Perfluorobutanesulfonic acid



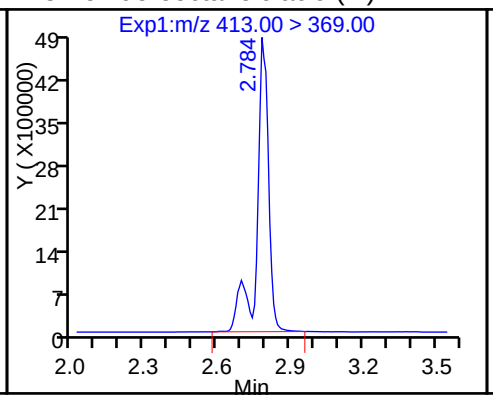
D 10 18O2 PFHxS



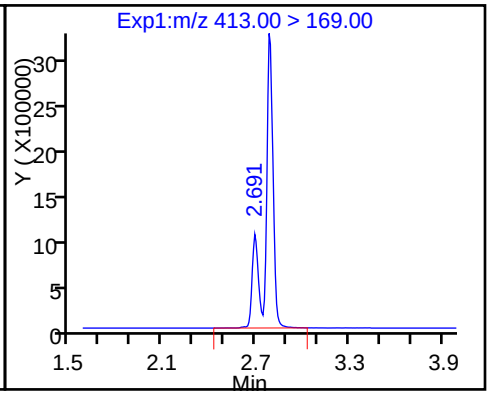
D 14 13C4 PFOA



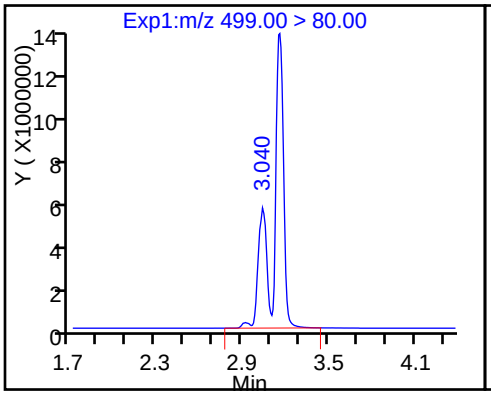
15 Perfluorooctanoic acid (M)



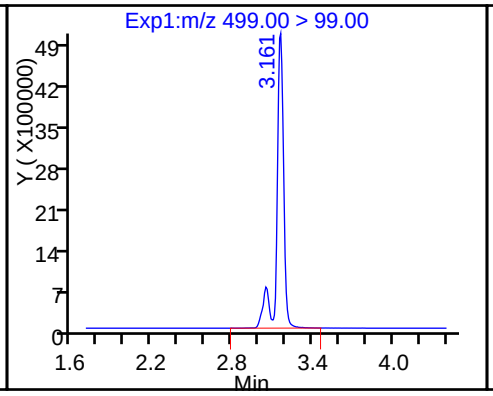
15 Perfluorooctanoic acid



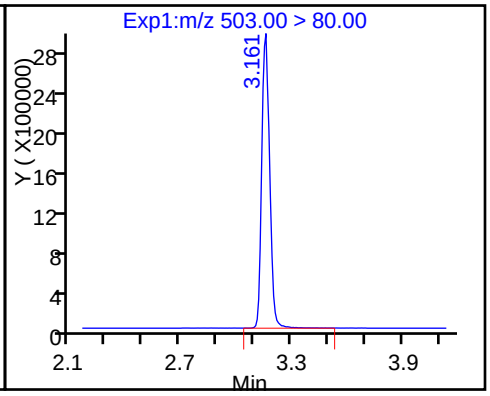
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

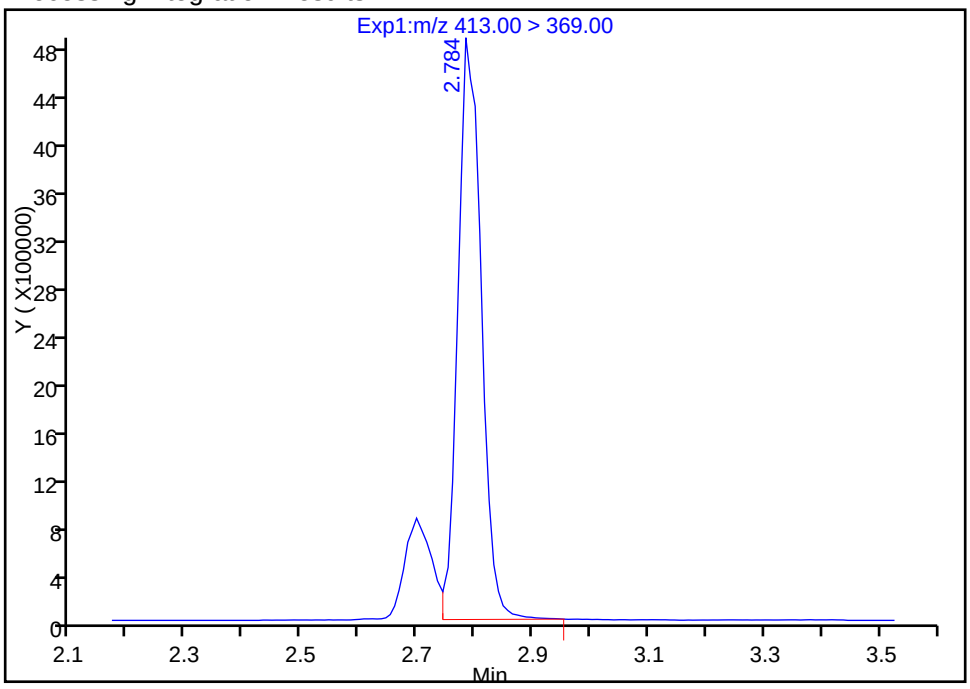
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_052.d				
Injection Date:	27-Dec-2016 23:12:40	Instrument ID:	A8_N		
Lims ID:	320-24060-A-14-A	Lab Sample ID:	320-24060-14		
Client ID:	DPT-16-16-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	39	Worklist Smp#:	52
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

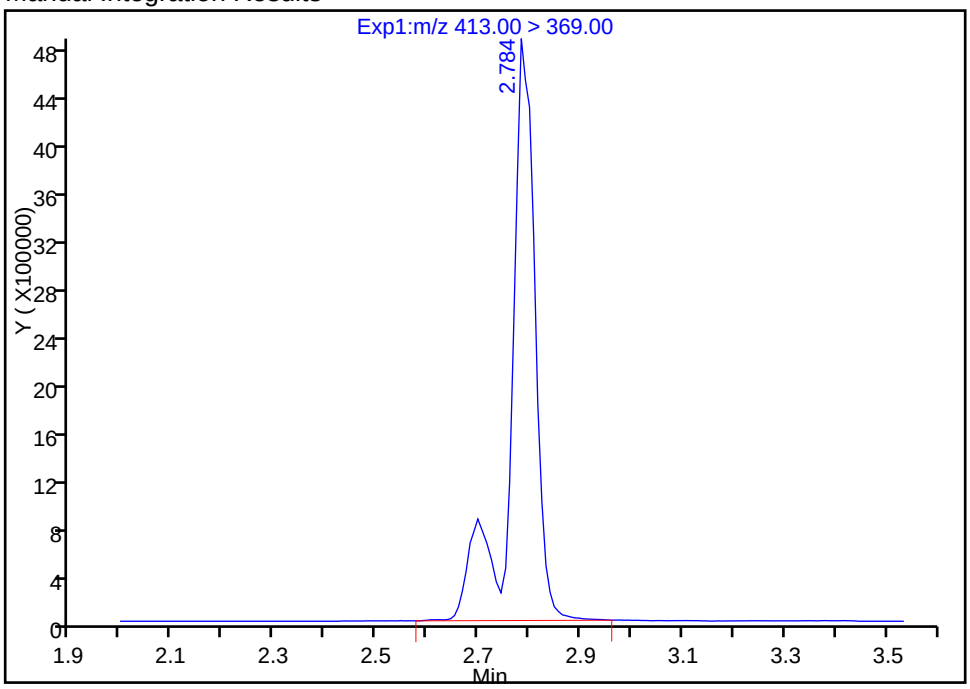
Processing Integration Results

RT: 2.78
Area: 13646483
Amount: 97.080763
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 16409062
Amount: 116.7337
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:51:56

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-16-GW-19-23 DL Lab Sample ID: 320-24060-14 DL

Matrix: Water Lab File ID: 29DEC2016C_016.d

Analysis Method: 537 (Modified) Date Collected: 12/05/2016 14:50

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 262.8(mL) Date Analyzed: 12/29/2016 15:19

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.23*	*D*	*0.024*	0.019	*0.0071*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.043*	*D*	*0.024*	0.019	*0.0087*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.88	D	0.038	0.029	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	75		25-150
STL00994	18O2 PFHxS	109		25-150
STL00991	13C4 PFOS	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_016.d
Lims ID: 320-24060-A-14-A
Client ID: DPT-16-16-GW-19-23
Sample Type: Client
Inject. Date: 29-Dec-2016 15:19:37 ALS Bottle#: 28 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-14-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:49 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.849	-0.007	1.000	1148356	2.27				
298.90 > 99.00	1.842	1.849	-0.007	1.000	480132		2.39(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.448	-0.004		1687034	5.16		10.9	122033	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.782	2.784	-0.002	1.000	2077941	12.0			23542	
413.00 > 169.00	2.687	2.784	-0.097	0.966	1377984		1.51(0.90-1.10)		18889	
D 14 13C4 PFOA										
417.00 > 372.00	2.782	2.784	-0.002		863605	3.75		7.5	109725	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.150	3.050	0.100	1.000	11096207	46.3			293370	
499.00 > 99.00	3.150	3.050	0.100	1.000	2318124		4.79(0.90-1.10)		94919	
D 17 13C4 PFOS										
503.00 > 80.00	3.142	3.153	-0.011		1151183	4.63		9.7	70558	

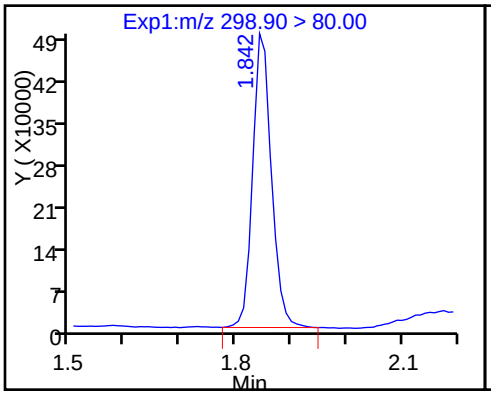
Report Date: 03-Jan-2017 08:08:55 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

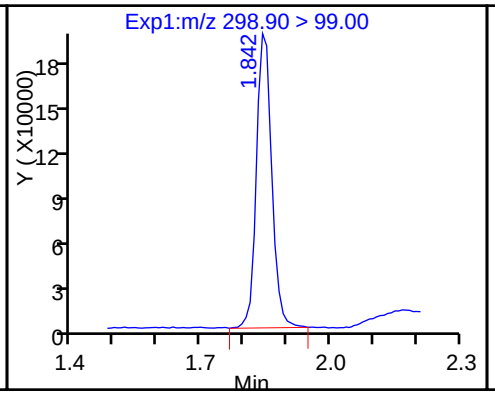
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_016.d

Injection Date:	29-Dec-2016 15:19:37	Instrument ID:	A8_N		
Lims ID:	320-24060-A-14-A	Lab Sample ID:	320-24060-14		
Client ID:	DPT-16-16-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	28	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

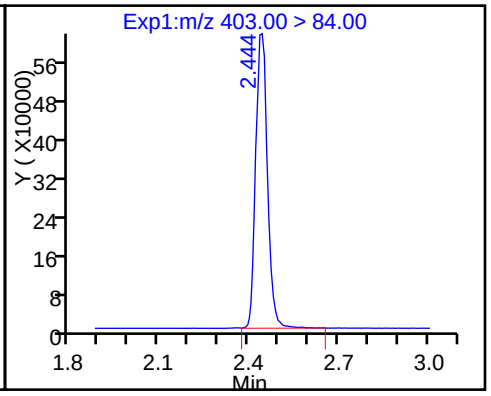
5 Perfluorobutanesulfonic acid



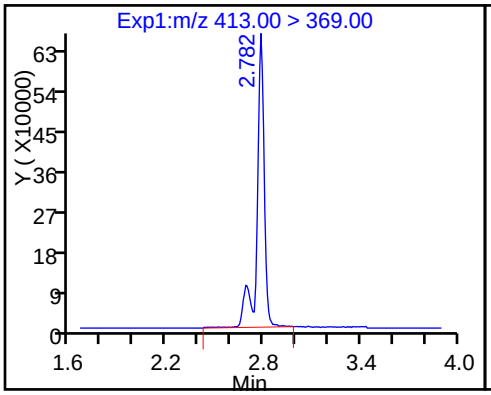
5 Perfluorobutanesulfonic acid



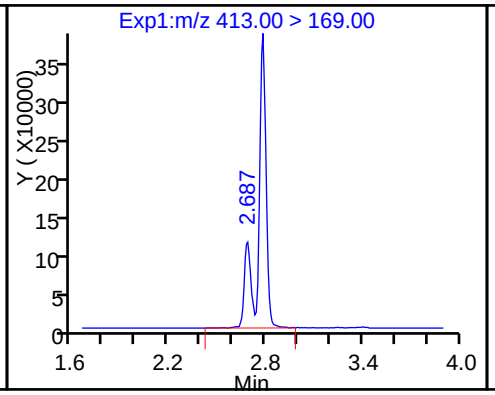
D 10 18O2 PFHxS



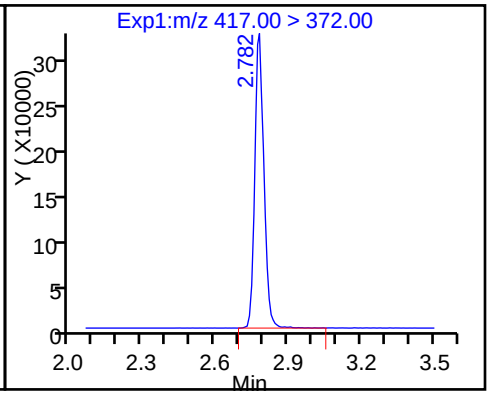
15 Perfluorooctanoic acid



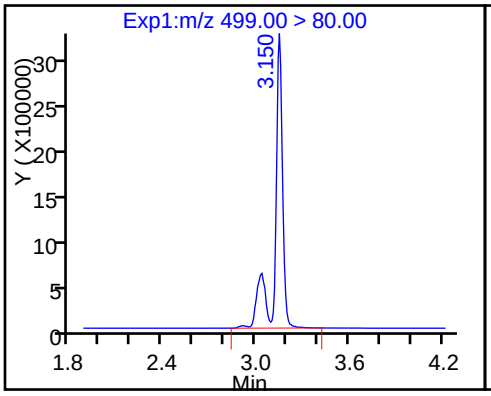
15 Perfluorooctanoic acid



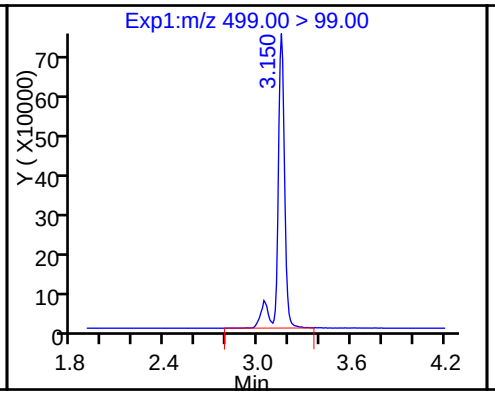
D 14 13C4 PFOA



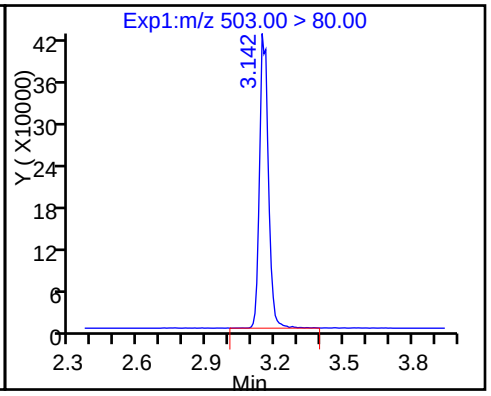
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-25-GW-31-35 Lab Sample ID: 320-24060-15

Matrix: Water Lab File ID: 27DEC2016A_053.d

Analysis Method: 537 (Modified) Date Collected: 12/06/2016 09:35

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 233.8(mL) Date Analyzed: 12/27/2016 23:20

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.17	M	0.0027	0.0021	0.00080
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.060		0.0027	0.0021	0.00098
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.39		0.0043	0.0032	0.0014

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	70		25-150
STL00994	18O2 PFHxS	66		25-150
STL00991	13C4 PFOS	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_053.d
Lims ID: 320-24060-A-15-A
Client ID: DPT-16-25-GW-31-35
Sample Type: Client
Inject. Date: 27-Dec-2016 23:20:10 ALS Bottle#: 40 Worklist Smp#: 53
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-15-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:53:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:52:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.842	0.006	1.000	8640967	28.2				
298.90 > 99.00	1.848	1.842	0.006	1.000	3615107		2.39(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.446	2.441	0.005		10243191	31.3		66.2	793168	
D 14 13C4 PFOA										
417.00 > 372.00	2.790	2.785	0.005		8054136	35.0		69.9	378298	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.790	2.785	0.005	1.000	13181492	81.6			106757	M
413.00 > 169.00	2.767	2.785	-0.018	0.992	8679952		1.52(0.90-1.10)		121954	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.047	3.051	-0.004	1.000	43628865	180.9			324300	
499.00 > 99.00	3.159	3.051	0.108	1.037	10199738		4.28(0.90-1.10)		318126	
D 17 13C4 PFOS										
503.00 > 80.00	3.159	3.154	0.005		11594417	46.6		97.5	214138	

QC Flag Legend

Review Flags
M - Manually Integrated

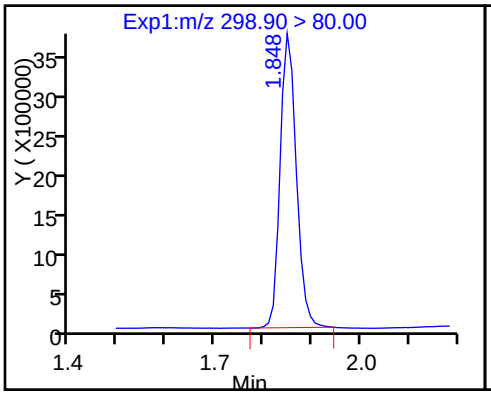
Report Date: 29-Dec-2016 09:54:04 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

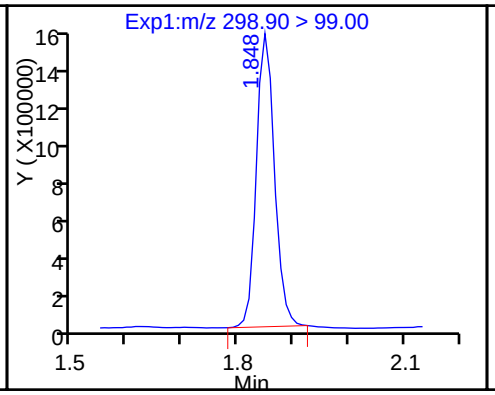
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_053.d

Injection Date:	27-Dec-2016 23:20:10	Instrument ID:	A8_N		
Lims ID:	320-24060-A-15-A	Lab Sample ID:	320-24060-15		
Client ID:	DPT-16-25-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	40	Worklist Smp#:	53
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

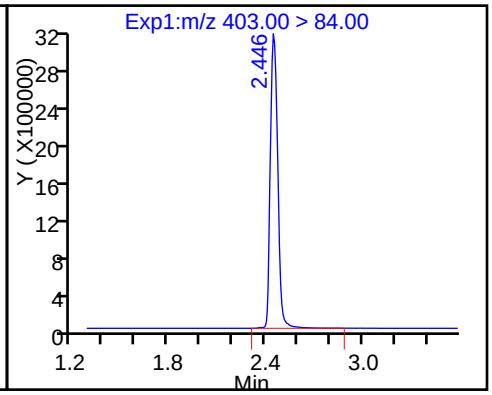
5 Perfluorobutanesulfonic acid



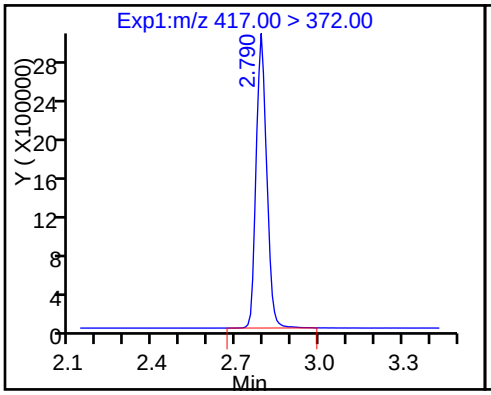
5 Perfluorobutanesulfonic acid



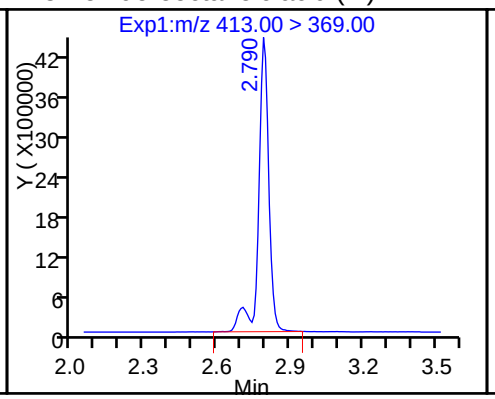
D 10 18O2 PFHxS



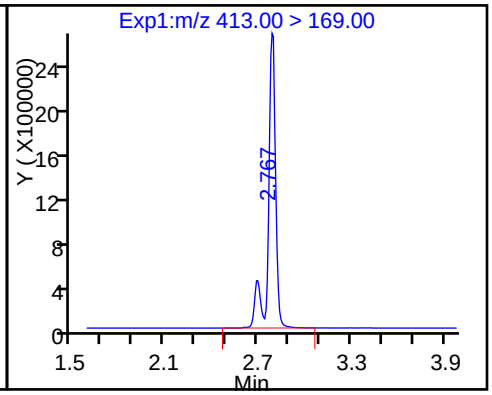
D 14 13C4 PFOA



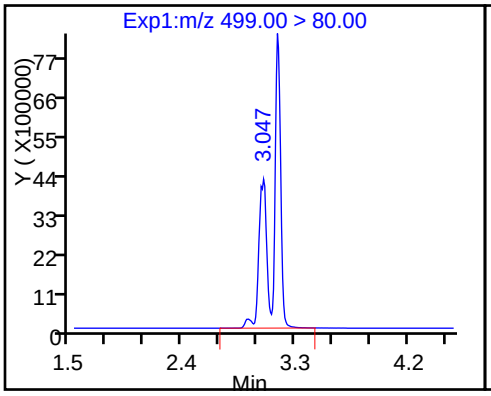
15 Perfluorooctanoic acid (M)



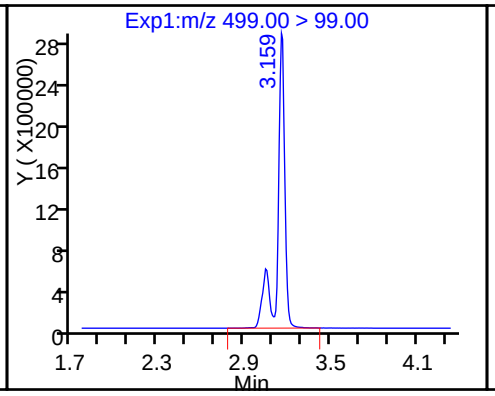
15 Perfluorooctanoic acid



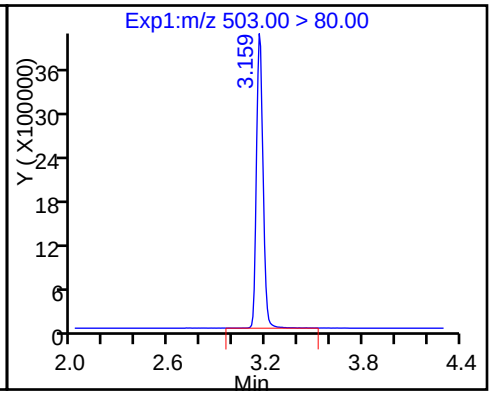
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

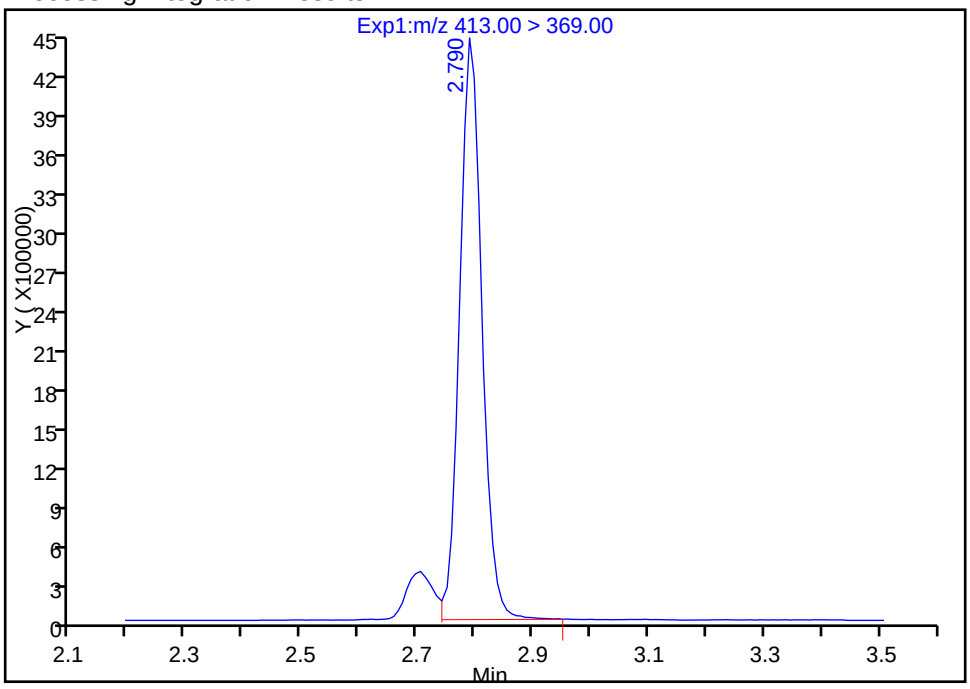
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_053.d				
Injection Date:	27-Dec-2016 23:20:10	Instrument ID:	A8_N		
Lims ID:	320-24060-A-15-A	Lab Sample ID:	320-24060-15		
Client ID:	DPT-16-25-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	40	Worklist Smp#:	53
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

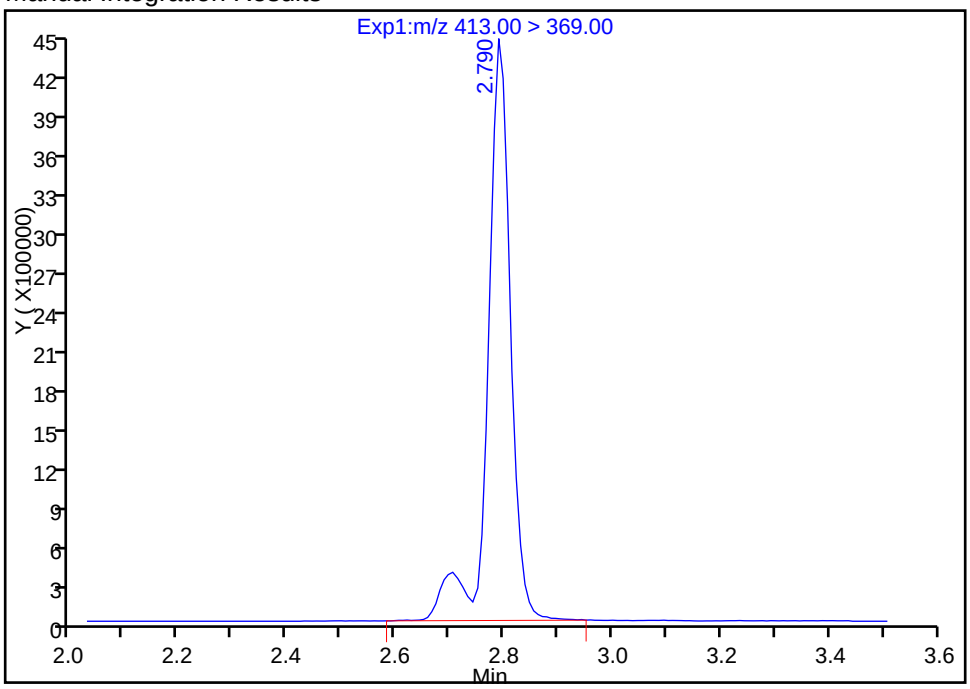
Processing Integration Results

RT: 2.79
Area: 11979328
Amount: 74.134523
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 13181492
Amount: 81.574160
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:52:16

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-25-GW-19-23 | Lab Sample ID: 320-24060-16

Matrix: Water | Lab File ID: 27DEC2016A_057.d

Analysis Method: 537 (Modified) | Date Collected: 12/06/2016 09:45

Extraction Method: 3535 | Date Extracted: 12/17/2016 13:28

Sample wt/vol: 255.5(mL) | Date Analyzed: 12/27/2016 23:50

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.50*	*E M*	*0.0024*	0.0020	*0.00073*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.49*	*E*	*0.0024*	0.0020	*0.00090*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1.0*	*E*	*0.0039*	0.0029	*0.0012*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	68		25-150
STL00994	18O2 PFHxS	31		25-150
STL00991	13C4 PFOS	78		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_057.d
Lims ID: 320-24060-A-16-A
Client ID: DPT-16-25-GW-19-23
Sample Type: Client
Inject. Date: 27-Dec-2016 23:50:08 ALS Bottle#: 41 Worklist Smp#: 57
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-16-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 10:02:34 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:53:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.848	1.842	0.006	1.000	35552868	248.9				E
298.90 > 99.00	1.848	1.842	0.006	1.000	17792440		2.00(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.455	2.446	0.009		4769099	14.6		30.8	46597	
D 14 13C4 PFOA										
417.00 > 372.00	2.794	2.782	0.012		7884099	34.2		68.4	326346	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.794	2.782	0.012	1.000	40523530	256.2			6198	EM
413.00 > 169.00	2.794	2.782	0.012	1.000	30990882		1.31(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.051	3.048	0.003	1.000	101354418	522.4			279278	E
499.00 > 99.00	3.051	3.048	0.003	1.000	22371453		4.53(0.90-1.10)		194051	
D 17 13C4 PFOS										
503.00 > 80.00	3.164	3.159	0.005		9325146	37.5		78.4	101745	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

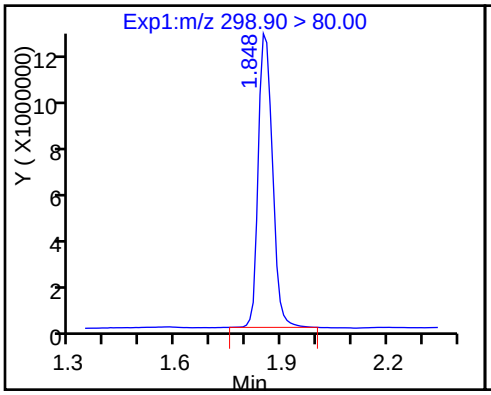
Report Date: 29-Dec-2016 10:02:38 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

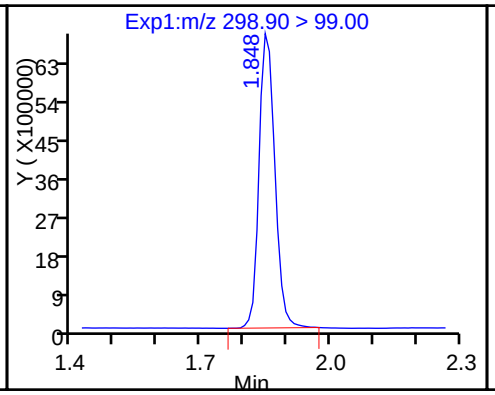
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_057.d

Injection Date:	27-Dec-2016 23:50:08	Instrument ID:	A8_N		
Lims ID:	320-24060-A-16-A	Lab Sample ID:	320-24060-16		
Client ID:	DPT-16-25-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	41	Worklist Smp#:	57
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

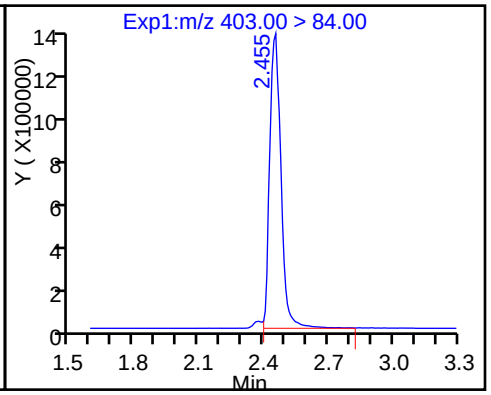
5 Perfluorobutanesulfonic acid



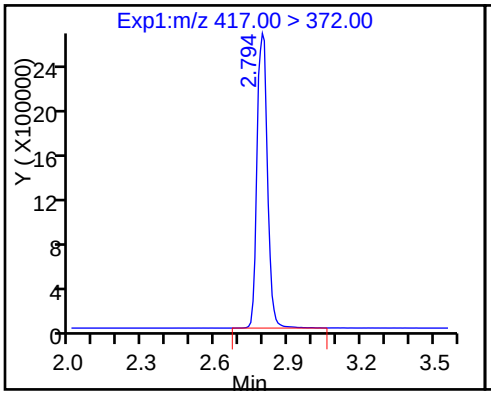
5 Perfluorobutanesulfonic acid



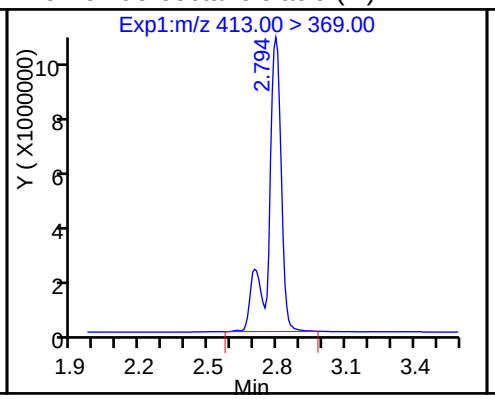
D 10 18O2 PFHxS



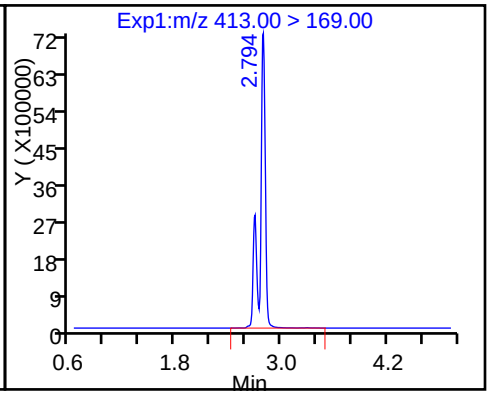
D 14 13C4 PFOA



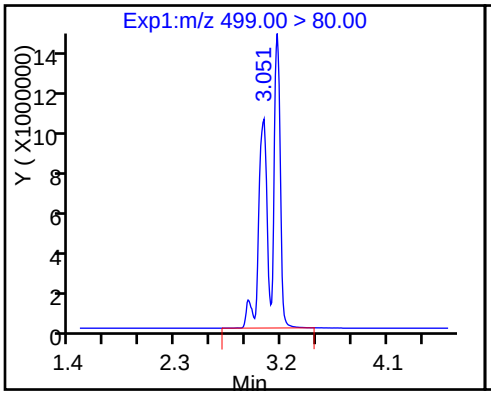
15 Perfluorooctanoic acid (M)



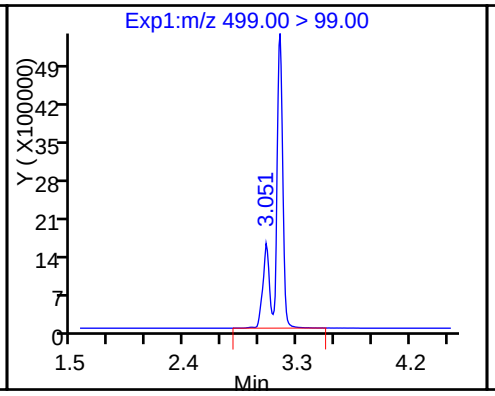
15 Perfluorooctanoic acid



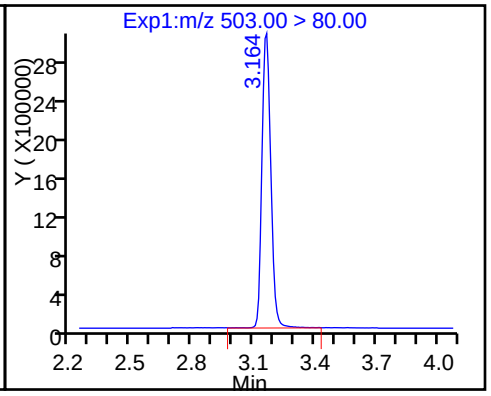
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

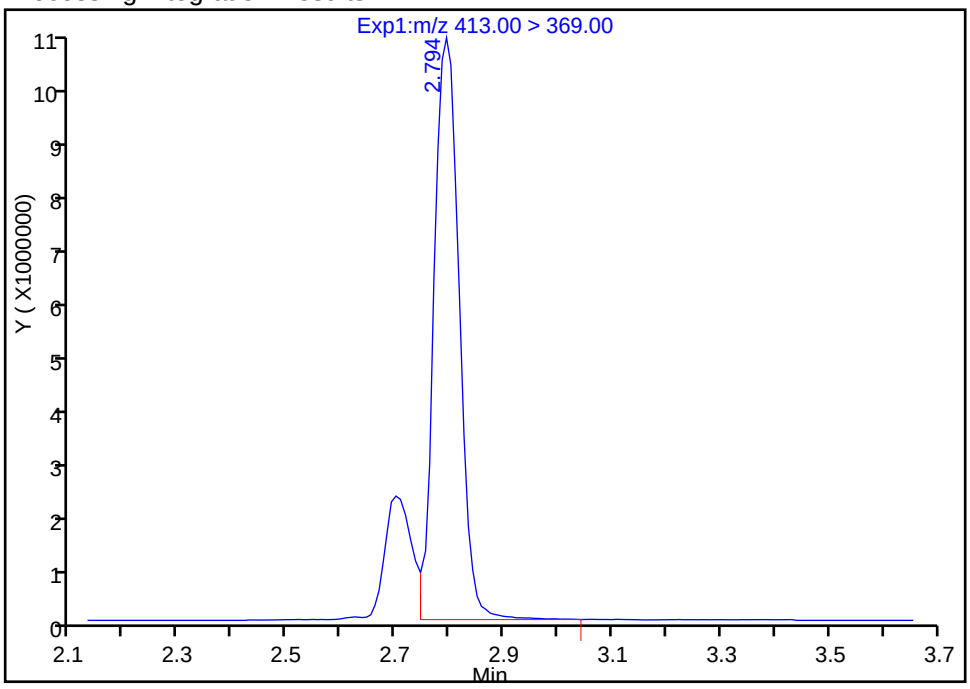
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_057.d				
Injection Date:	27-Dec-2016 23:50:08	Instrument ID:	A8_N		
Lims ID:	320-24060-A-16-A	Lab Sample ID:	320-24060-16		
Client ID:	DPT-16-25-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	41	Worklist Smp#:	57
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

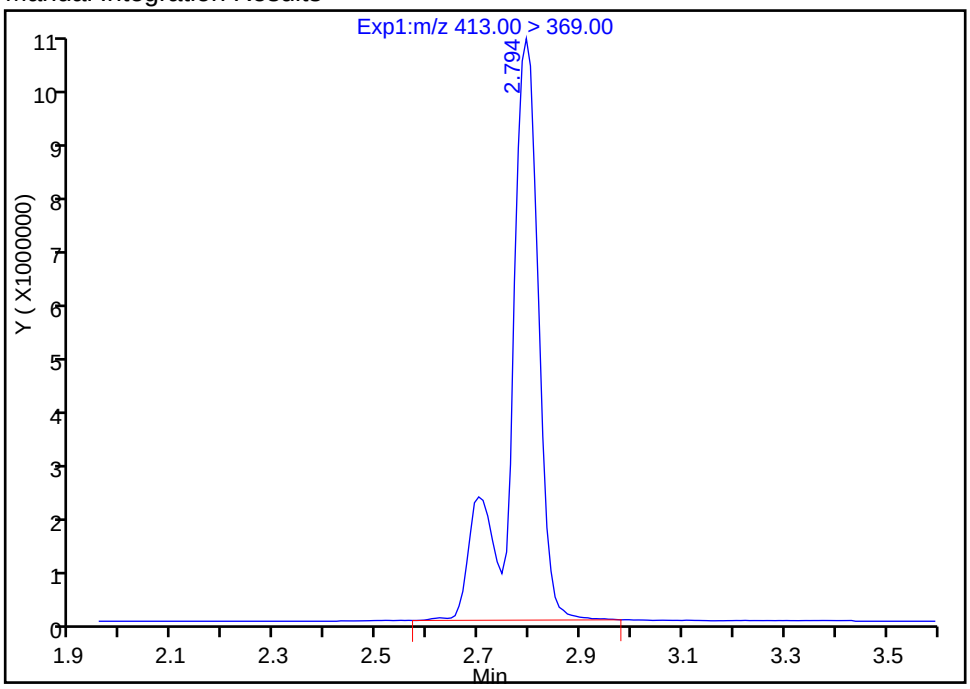
Processing Integration Results

RT: 2.79
Area: 33157594
Amount: 209.6225
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 40523530
Amount: 256.1900
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:53:50

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-25-GW-19-23 DL Lab Sample ID: 320-24060-16 DL

Matrix: Water Lab File ID: 29DEC2016C_017.d

Analysis Method: 537 (Modified) Date Collected: 12/06/2016 09:45

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 255.5(mL) Date Analyzed: 12/29/2016 15:27

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.57	D	0.024	0.020	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.31	D	0.024	0.020	0.0090
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.1	D	0.039	0.029	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	98		25-150
STL00994	18O2 PFHxS	85		25-150
STL00991	13C4 PFOS	111		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_017.d
Lims ID: 320-24060-A-16-A
Client ID: DPT-16-25-GW-19-23
Sample Type: Client
Inject. Date: 29-Dec-2016 15:27:07 ALS Bottle#: 29 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-16-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:49 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

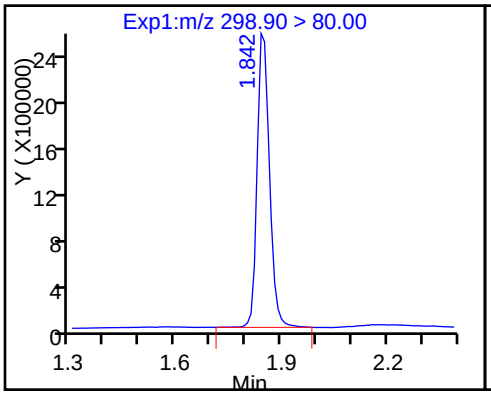
Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.849	-0.007	1.000	6301568	16.1				
298.90 > 99.00	1.842	1.849	-0.007	1.000	2572814		2.45(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.438	2.448	-0.010		1310142	4.01		8.5	69575	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.751	2.784	-0.033	1.000	6552557	28.9			11116	
413.00 > 169.00	2.681	2.784	-0.103	0.975	4379580		1.50(0.90-1.10)		40082	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.784	-0.003		1128396	4.90		9.8	83980	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.037	3.050	-0.013	1.000	15605554	57.0			127318	
499.00 > 99.00	3.158	3.050	0.108	1.040	2871266		5.44(0.90-1.10)		72865	
D 17 13C4 PFOS										
503.00 > 80.00	3.150	3.153	-0.003		1315242	5.29		11.1	30781	

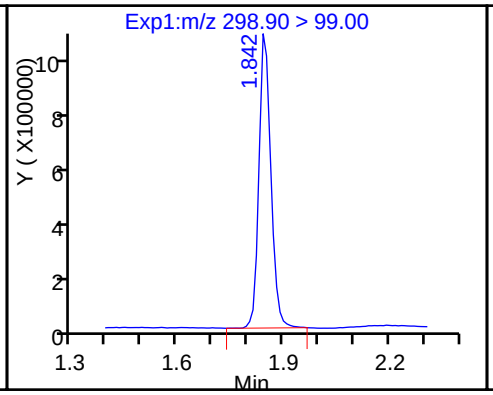
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_017.d
Injection Date: 29-Dec-2016 15:27:07 Instrument ID: A8_N
Lims ID: 320-24060-A-16-A Lab Sample ID: 320-24060-16
Client ID: DPT-16-25-GW-19-23
Operator ID: A8-PC\A8 ALS Bottle#: 29 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL

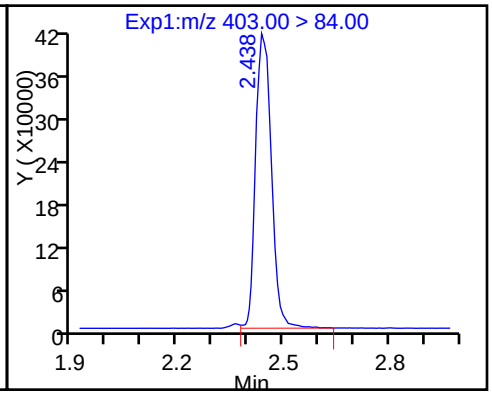
5 Perfluorobutanesulfonic acid



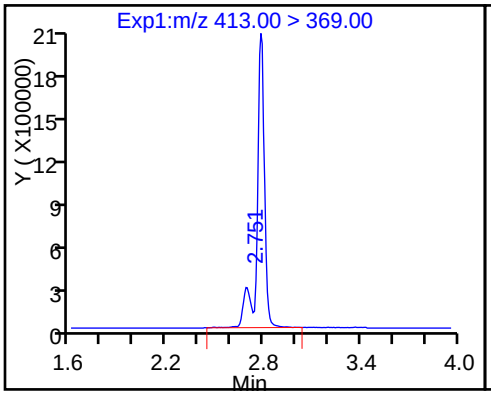
5 Perfluorobutanesulfonic acid



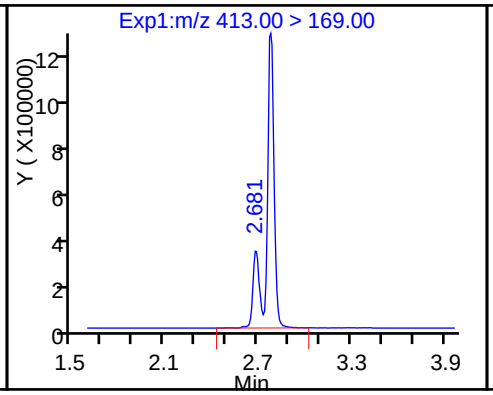
D 10 18O2 PFHxS



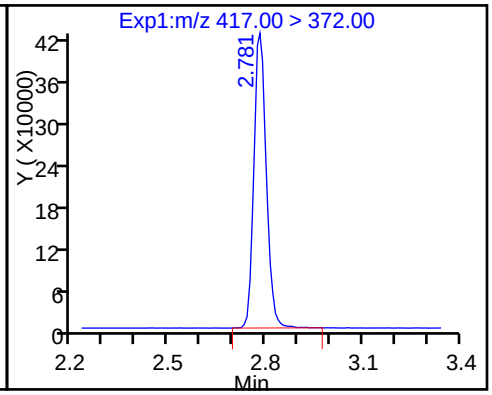
15 Perfluorooctanoic acid



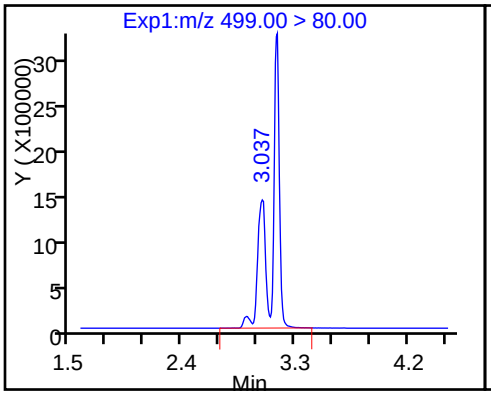
15 Perfluorooctanoic acid



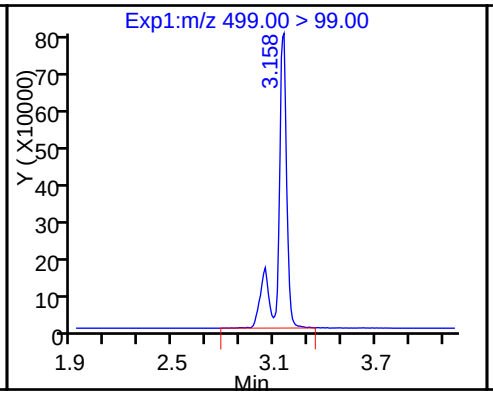
D 14 13C4 PFOA



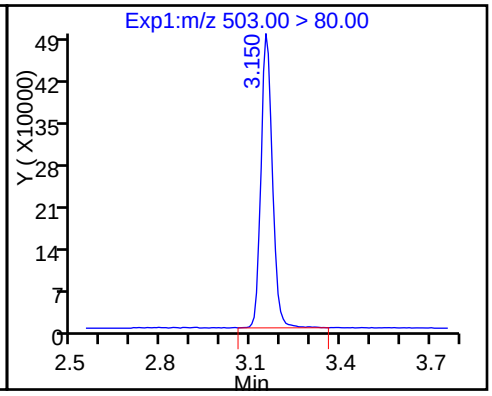
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-24-GW-21-25 Lab Sample ID: 320-24060-17

Matrix: Water Lab File ID: 27DEC2016A_058.d

Analysis Method: 537 (Modified) Date Collected: 12/06/2016 10:40

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 248.9(mL) Date Analyzed: 12/27/2016 23:57

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.044	M	0.0025	0.0020	0.00075
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.029		0.0025	0.0020	0.00092
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.39*	*E*	*0.0040*	0.0030	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	61		25-150
STL00994	18O2 PFHxS	86		25-150
STL00991	13C4 PFOS	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_058.d
Lims ID: 320-24060-A-17-A
Client ID: DPT-16-24-GW-21-25
Sample Type: Client
Inject. Date: 27-Dec-2016 23:57:38 ALS Bottle#: 42 Worklist Smp#: 58
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-17-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 10:02:34 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:58:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.842	0.0	1.000	5746724	14.4				
298.90 > 99.00	1.842	1.842	0.0	1.000	2384110		2.41(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.448	2.446	0.002		13298129	40.7		86.0	592991	
D 14 13C4 PFOA										
417.00 > 372.00	2.784	2.782	0.002		7080794	30.7		61.5	324100	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.792	2.782	0.010	1.000	3123015	22.0			21158	M
413.00 > 169.00	2.691	2.782	-0.091	0.964	2116300		1.48(0.90-1.10)		10032	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.040	3.048	-0.008	1.000	43587308	191.8			192246	E
499.00 > 99.00	3.161	3.048	0.113	1.040	10082151		4.32(0.90-1.10)		231869	
D 17 13C4 PFOS										
503.00 > 80.00	3.161	3.159	0.002		10923146	43.9		91.8	285758	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

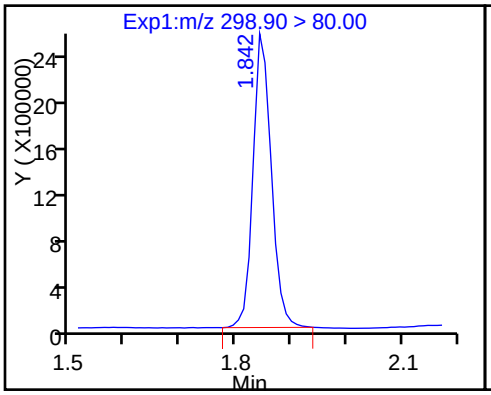
Report Date: 29-Dec-2016 10:02:40 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

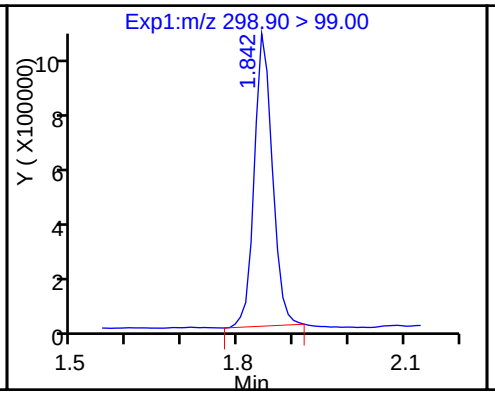
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_058.d

Injection Date:	27-Dec-2016 23:57:38	Instrument ID:	A8_N		
Lims ID:	320-24060-A-17-A	Lab Sample ID:	320-24060-17		
Client ID:	DPT-16-24-GW-21-25				
Operator ID:	A8-PC\A8	ALS Bottle#:	42	Worklist Smp#:	58
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

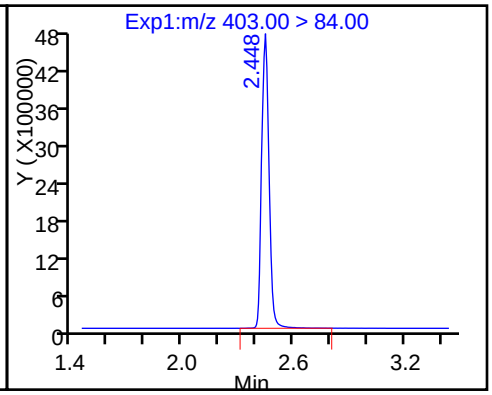
5 Perfluorobutanesulfonic acid



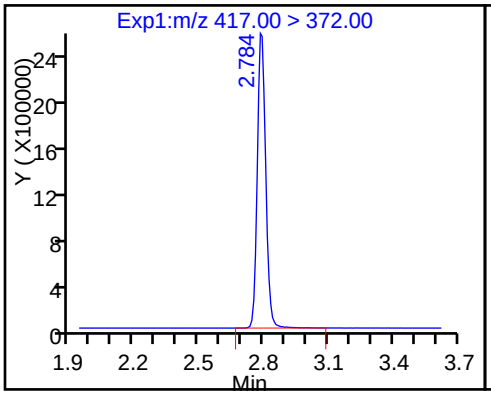
5 Perfluorobutanesulfonic acid



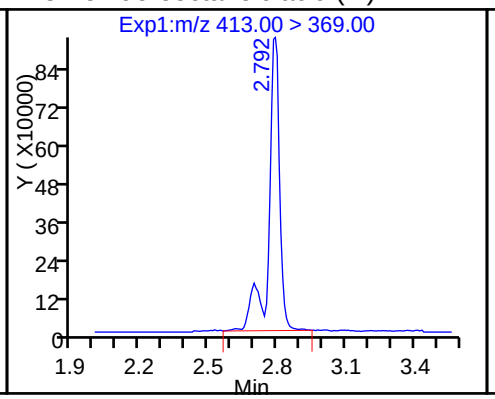
D 10 18O2 PFHxS



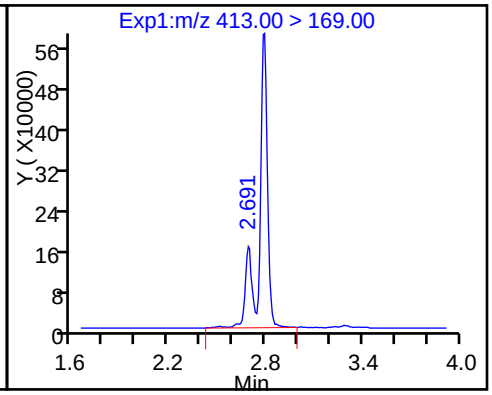
D 14 13C4 PFOA



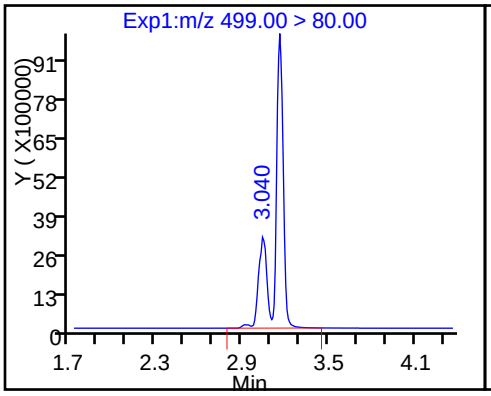
15 Perfluorooctanoic acid (M)



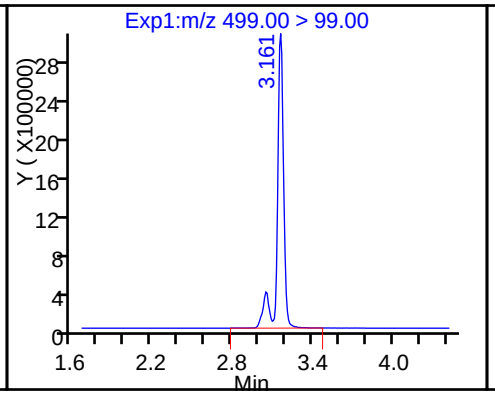
15 Perfluorooctanoic acid



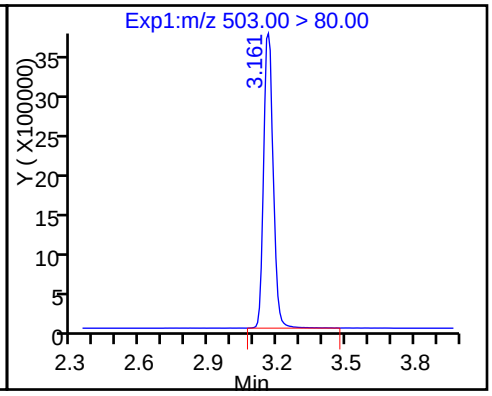
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

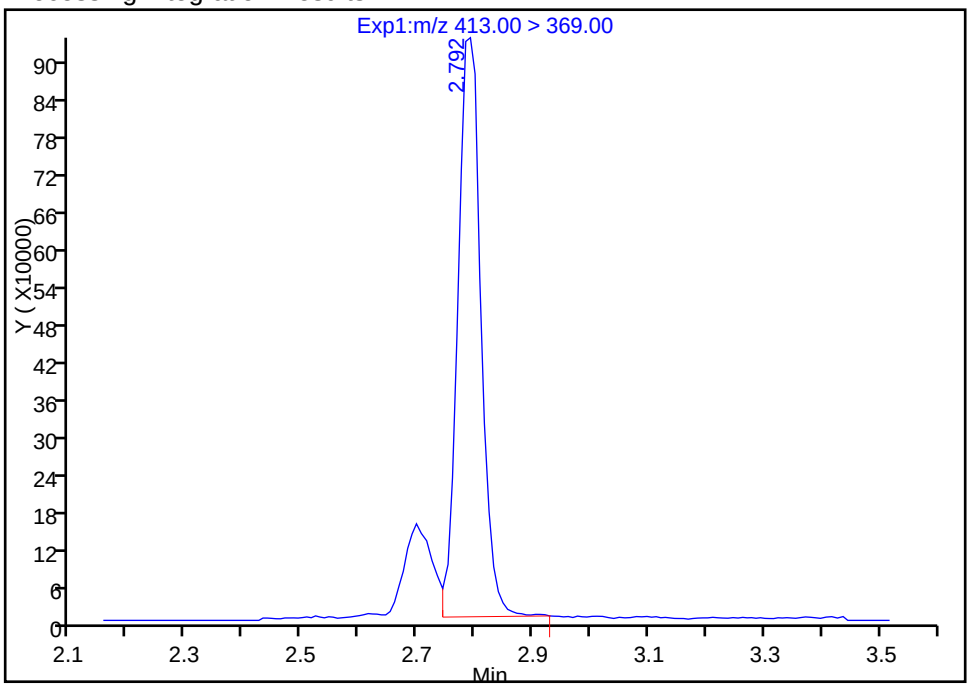
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_058.d				
Injection Date:	27-Dec-2016 23:57:38	Instrument ID:	A8_N		
Lims ID:	320-24060-A-17-A	Lab Sample ID:	320-24060-17		
Client ID:	DPT-16-24-GW-21-25				
Operator ID:	A8-PC\A8	ALS Bottle#:	42	Worklist Smp#:	58
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

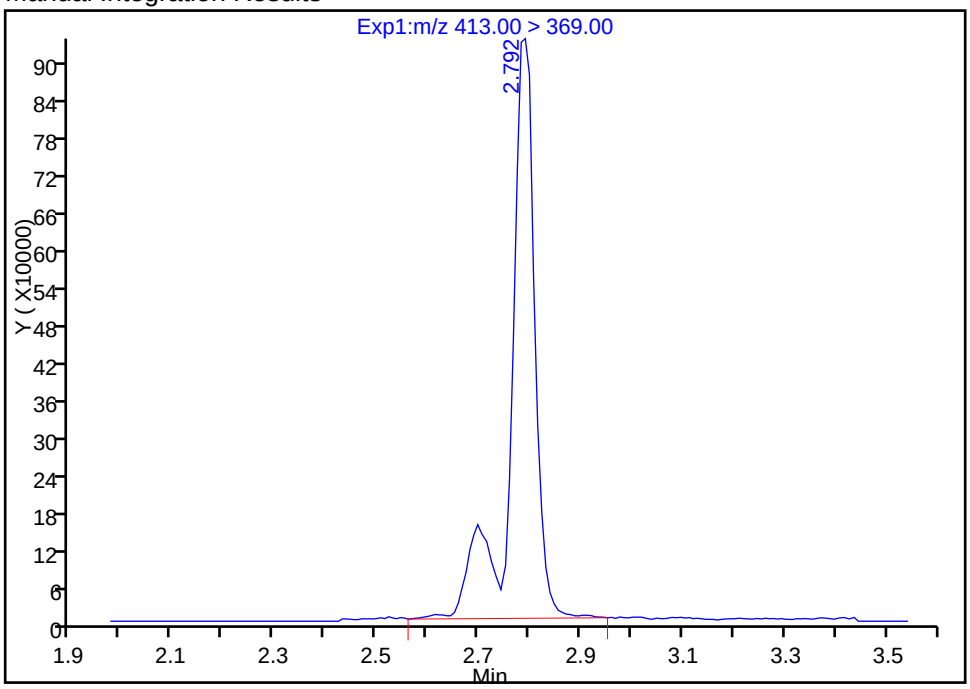
Processing Integration Results

RT: 2.79
Area: 2586660
Amount: 18.208090
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 3123015
Amount: 21.983615
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 09:59:54

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-24-GW-21-25 DL | Lab Sample ID: 320-24060-17 DL

Matrix: Water | Lab File ID: 29DEC2016C_018.d

Analysis Method: 537 (Modified) | Date Collected: 12/06/2016 10:40

Extraction Method: 3535 | Date Extracted: 12/17/2016 13:28

Sample wt/vol: 248.9(mL) | Date Analyzed: 12/29/2016 15:34

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 10

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.046*	*D*	*0.025*	0.020	*0.0075*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.023*	*J D M*	*0.025*	0.020	*0.0092*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.41	D	0.040	0.030	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	70		25-150
STL00994	18O2 PFHxS	113		25-150
STL00991	13C4 PFOS	103		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_018.d
Lims ID: 320-24060-A-17-A
Client ID: DPT-16-24-GW-21-25
Sample Type: Client
Inject. Date: 29-Dec-2016 15:34:36 ALS Bottle#: 30 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-17-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:49 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 03-Jan-2017 08:07:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.852	1.849	0.003	1.000	592067	1.13				
298.90 > 99.00	1.842	1.849	-0.007	0.995	254002		2.33(0.00-0.00)			M
D 10 18O2 PFHxS										
403.00 > 84.00	2.445	2.448	-0.003		1751324	5.36		11.3	165150	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.781	2.784	-0.003	1.000	369069	2.28			3904	
413.00 > 169.00	2.781	2.784	-0.003	1.000	245000		1.51(0.90-1.10)		7079	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.784	-0.003		805241	3.50		7.0	145278	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.134	3.050	0.084	1.000	5188634	20.3			90247	
499.00 > 99.00	3.150	3.050	0.100	1.005	1114118		4.66(0.90-1.10)		52639	
D 17 13C4 PFOS										
503.00 > 80.00	3.150	3.153	-0.003		1228059	4.93		10.3	90704	

QC Flag Legend

Review Flags
M - Manually Integrated

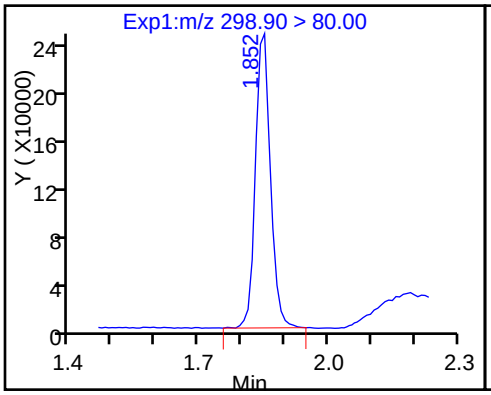
Report Date: 03-Jan-2017 08:08:58 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

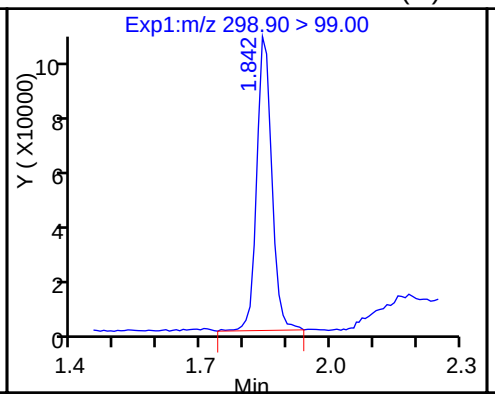
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_018.d

Injection Date:	29-Dec-2016 15:34:36	Instrument ID:	A8_N		
Lims ID:	320-24060-A-17-A	Lab Sample ID:	320-24060-17		
Client ID:	DPT-16-24-GW-21-25				
Operator ID:	A8-PC\A8	ALS Bottle#:	30	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

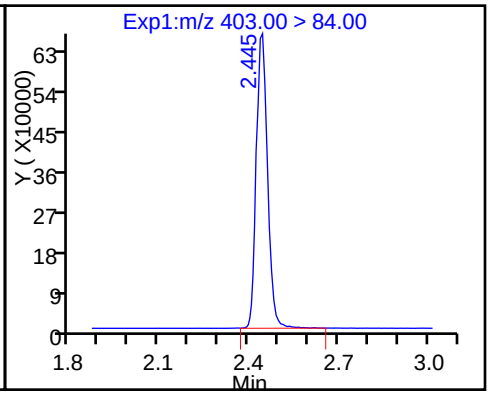
5 Perfluorobutanesulfonic acid



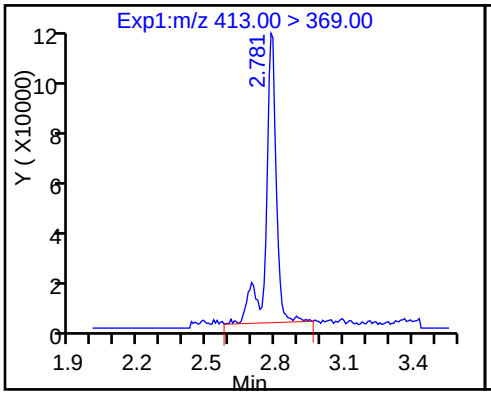
5 Perfluorobutanesulfonic acid (M)



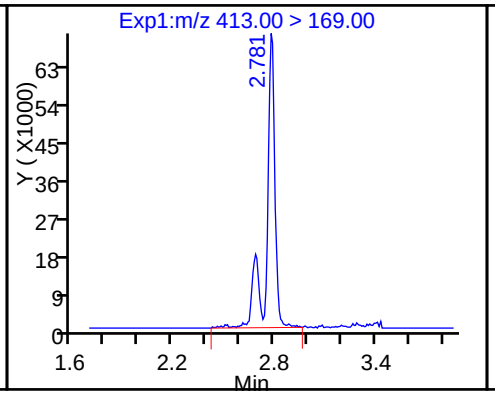
D 10 18O2 PFHxS



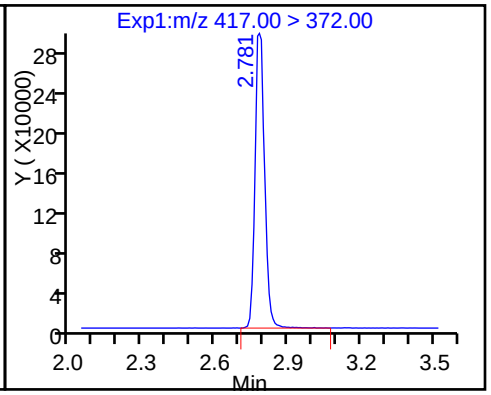
15 Perfluorooctanoic acid



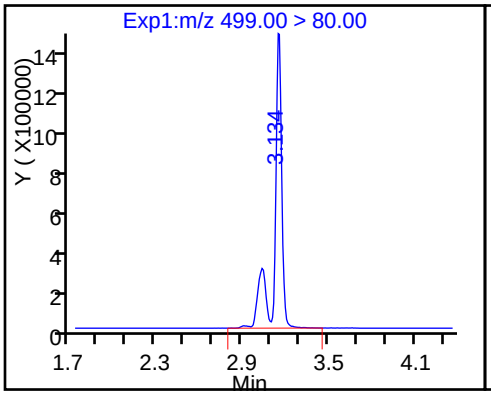
15 Perfluorooctanoic acid



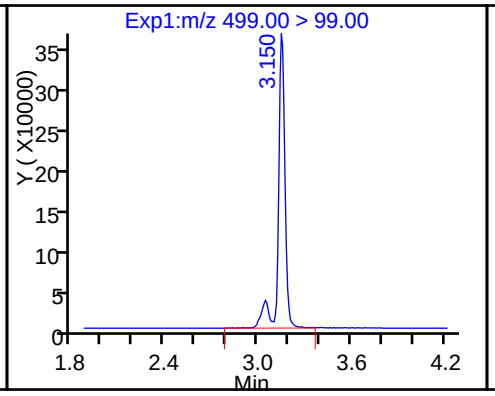
D 14 13C4 PFOA



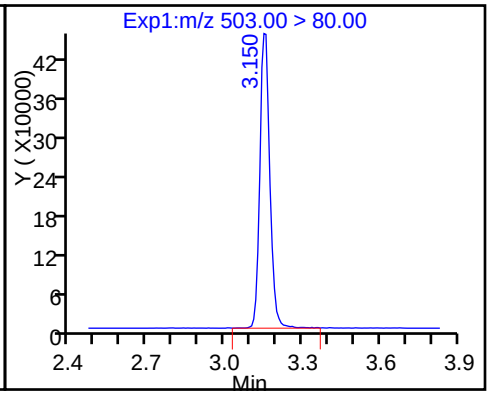
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

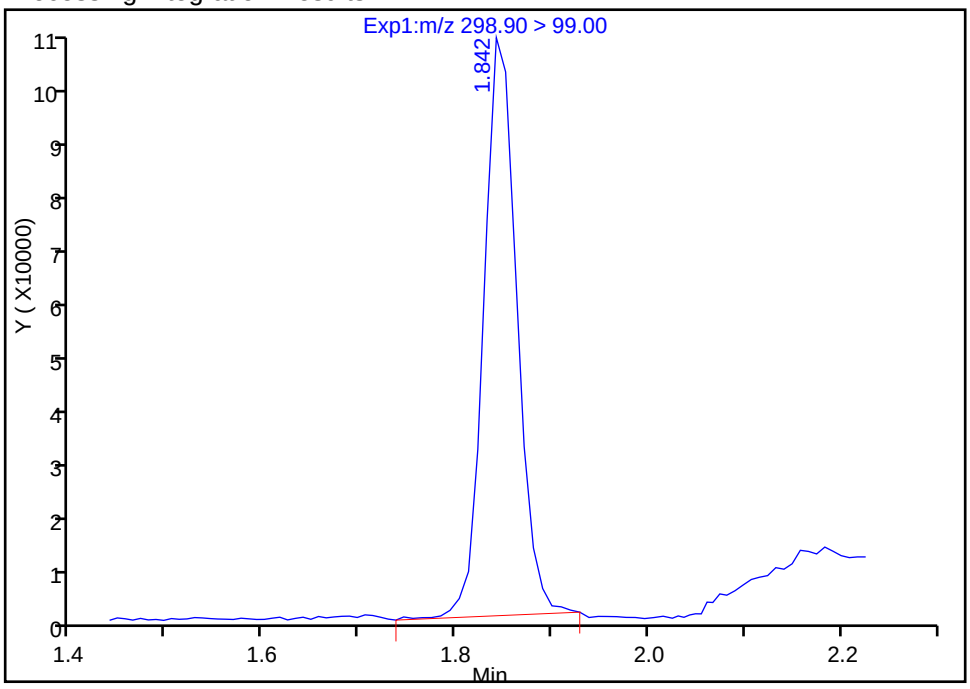
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_018.d				
Injection Date:	29-Dec-2016 15:34:36	Instrument ID:	A8_N		
Lims ID:	320-24060-A-17-A	Lab Sample ID:	320-24060-17		
Client ID:	DPT-16-24-GW-21-25				
Operator ID:	A8-PC\A8	ALS Bottle#:	30	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

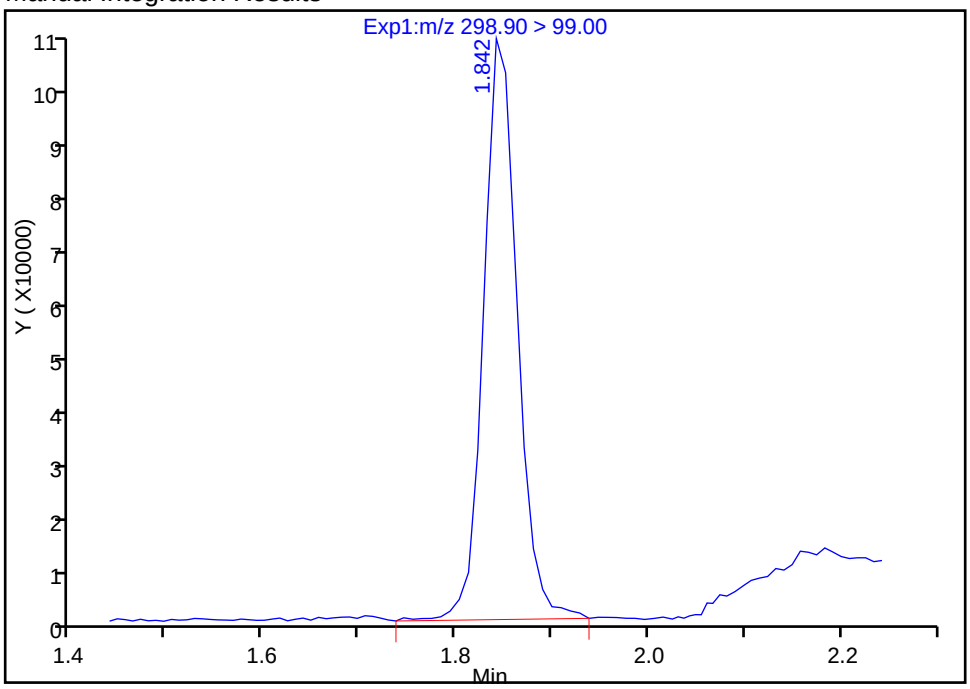
Processing Integration Results

RT: 1.84
Area: 248125
Amount: 1.128521
Amount Units: ng/ml



Manual Integration Results

RT: 1.84
Area: 254002
Amount: 1.128521
Amount Units: ng/ml



Reviewer: westendorfc, 03-Jan-2017 08:07:21
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-24-GW-31-35 Lab Sample ID: 320-24060-18

Matrix: Water Lab File ID: 27DEC2016A_059.d

Analysis Method: 537 (Modified) Date Collected: 12/06/2016 10:50

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 260.5(mL) Date Analyzed: 12/28/2016 00:05

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.15	M	0.0024	0.0019	0.00072
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.043		0.0024	0.0019	0.00088
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.44*	*E*	*0.0038*	0.0029	*0.0012*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	61		25-150
STL00994	18O2 PFHxS	78		25-150
STL00991	13C4 PFOS	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_059.d
Lims ID: 320-24060-A-18-A
Client ID: DPT-16-24-GW-31-35
Sample Type: Client
Inject. Date: 28-Dec-2016 00:05:07 ALS Bottle#: 43 Worklist Smp#: 59
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-18-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 10:02:34 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 10:00:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.842	0.006	1.000	8144265	22.4				
298.90 > 99.00	1.848	1.842	0.006	1.000	3402901		2.39(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.445	2.446	-0.001		12139712	37.1		78.5	763464	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.782	-0.001		7056571	30.6		61.3	631640	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.781	2.782	-0.001	1.000	11141145	78.7			71548	M
413.00 > 169.00	2.781	2.782	-0.001	1.000	7669557		1.45(0.90-1.10)		209754	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.046	3.048	-0.002	1.000	55003233	228.2			285601	E
499.00 > 99.00	3.157	3.048	0.109	1.037	12652620		4.35(0.90-1.10)		365813	
D 17 13C4 PFOS										
503.00 > 80.00	3.157	3.159	-0.002		11585259	46.6		97.4	359595	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

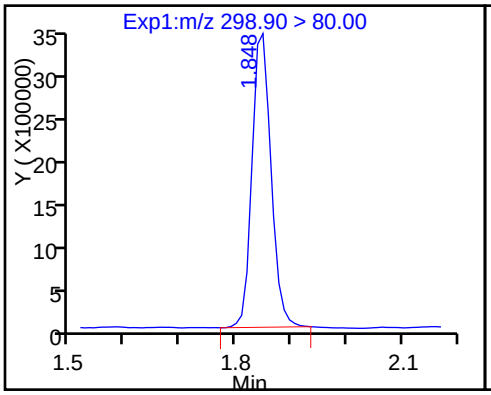
Report Date: 29-Dec-2016 10:02:42 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

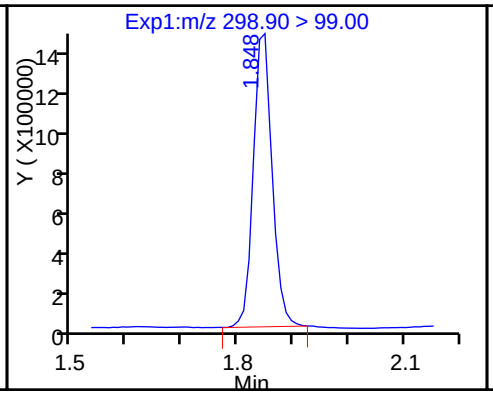
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_059.d

Injection Date:	28-Dec-2016 00:05:07	Instrument ID:	A8_N		
Lims ID:	320-24060-A-18-A	Lab Sample ID:	320-24060-18		
Client ID:	DPT-16-24-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	43	Worklist Smp#:	59
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

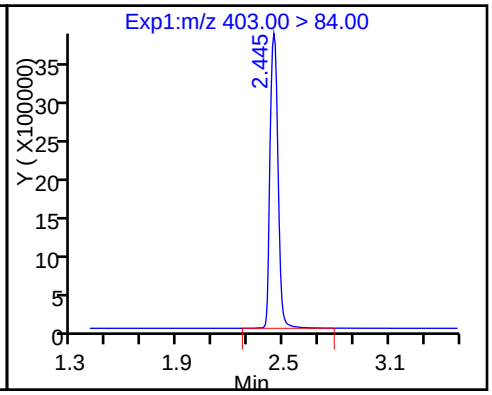
5 Perfluorobutanesulfonic acid



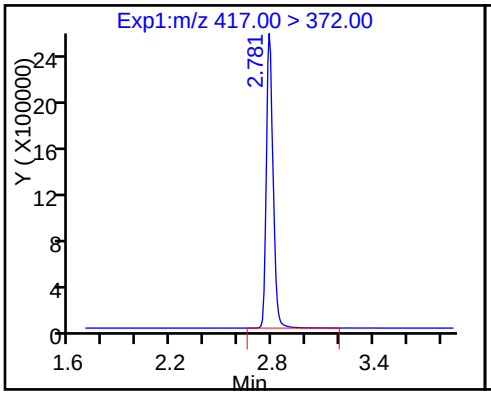
5 Perfluorobutanesulfonic acid



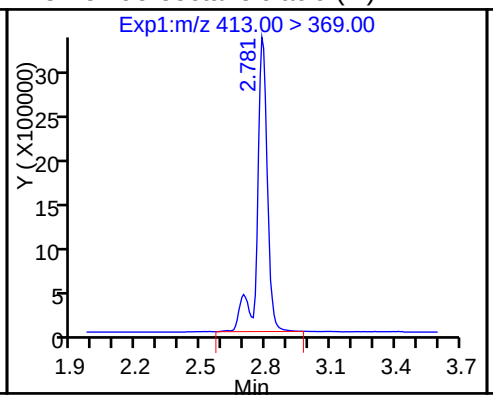
D 10 18O2 PFHxS



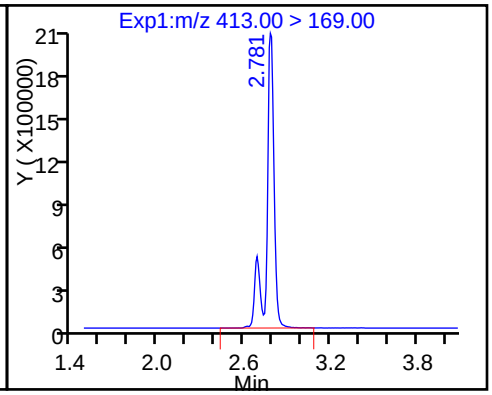
D 14 13C4 PFOA



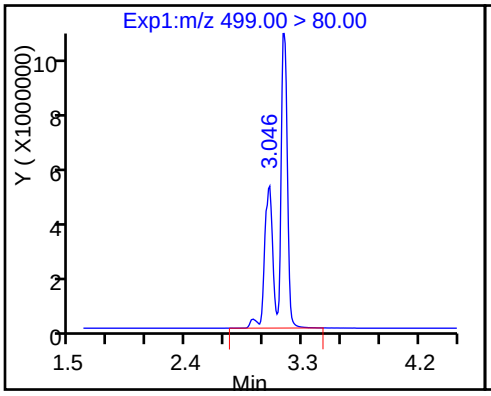
15 Perfluorooctanoic acid (M)



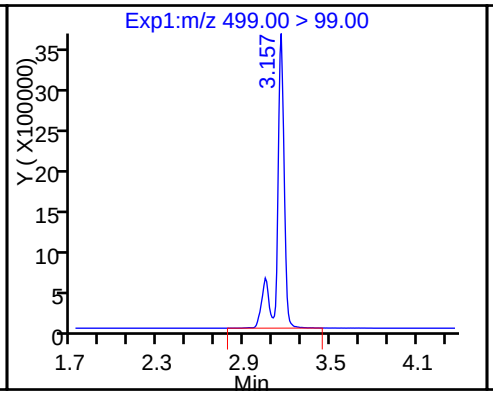
15 Perfluorooctanoic acid



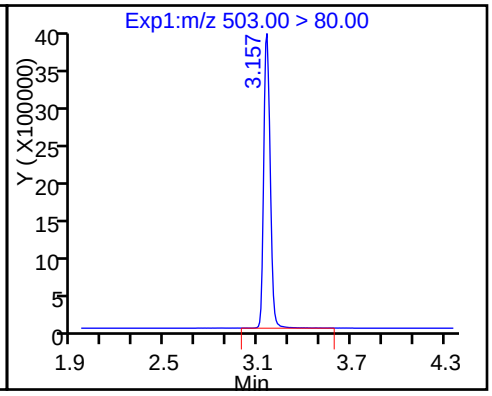
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

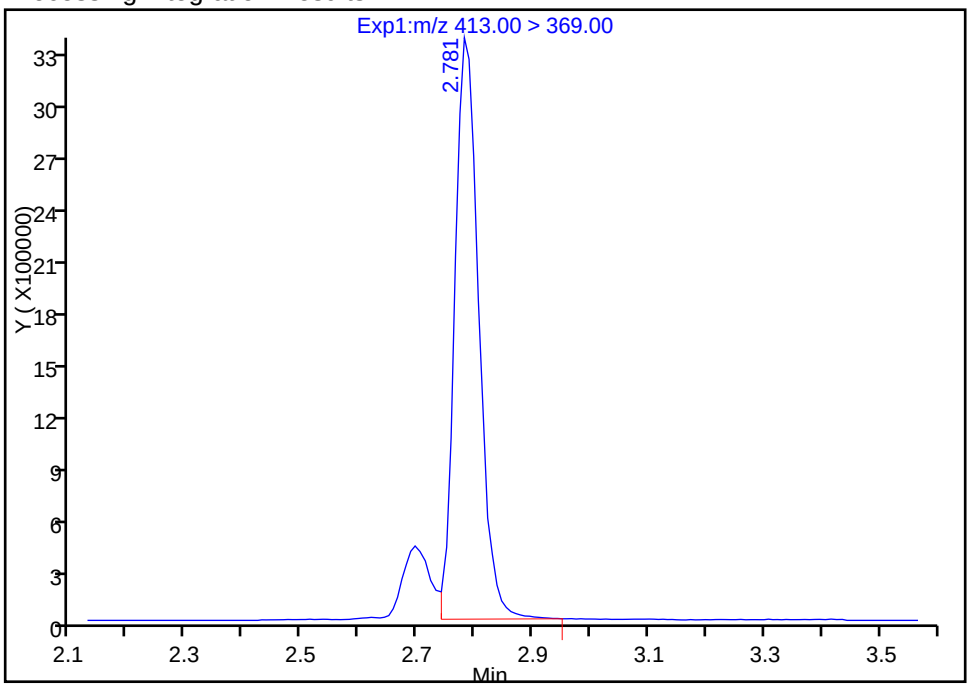
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_059.d				
Injection Date:	28-Dec-2016 00:05:07	Instrument ID:	A8_N		
Lims ID:	320-24060-A-18-A	Lab Sample ID:	320-24060-18		
Client ID:	DPT-16-24-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	43	Worklist Smp#:	59
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

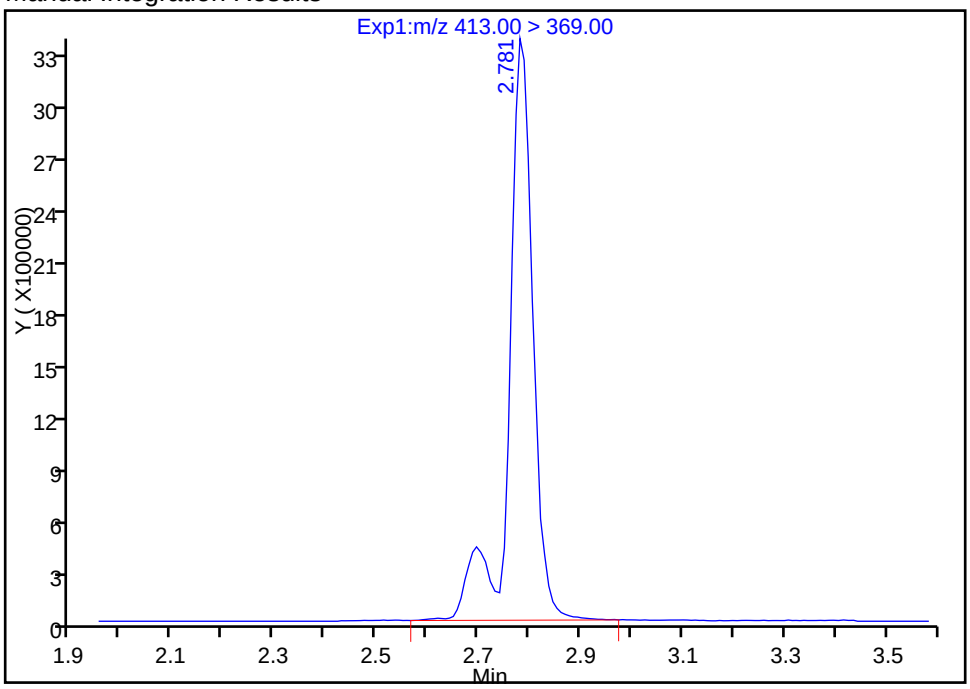
Processing Integration Results

RT: 2.78
Area: 9696790
Amount: 68.492225
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 11141145
Amount: 78.694270
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 10:00:26

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-24-GW-31-35 DL Lab Sample ID: 320-24060-18 DL

Matrix: Water Lab File ID: 29DEC2016C_019.d

Analysis Method: 537 (Modified) Date Collected: 12/06/2016 10:50

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 260.5(mL) Date Analyzed: 12/29/2016 15:42

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.15*	*D*	*0.024*	0.019	*0.0072*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.032*	*D*	*0.024*	0.019	*0.0088*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.47	D	0.038	0.029	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	89		25-150
STL00994	18O2 PFHxS	122		25-150
STL00991	13C4 PFOS	112		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_019.d
Lims ID: 320-24060-A-18-A
Client ID: DPT-16-24-GW-31-35
Sample Type: Client
Inject. Date: 29-Dec-2016 15:42:07 ALS Bottle#: 31 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-18-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:49 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.849	-0.007	1.000	931310	1.64				
298.90 > 99.00	1.842	1.849	-0.007	1.000	380778		2.45(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.439	2.448	-0.009		1890951	5.78		12.2	175419	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.782	2.784	-0.002	1.000	1582666	7.74			24302	
413.00 > 169.00	2.682	2.784	-0.102	0.964	985301		1.61(0.90-1.10)		6022	
D 14 13C4 PFOA										
417.00 > 372.00	2.775	2.784	-0.009		1019374	4.43		8.9	98361	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.151	3.050	0.101	1.000	6743732	24.3			245735	
499.00 > 99.00	3.151	3.050	0.101	1.000	1391098		4.85(0.90-1.10)		70876	
D 17 13C4 PFOS										
503.00 > 80.00	3.143	3.153	-0.010		1335279	5.37		11.2	77153	

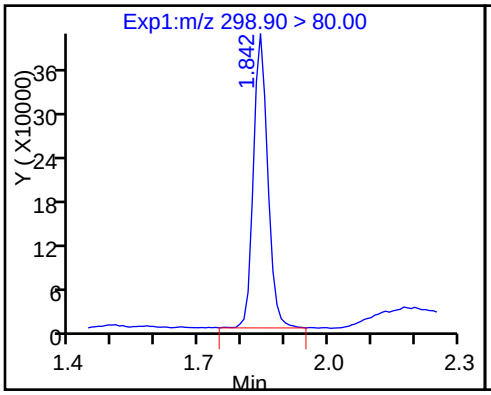
Report Date: 03-Jan-2017 08:08:59 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

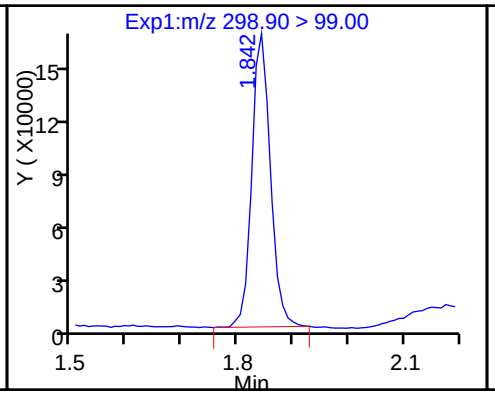
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_019.d

Injection Date:	29-Dec-2016 15:42:07	Instrument ID:	A8_N		
Lims ID:	320-24060-A-18-A	Lab Sample ID:	320-24060-18		
Client ID:	DPT-16-24-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	31	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

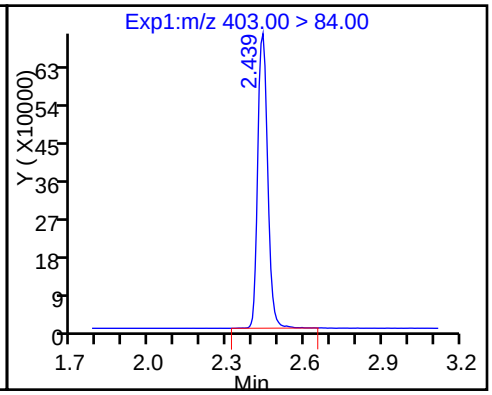
5 Perfluorobutanesulfonic acid



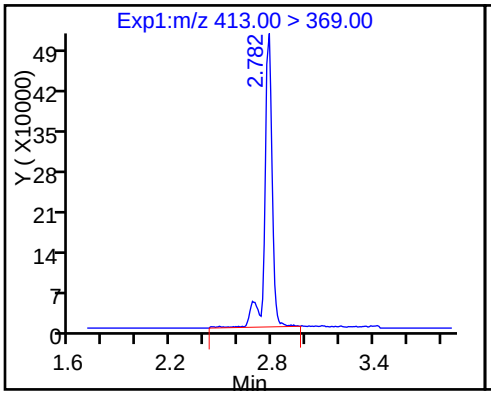
5 Perfluorobutanesulfonic acid



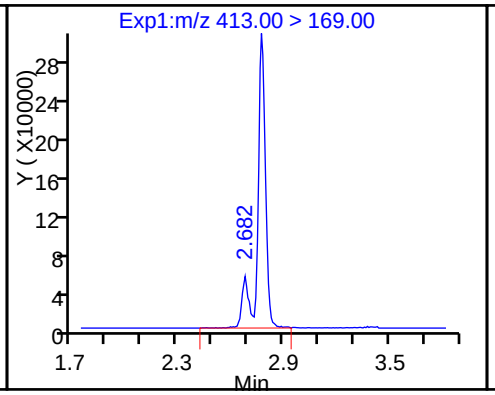
D 10 18O2 PFHxS



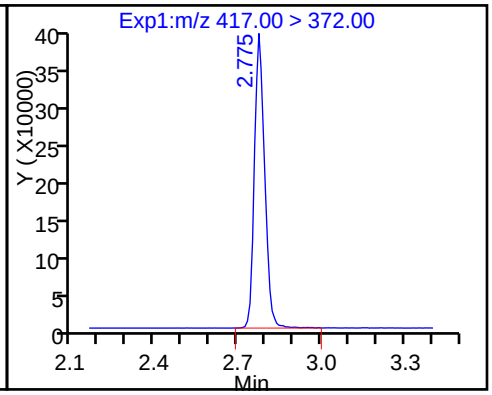
15 Perfluorooctanoic acid



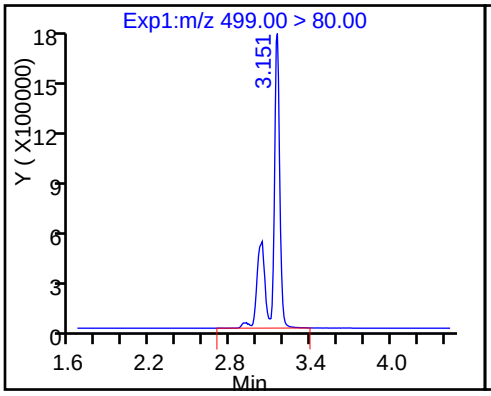
15 Perfluorooctanoic acid



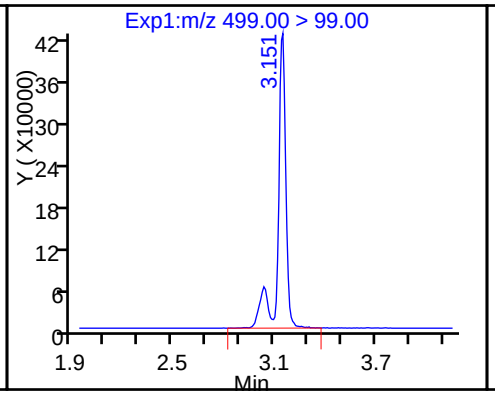
D 14 13C4 PFOA



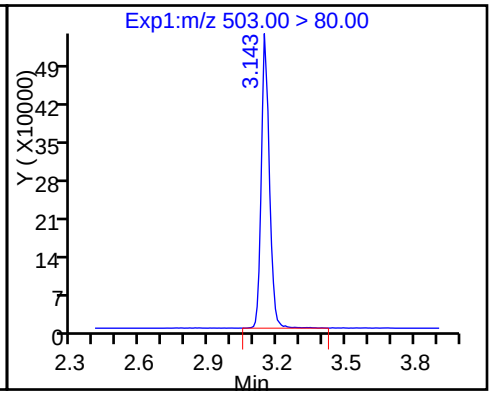
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-28-GW-31-35 Lab Sample ID: 320-24060-19

Matrix: Water Lab File ID: 27DEC2016A_060.d

Analysis Method: 537 (Modified) Date Collected: 12/06/2016 11:35

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 244(mL) Date Analyzed: 12/28/2016 00:12

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.52*	*E M*	*0.0026*	0.0020	*0.00077*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.0020	0.00094
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.42*	*E*	*0.0041*	0.0031	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	60		25-150
STL00994	18O2 PFHxS	44		25-150
STL00991	13C4 PFOS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_060.d
Lims ID: 320-24060-A-19-A
Client ID: DPT-16-28-GW-31-35
Sample Type: Client
Inject. Date: 28-Dec-2016 00:12:36 ALS Bottle#: 44 Worklist Smp#: 60
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-19-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 10:02:34 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 10:01:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.842	0.006	1.000	20284935	100.2				
298.90 > 99.00	1.848	1.842	0.006	1.000	9183983		2.21(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.446	0.006		6758336	20.7		43.7	141503	
D 14 13C4 PFOA										
417.00 > 372.00	2.790	2.782	0.008		6892493	29.9		59.8	405123	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.790	2.782	0.008	1.000	35363848	255.7			238727	EM
413.00 > 169.00	2.790	2.782	0.008	1.000	25671569		1.38(0.90-1.10)		678729	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.037	3.048	-0.011	1.000	49621317	205.2			303931	E
499.00 > 99.00	3.056	3.048	0.008	1.006	10211712		4.86(0.90-1.10)		85860	
D 17 13C4 PFOS										
503.00 > 80.00	3.158	3.159	-0.001		11624979	46.7		97.7	250792	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

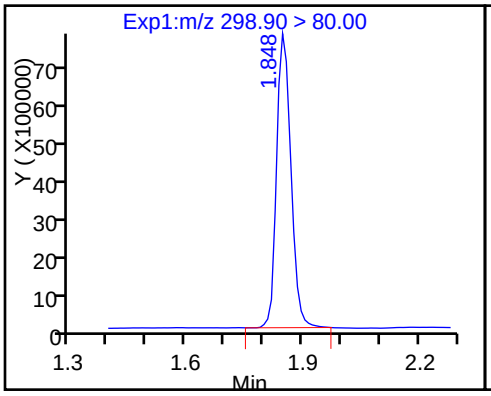
Report Date: 29-Dec-2016 10:02:44 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

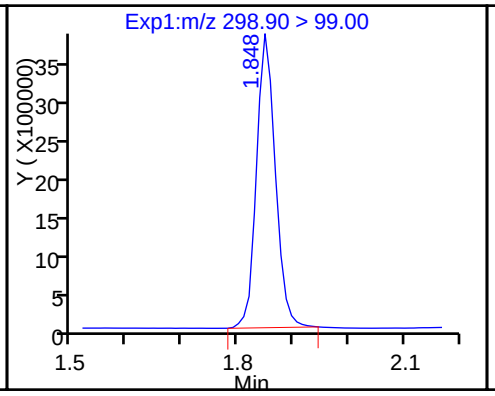
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_060.d

Injection Date:	28-Dec-2016 00:12:36	Instrument ID:	A8_N		
Lims ID:	320-24060-A-19-A	Lab Sample ID:	320-24060-19		
Client ID:	DPT-16-28-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	44	Worklist Smp#:	60
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

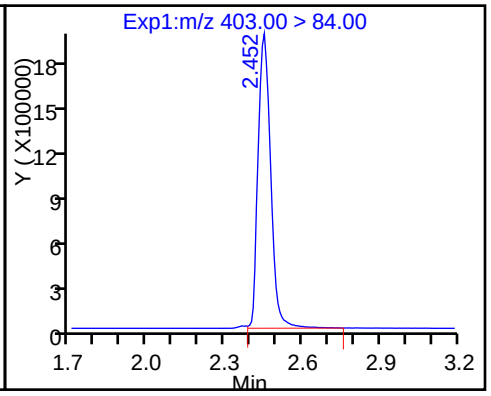
5 Perfluorobutanesulfonic acid



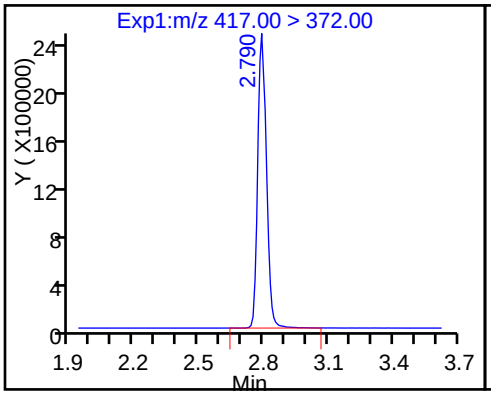
5 Perfluorobutanesulfonic acid



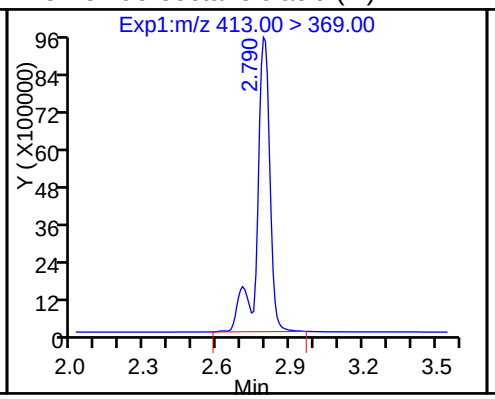
D 10 18O2 PFHxS



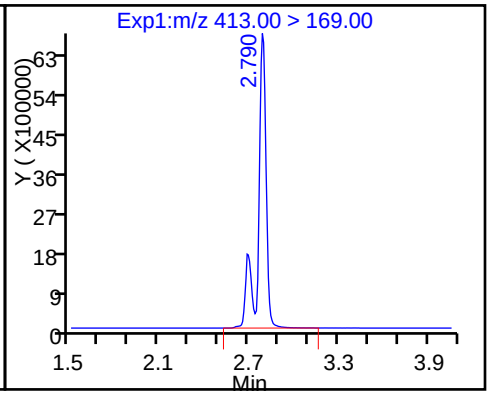
D 14 13C4 PFOA



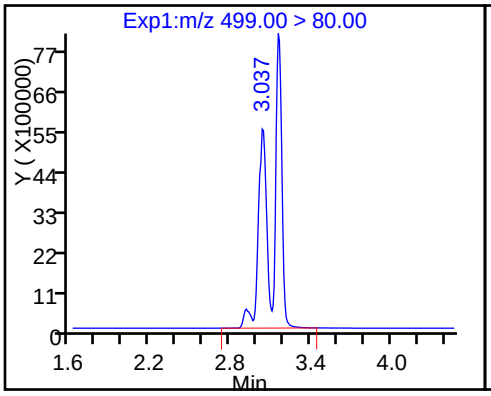
15 Perfluorooctanoic acid (M)



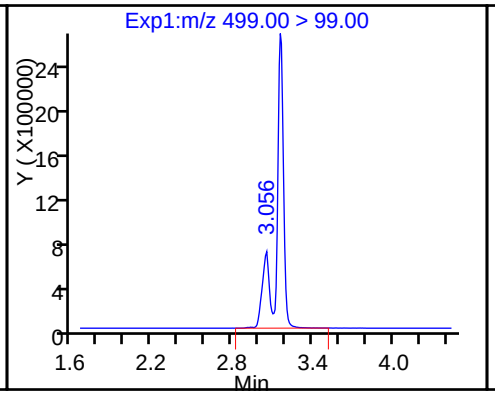
15 Perfluorooctanoic acid



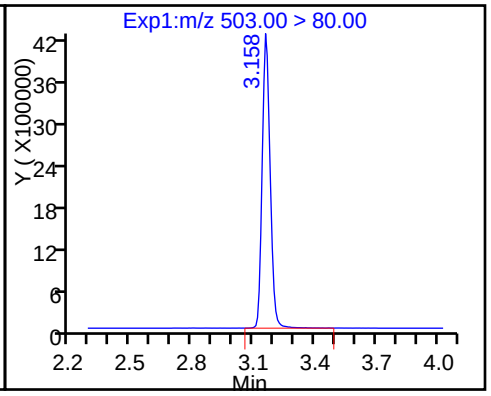
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

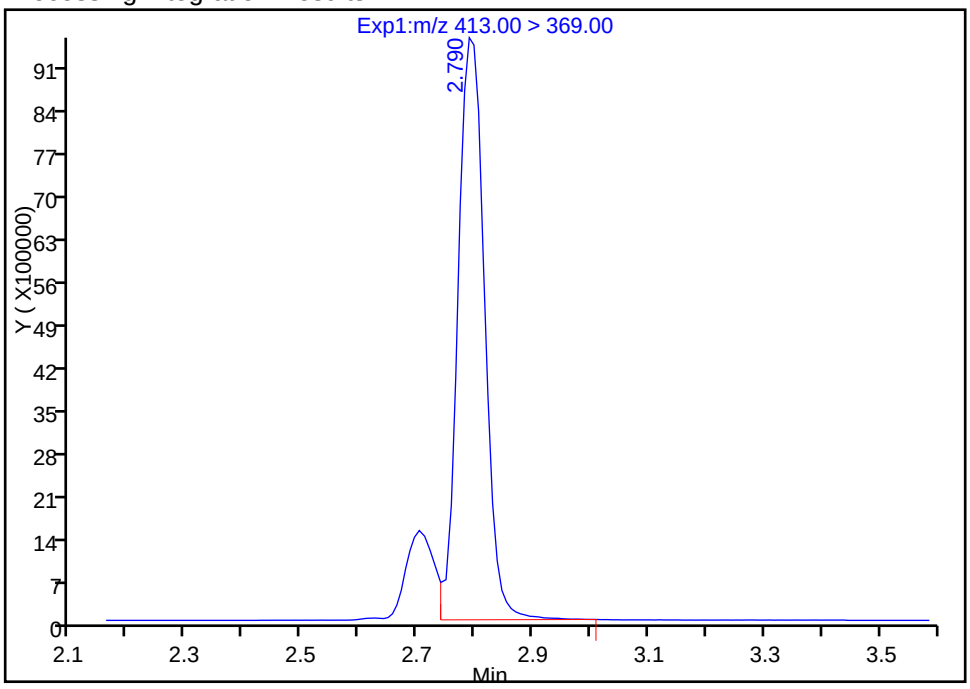
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_060.d				
Injection Date:	28-Dec-2016 00:12:36	Instrument ID:	A8_N		
Lims ID:	320-24060-A-19-A	Lab Sample ID:	320-24060-19		
Client ID:	DPT-16-28-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	44	Worklist Smp#:	60
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

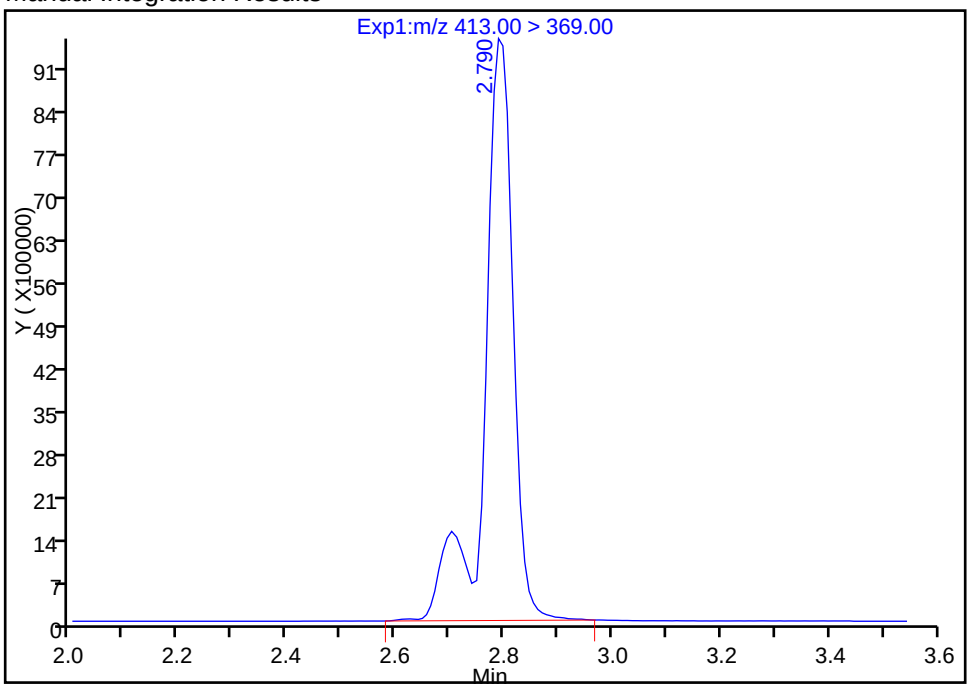
Processing Integration Results

RT: 2.79
Area: 30571318
Amount: 221.0776
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 35363848
Amount: 255.7350
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 10:01:06

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-28-GW-31-35 DL Lab Sample ID: 320-24060-19 DL

Matrix: Water Lab File ID: 29DEC2016C_020.d

Analysis Method: 537 (Modified) Date Collected: 12/06/2016 11:35

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 244(mL) Date Analyzed: 12/29/2016 15:49

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.61	D	0.026	0.020	0.0077
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.12*	*D*	*0.026*	0.020	*0.0094*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.43	D	0.041	0.031	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	77		25-150
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_020.d
Lims ID: 320-24060-A-19-A
Client ID: DPT-16-28-GW-31-35
Sample Type: Client
Inject. Date: 29-Dec-2016 15:49:38 ALS Bottle#: 32 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-24060-a-19-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:49 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

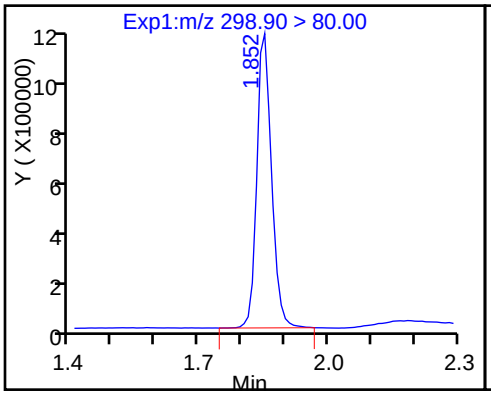
First Level Reviewer: westendorfc Date: 03-Jan-2017 08:07:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.849	0.003	1.000	2718636	6.04				
298.90 > 99.00	1.852	1.849	0.003	1.000	1123505		2.42(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.443	2.448	-0.005		1503265	4.60		9.7	180294	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.788	2.784	0.004	1.000	5341984	29.9			64683	
413.00 > 169.00	2.686	2.784	-0.098	0.963	3379055		1.58(0.90-1.10)		18713	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.784	-0.003		889036	3.86		7.7	106130	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.156	3.050	0.106	1.000	5374805	20.9			136934	
499.00 > 99.00	3.156	3.050	0.106	1.000	1029698		5.22(0.90-1.10)		40258	
D 17 13C4 PFOS										
503.00 > 80.00	3.156	3.153	0.003		1237573	4.97		10.4	67516	

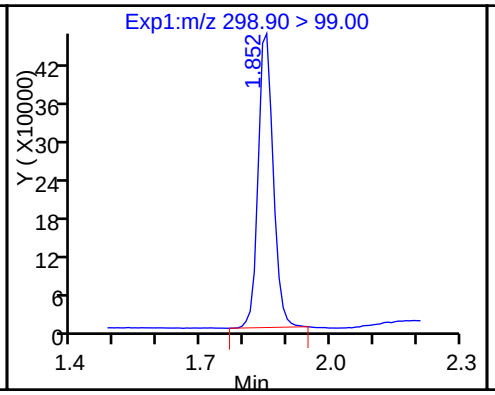
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_020.d
Injection Date: 29-Dec-2016 15:49:38 Instrument ID: A8_N
Lims ID: 320-24060-A-19-A Lab Sample ID: 320-24060-19
Client ID: DPT-16-28-GW-31-35
Operator ID: A8-PC\A8 ALS Bottle#: 32 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL

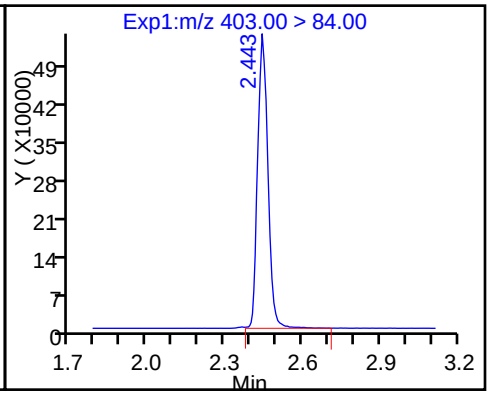
5 Perfluorobutanesulfonic acid



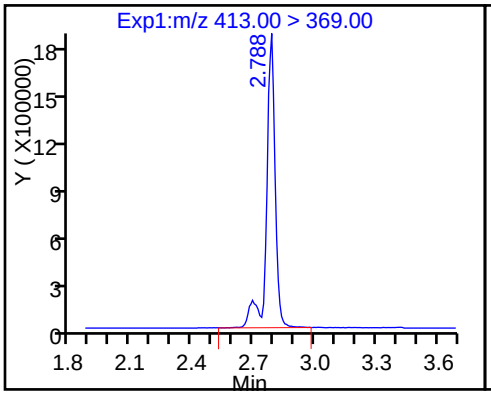
5 Perfluorobutanesulfonic acid



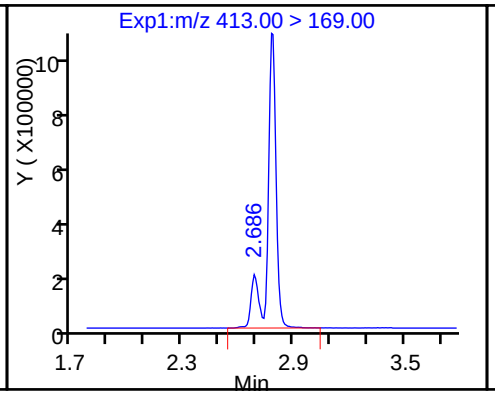
D 10 18O2 PFHxS



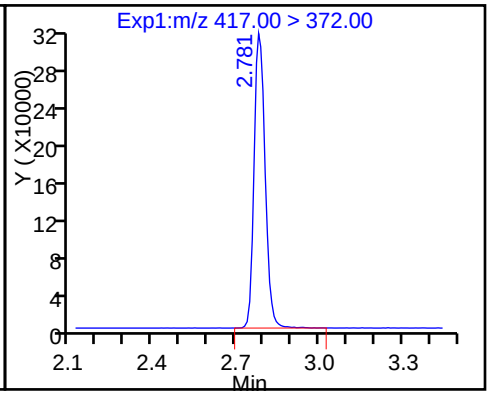
15 Perfluorooctanoic acid



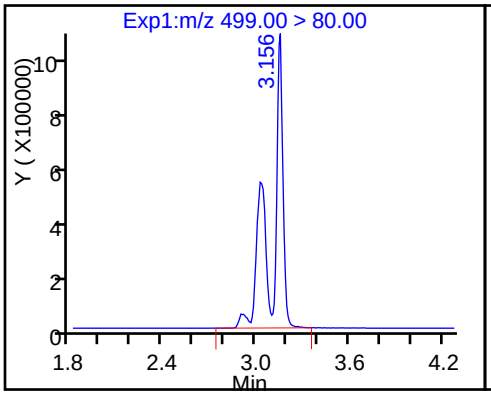
15 Perfluorooctanoic acid



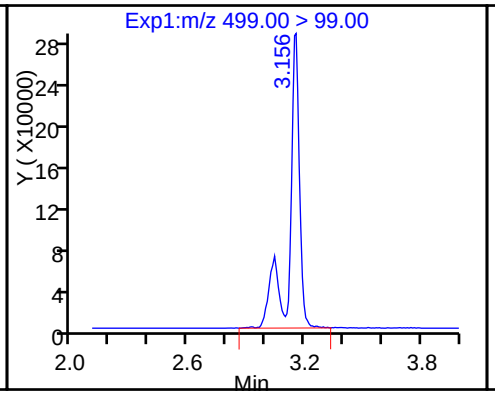
D 14 13C4 PFOA



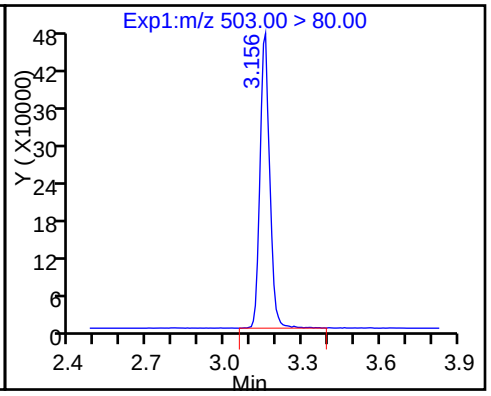
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-28-GW-19-23 | Lab Sample ID: 320-24060-20

Matrix: Water | Lab File ID: 27DEC2016A_061.d

Analysis Method: 537 (Modified) | Date Collected: 12/06/2016 11:45

Extraction Method: 3535 | Date Extracted: 12/17/2016 13:28

Sample wt/vol: 250.5(mL) | Date Analyzed: 12/28/2016 00:20

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.55*	*E M*	*0.0025*	0.0020	*0.00075*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.0020	0.00092
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*3.2*	*E*	*0.0040*	0.0030	*0.0013*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	78		25-150
STL00994	18O2 PFHxS	51		25-150
STL00991	13C4 PFOS	49		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_061.d
Lims ID: 320-24060-A-20-A
Client ID: DPT-16-28-GW-19-23
Sample Type: Client
Inject. Date: 28-Dec-2016 00:20:06 ALS Bottle#: 45 Worklist Smp#: 61
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-24060-a-20-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 10:02:34 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 10:02:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.842	0.007	1.000	19001992	79.7				
298.90 > 99.00	1.849	1.842	0.007	1.000	8171690		2.33(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.441	2.446	-0.005		7953853	24.3		51.4	420737	
D 14 13C4 PFOA										
417.00 > 372.00	2.788	2.782	0.006		8926879	38.8		77.5	382258	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.788	2.782	0.006	1.000	49440578	276.1			134514	EM
413.00 > 169.00	2.788	2.782	0.006	1.000	39602099		1.25(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.034	3.048	-0.014	1.000	195775780	1612.5			229363	E
499.00 > 99.00	3.155	3.048	0.107	1.040	60297728		3.25(0.90-1.10)		585181	
D 17 13C4 PFOS										
503.00 > 80.00	3.155	3.159	-0.004		5835998	23.5		49.1	73007	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

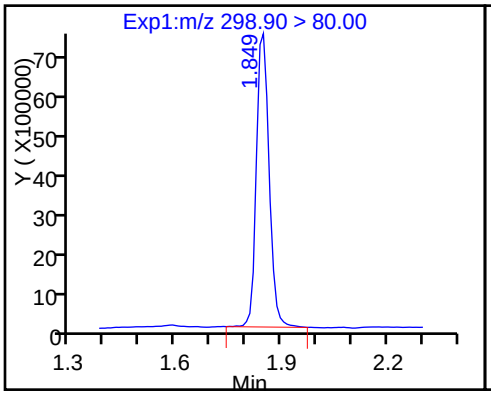
Report Date: 29-Dec-2016 10:02:45 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

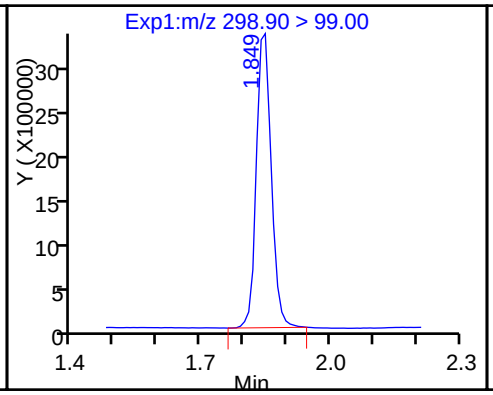
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_061.d

Injection Date:	28-Dec-2016 00:20:06	Instrument ID:	A8_N		
Lims ID:	320-24060-A-20-A	Lab Sample ID:	320-24060-20		
Client ID:	DPT-16-28-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	45	Worklist Smp#:	61
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

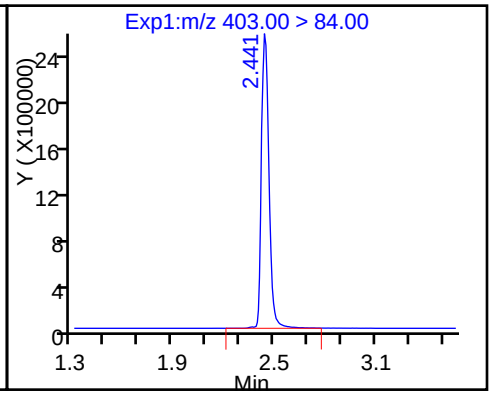
5 Perfluorobutanesulfonic acid



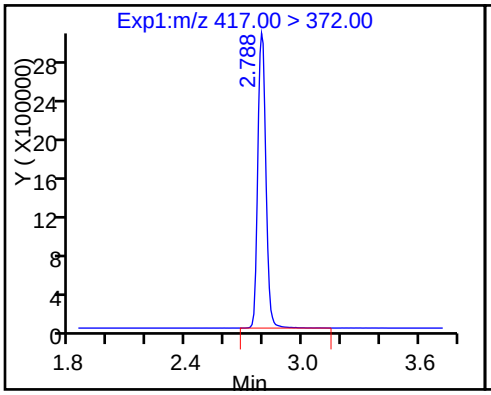
5 Perfluorobutanesulfonic acid



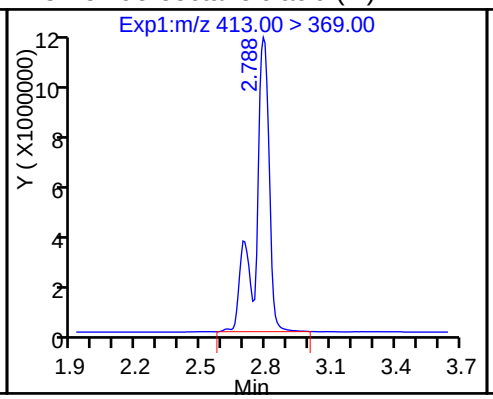
D 10 18O2 PFHxS



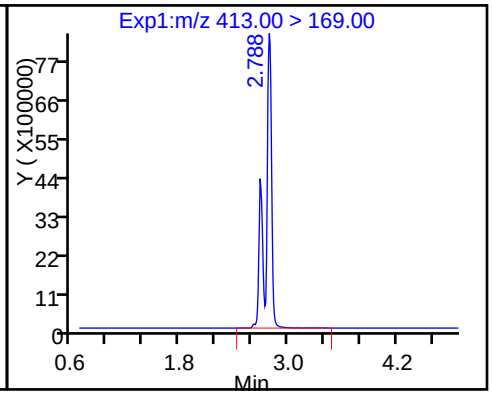
D 14 13C4 PFOA



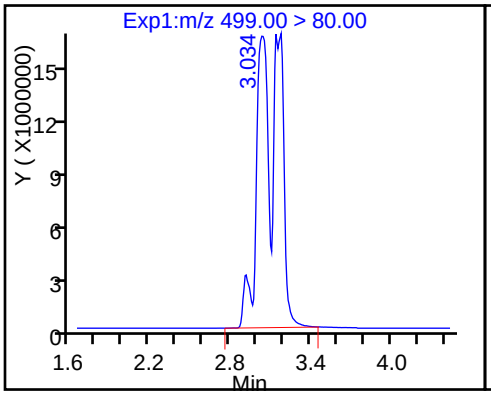
15 Perfluorooctanoic acid (M)



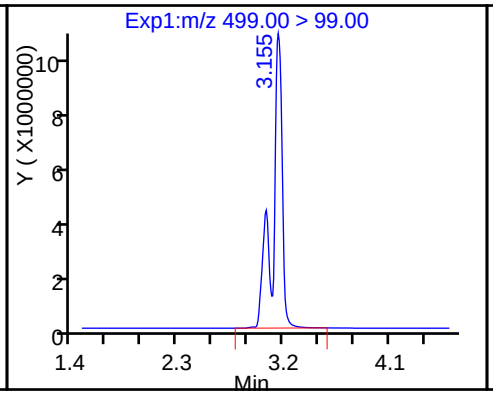
15 Perfluorooctanoic acid



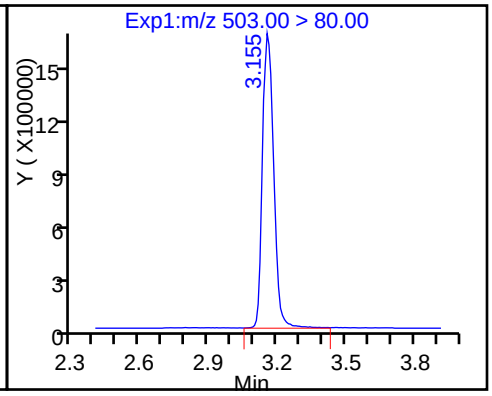
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

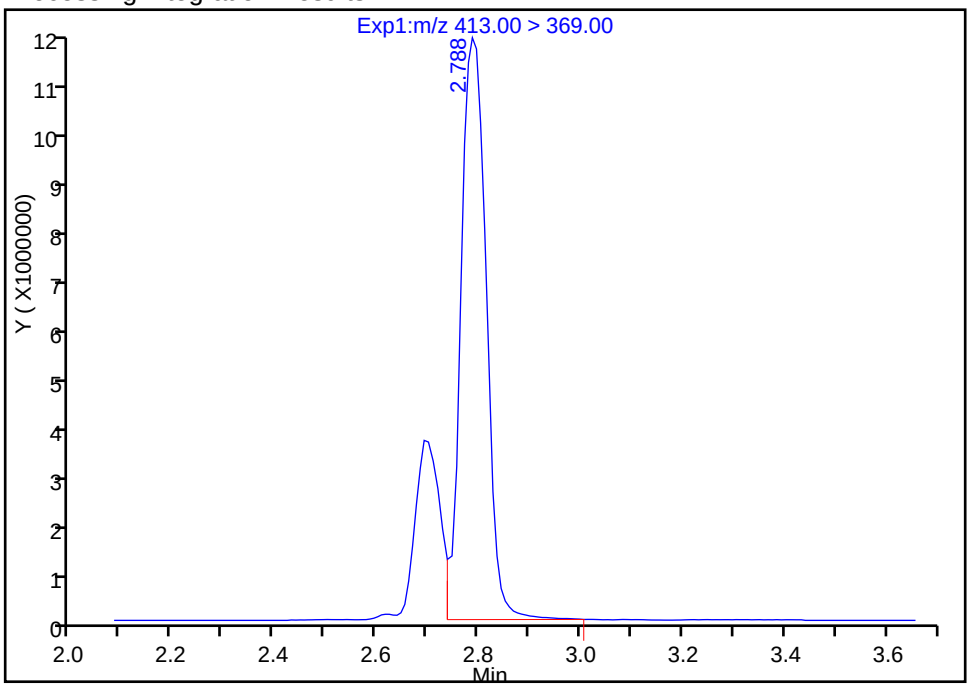
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_061.d				
Injection Date:	28-Dec-2016 00:20:06	Instrument ID:	A8_N		
Lims ID:	320-24060-A-20-A	Lab Sample ID:	320-24060-20		
Client ID:	DPT-16-28-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	45	Worklist Smp#:	61
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

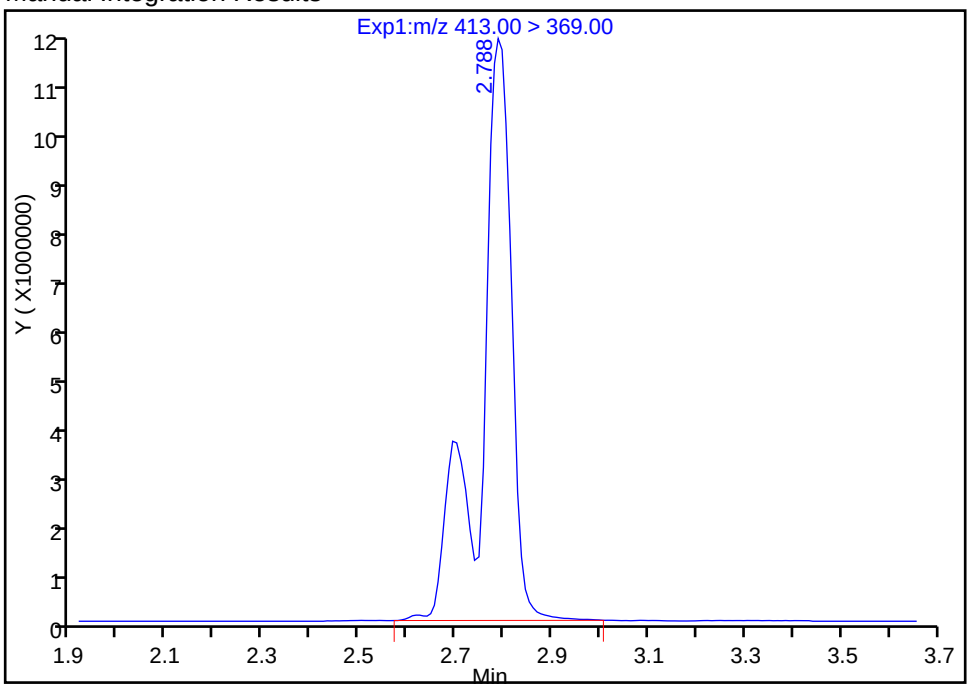
Processing Integration Results

RT: 2.79
Area: 37993238
Amount: 212.1357
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 49440578
Amount: 276.0520
Amount Units: ng/ml



Reviewer: chandrasenas, 29-Dec-2016 10:02:08

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: DPT-16-28-GW-19-23 DL Lab Sample ID: 320-24060-20 DL

Matrix: Water Lab File ID: 29DEC2016C_007.d

Analysis Method: 537 (Modified) Date Collected: 12/06/2016 11:45

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 250.5(mL) Date Analyzed: 12/29/2016 14:12

Con. Extract Vol.: 0.5(mL) Dilution Factor: 20

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144419 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.66	D	0.050	0.040	0.015
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.089*	*D*	*0.050*	0.040	*0.018*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	4.9	D	0.080	0.060	0.025

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	114		25-150
STL00994	18O2 PFHxS	108		25-150
STL00991	13C4 PFOS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_007.d
Lims ID: 320-24060-A-20-A
Client ID: DPT-16-28-GW-19-23
Sample Type: Client
Inject. Date: 29-Dec-2016 14:12:10 ALS Bottle#: 21 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 20.0000
Sample Info: 320-24060-a-20-a 20X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

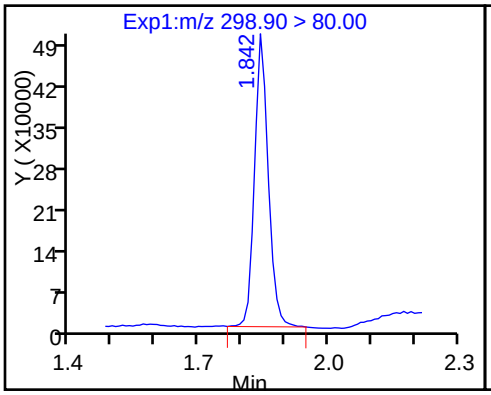
Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.848	-0.006	1.000	1113620	2.23				
298.90 > 99.00	1.842	1.848	-0.006	1.000	467885		2.38(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.440	2.443	-0.003		831800	2.54		5.4	108543	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.783	2.781	0.002	1.000	4337892	16.4			79705	
413.00 > 169.00	2.683	2.781	-0.098	0.964	2919230		1.49(0.90-1.10)		25852	
D 14 13C4 PFOA										
417.00 > 372.00	2.783	2.789	-0.006		658627	2.86		5.7	125533	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.136	3.157	-0.021	1.000	29527589	121.9			361787	
499.00 > 99.00	3.152	3.157	-0.005	1.005	6219672		4.75(0.90-1.10)		312073	
D 17 13C4 PFOS										
503.00 > 80.00	3.144	3.157	-0.013		582112	2.34		4.9	31265	

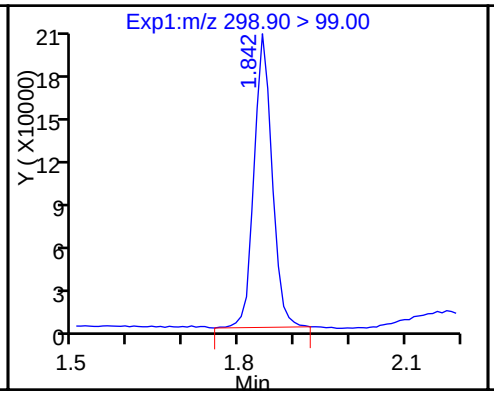
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_007.d
Injection Date: 29-Dec-2016 14:12:10 Instrument ID: A8_N
Lims ID: 320-24060-A-20-A Lab Sample ID: 320-24060-20
Client ID: DPT-16-28-GW-19-23
Operator ID: A8-PC\A8 ALS Bottle#: 21 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 20.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL

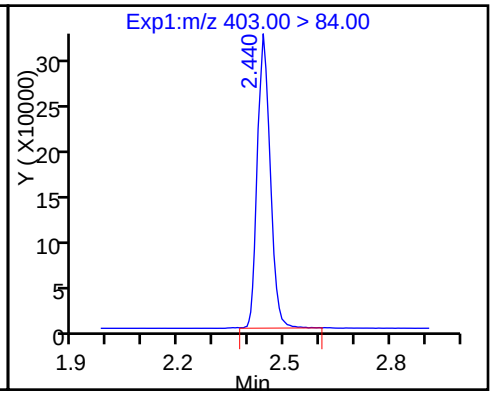
5 Perfluorobutanesulfonic acid



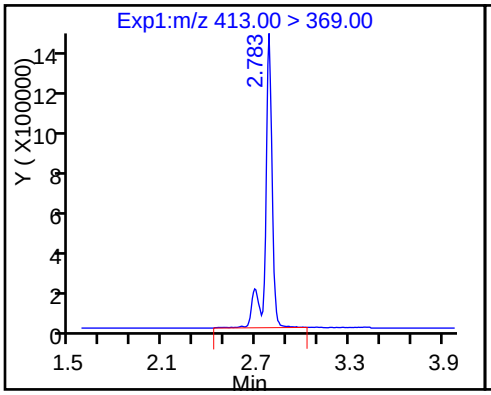
5 Perfluorobutanesulfonic acid



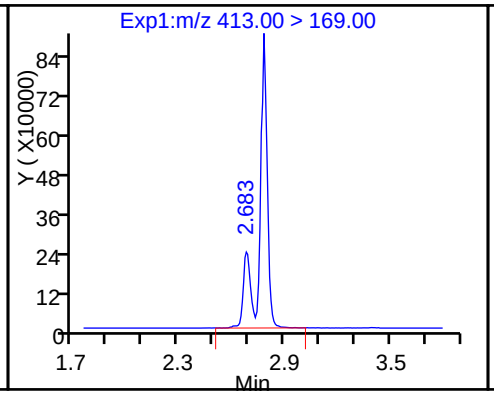
D 10 18O2 PFHxS



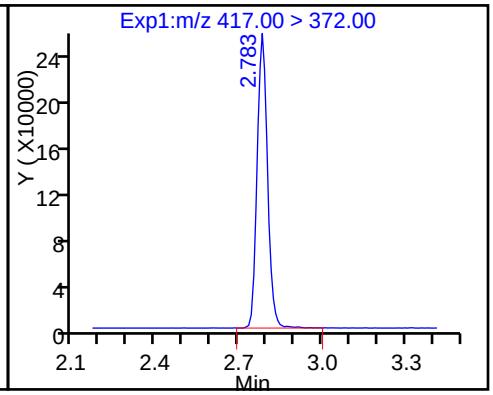
15 Perfluorooctanoic acid



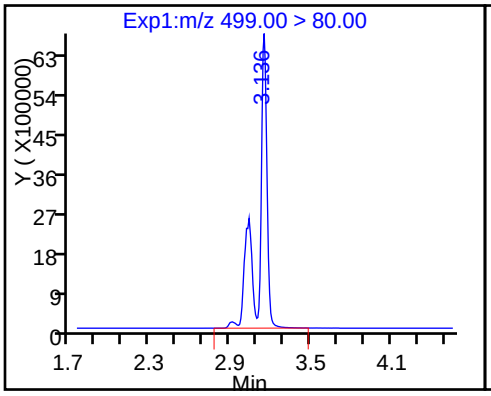
15 Perfluorooctanoic acid



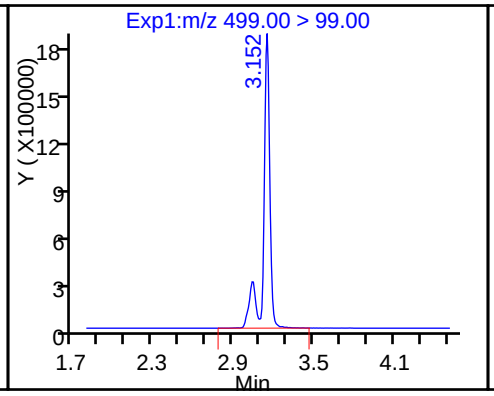
D 14 13C4 PFOA



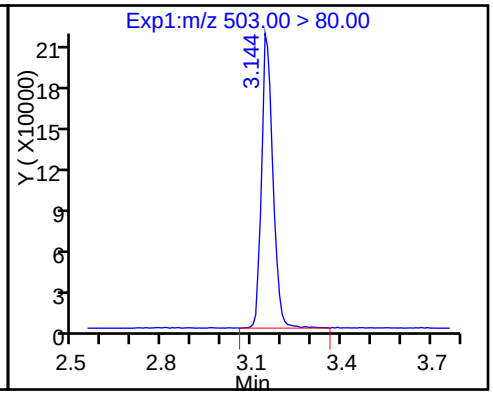
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_018.d

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.542 1.537		1.530		1.534		1.534		1.533		1.285 - 1.785	1.535
Perfluoropentanoic acid (PFPeA)	1.810 1.813		1.805		1.810		1.810		1.810		1.560 - 2.060	1.810
Perfluorobutanesulfonic acid (PFBS)	1.849 1.852		1.844		1.849		1.849		1.848		1.668 - 2.028	1.849
Perfluorohexanoic acid (PFHxA)	2.097 2.096		2.092		2.097		2.093		2.098		1.846 - 2.346	2.096
Perfluorohexanesulfonic acid (PFHxS)	+++++ 2.444		2.445		2.364		2.440		2.446		2.181 - 2.681	2.428
Perfluoroheptanoic acid (PFHpA)	2.430 2.426		2.430		2.432		2.426		2.424		2.178 - 2.678	2.428
6:2FTS		+++++ 2.769		2.761		2.768		2.767		2.767	2.518 - 3.018	2.766
Perfluorooctanoic acid (PFOA)	+++++ 2.783		2.781		2.783		2.785		2.782		2.533 - 3.033	2.783
Perfluoroheptanesulfonic Acid (PFHpS)	2.790 2.791		2.789		2.792		2.785		2.791		2.540 - 3.040	2.790
Perfluorooctane Sulfonate (PFOS)	+++++ 2.977		3.149		3.153		3.129		3.151		2.868 - 3.368	3.112
Perfluorononanoic acid (PFNA)	3.159 3.160		3.157		3.153		3.153		3.151		2.905 - 3.405	3.156
Perfluorooctane Sulfonamide (FOSA)	3.490 3.491		3.489		3.492		3.492		3.490		3.241 - 3.741	3.491
Perfluorodecanoic acid (PFDA)	3.515 3.516		3.506		3.509		3.509		3.507		3.260 - 3.760	3.510
8:2FTS		3.511 3.516		3.502		3.511		3.511		3.512	3.261 - 3.761	3.511

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		3.684 3.680		3.673		3.683		3.683		3.684	3.431 - 3.931	3.681
Perfluorodecanesulfonic acid (PFDS)	3.826 3.819		3.824		3.819		3.827		3.818		3.572 - 4.072	3.822
Perfluoroundecanoic acid (PFUnA)	3.834 3.845		3.833		3.837		3.844		3.844		3.589 - 4.089	3.840
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		3.865 3.853		3.855		3.847		3.847		3.857	3.604 - 4.104	3.854
MeFOSA		3.998 4.004		3.997		3.997		3.997		3.999	3.749 - 4.249	3.999
Perfluorododecanoic acid (PFDoA)	4.141 4.136		4.133		4.136		4.135		4.135		3.886 - 4.386	4.136
N-EtFOSA-M		4.187 4.193		4.179		4.186		4.186		4.189	3.937 - 4.437	4.187
Perfluorotridecanoic Acid (PFTriA)	4.404 4.407		4.396		4.398		4.398		4.398		4.150 - 4.650	4.400
Perfluorotetradecanoic acid (PFTeA)	4.643 4.635		4.643		4.645		4.644		4.645		4.392 - 4.892	4.643
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 5.060		5.058		5.059		5.059		5.059		4.809 - 5.309	5.059
Perfluoro-n-octadecanoic acid (PFODA)	5.413 5.414		5.413		5.414		5.413		5.413		5.164 - 5.664	5.413
13C4 PFBA	1.534 1.537		1.530		1.534		1.534		1.533		1.284 - 1.784	1.534
13C5-PFPeA	1.810 1.813		1.805		1.810		1.810		1.810		1.560 - 2.060	1.810
13C2 PFHxA	2.097 2.096		2.092		2.097		2.102		2.098		1.847 - 2.347	2.097
13C4-PFHpA	2.430 2.426		2.423		2.425		2.426		2.424		2.176 - 2.676	2.426
18O2 PFHxS	2.452 2.444		2.445		2.447		2.440		2.446		2.196 - 2.696	2.446
M2-6:2FTS		2.760 2.776		2.761		2.768		2.767		2.767	2.517 - 3.017	2.767
13C4 PFOA	2.782 2.783		2.781		2.783		2.785		2.782		2.533 - 3.033	2.783
13C4 PFOS	3.151 3.152		3.149		3.153		3.153		3.151		2.901 - 3.401	3.152
13C5 PFNA	3.159 3.152		3.149		3.153		3.153		3.151		2.903 - 3.403	3.153
13C8 FOSA	3.490 3.491		3.489		3.484		3.484		3.490		3.238 - 3.738	3.488
13C2 PFDA	3.515 3.508		3.514		3.509		3.517		3.516		3.263 - 3.763	3.513

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
M2-8:2FTS		3.511 3.516		3.511		3.511		3.511		3.520	3.263 - 3.763	3.513
d3-NMeFOSAA		3.684 3.680		3.673		3.673		3.673		3.675	3.426 - 3.926	3.676
13C2 PFUnA	3.843 3.845		3.842		3.845		3.835		3.844		3.592 - 4.092	3.842
d5-NEtFOSAA		3.848 3.845		3.838		3.838		3.838		3.848	3.592 - 4.092	3.843
d-N-MeFOSA-M		3.988 3.995		3.987		3.987		3.997		3.999	3.742 - 4.242	3.992
13C2 PFDoA	4.134 4.129		4.133		4.129		4.135		4.135		3.882 - 4.382	4.133
d-N-EtFOSA-M		4.180 4.186		4.172		4.179		4.179		4.182	3.930 - 4.430	4.180
13C2-PFTeDA	4.643 4.635		4.633		4.645		4.644		4.645		4.391 - 4.891	4.641
13C2-PFHxDA	5.058 5.060		5.047		5.059		5.059		5.059		4.807 - 5.307	5.057

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

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_018.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9	LVL 2 LVL 6 LVL 10	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
13C4 PFBA	365277 360742 345484		364028 351708 299221		Ave		347743.167				7.2		50.0			
13C5-PFPeA	282426 281261 261073		281354 272343 217976		Ave		266072.353				9.4		50.0			
13C2 PFHxA	253106 254198 247986		256296 252164 206910		Ave		245109.910				7.7		50.0			
13C4-PFHpA	244814 245211 216032		244964 235764 171281		Ave		226344.393				12.9		50.0			
18O2 PFHxS	341723 342975 323020		340234 339593 274309		Ave		326975.747				8.2		50.0			
M2-6:2FTS		112694 117279 110718		107543 136249 117410	Ave		116982.140				8.7		50.0			
13C4 PFOA	250090 252701 222856		252554 236364 167605		Ave		230361.637				14.3		50.0			

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9	LVL 2 LVL 6 LVL 10	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
13C4 PFOS	256822 261188 249930		260657 254876 209612		Ave		248847.249				7.9		50.0			
13C5 PFNA	189110 195552 171630		190741 184721 134367		Ave		177686.923				12.8		50.0			
13C8 FOSA	407109 400699 376084		404776 394065 322114		Ave		384141.077				8.4		50.0			
13C2 PFDA	168454 164694 153437		169609 162695 124922		Ave		157301.833				10.7		50.0			
M2-8:2FTS		100584 111541 99917		96024 124933 111666	Ave		107444.339				10.0		50.0			
d3-NMeFOSAA		72700 80292 68450		71182 87583 71744	Ave		75324.9433				9.6		50.0			
13C2 PFUnA	127043 125252 113156		124385 124531 89132		Ave		117249.927				12.5		50.0			
d5-NEtFOSAA		77796 84707 69727		75140 88209 74518	Ave		78349.4833				8.8		50.0			
d-N-MeFOSA-M		86501 102439 90246		92791 105280 93163	Ave		95069.8233				7.6		50.0			
13C2 PFDoA	116302 115598 108083		116442 116336 92982		Ave		110957.213				8.5		50.0			
d-N-EtFOSA-M		75857 91238 82985		82198 93456 88971	Ave		85784.0067				7.7		50.0			
13C2-PFTeDA	239125 244965 219010		237709 233101 190415		Ave		227387.480				8.8		50.0			
13C2-PFHxDA	131492 130859 120547		133987 126716 103803		Ave		124567.543				9.0		50.0			

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

FORM VI

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
Perfluorobutanoic acid (PFBA)	310962 213818	334546	310647	308231	310088	AveID		0.8537				9.1		35.0			
Perfluoropentanoic acid (PFPeA)	304642 171455	288512	287573	263221	271648	AveID		0.9868				10.7		35.0			
Perfluorobutanesulfonic acid (PFBS)	490041 286903	557732	479895	487779	500362	AveID		1.4170				14.1		50.0			
Perfluorohexanoic acid (PFHxA)	252858 166120	246488	239458	230141	236657	AveID		0.9288				7.3		35.0			
Perfluorohexanesulfonic acid (PFHxS)	+++++ 253974	363991	382940	335246	339121	AveID		1.0300				7.4		35.0			
Perfluoroheptanoic acid (PFHpA)	258208 151171	237386	237734	215989	235022	AveID		0.9788				5.9		35.0			
6:2FTS	85456	+++++ 89174	127446	112813	109001	AveID		0.8914				15.8		35.0			
Perfluorooctanoic acid (PFOA)	+++++ 153922	255488	254861	228712	247908	AveID		1.0031				6.0		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	283576 201995	315862	279184	286553	283857	AveID		1.1019				8.2		50.0			
Perfluorooctane Sulfonate (PFOS)	+++++ 215911	272566	237468	253058	247933	AveID		0.9945				6.4		35.0			
Perfluorononanoic acid (PFNA)	180132 123966	178149	188341	164925	180502	AveID		0.9518				2.7		35.0			
Perfluorooctane Sulfonamide (FOSA)	391498 239019	399542	381363	354739	397863	AveID		0.9327				10.5		35.0			

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

FORM VI

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
Perfluorodecanoic acid (PFDA)	164274 113084	158337	155537	146490	154381	AveID		0.9438				3.1		35.0			
8:2FTS	83185	83106 84092	116095	79051	100536	AveID		0.8473				12.1		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	57133	59646 64621	85412	57389	74839	AveID		0.8846				15.4		35.0			
Perfluorodecanesulfonic acid (PFDS)	143714 124235	159960	145051	150246	147895	AveID		0.5840				4.8		50.0			
Perfluoroundecanoic acid (PFUnA)	130000 84265	121036	119189	108755	109942	AveID		0.9563				4.9		35.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	53544	59930 59690	75946	53623	68286	AveID		0.7929				15.1		35.0			
MeFOSA	68699	72138 80570	97349	70049	88147	AveID		0.8376				13.3		35.0			
Perfluorododecanoic acid (PFDoA)	105614 87129	111590	103481	101460	101274	AveID		0.9180				3.5		35.0			
N-EtFOSA-M	65375	61986 78901	90659	62962	85286	AveID		0.8640				13.9		35.0			
Perfluorotridecanoic Acid (PFTriA)	106640 80194	104393	109461	99013	105018	AveID		0.9069				2.9		50.0			
Perfluorotetradecanoic acid (PFTeA)	197042 136554	183949	187123	172910	180115	AveID		1.5848				4.6		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 88775	113395	173261	106364	119906	L1ID	0.5185	0.9555							1.0000		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	123098 91965	122262	114997	117393	116752	AveID		1.0304				3.9		50.0			

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_018.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
13C4 PFBA	Ave	18263829 14961055	17585378	18201393	17274187	18037108	50.0 50.0	50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	14121285 10898820	13617158	14067714	13053659	14063070	50.0 50.0	50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	12655304 10345480	12608210	12814780	12399280	12709919	50.0 50.0	50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	12240718 8564025	11788221	12248222	10801604	12260528	50.0 50.0	50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	16163510 12974829	16062766	16093048	15278828	16222736	47.3 47.3	47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	5570739	5352965 5576967	6471813	5108306	5259120	47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	12504504 8380251	11818203	12627691	11142777	12635065	50.0 50.0	50.0	50.0	50.0	50.0
13C4 PFOS	Ave	12276070 10019454	12183062	12459383	11946650	12484772	47.8 47.8	47.8	47.8	47.8	47.8

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

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
13C5 PFNA	Ave	9455492 6718354	9236073	9537045	8581504	9777609	50.0 50.0	50.0	50.0	50.0	50.0
13C8 FOSA	Ave	20355431 16105707	19703272	20238792	18804188	20034933	50.0 50.0	50.0	50.0	50.0	50.0
13C2 PFDA	Ave	8422718 6246112	8134734	8480447	7671861	8234678	50.0 50.0	50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	5342826	4817997 5348797	5984276	4599569	4786038	47.9	47.9 47.9	47.9	47.9	47.9
d3-NMeFOSAA	Ave	4014623	3634985 3587176	4379131	3559083	3422485	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	6352135 4456593	6226562	6219248	5657823	6262617	50.0 50.0	50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	4235352	3889792 3725902	4410456	3757014	3486329	50.0	50.0 50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	5121953	4325034 4658153	5263980	4639527	4512300	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	5815120 4649092	5816809	5822114	5404154	5779875	50.0 50.0	50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	4561882	3792851 4448546	4672820	4109875	4149228	50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	11956257 9520749	11655048	11885446	10950502	12248242	50.0 50.0	50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	6574607 5190172	6335821	6699329	6027362	6542972	50.0 50.0	50.0	50.0	50.0	50.0

Curve Type Legend:
Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_018.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Perfluorobutanoic acid (PFBA)		AveID	155481 42763611	6690917	310647	15411527	1550440	0.500 200	20.0	1.00	50.0	5.00
Perfluoropentanoic acid (PFPeA)		AveID	152321 34291076	5770240	287573	13161065	1358239	0.500 200	20.0	1.00	50.0	5.00
Perfluorobutanesulfonic acid (PFBS)		AveID	216598 50724469	9860707	424227	21559838	2211602	0.442 177	17.7	0.884	44.2	4.42
Perfluorohexanoic acid (PFHxA)		AveID	126429 33223923	4929766	239458	11507044	1183286	0.500 200	20.0	1.00	50.0	5.00
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 46223186	6624638	348475	15253691	1543002	+++++ 182	18.2	0.910	45.5	4.55
Perfluoroheptanoic acid (PFHpA)		AveID	129104 30234194	4747711	237734	10799449	1175112	0.500 200	20.0	1.00	50.0	5.00
6:2FTS		AveID	405060	+++++ 16907459	2416384	106947	5166665	4.74	+++++ 190	19.0	0.948	47.4
Perfluorooctanoic acid (PFOA)		AveID	+++++ 30784387	5109766	254861	11435583	1239541	+++++ 200	20.0	1.00	50.0	5.00

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	134982 38459925	6014021	265783	13639927	1351160	0.476 190	19.0	0.952	47.6	4.76
Perfluorooctane Sulfonate (PFOS)		AveID	+++++ 40073141	5058824	220370	11741891	1150410	+++++ 186	18.6	0.928	46.4	4.64
Perfluorononanoic acid (PFNA)		AveID	90066 24793148	3562981	188341	8246252	902512	0.500 200	20.0	1.00	50.0	5.00
Perfluorooctane Sulfonamide (FOSA)		AveID	195749 47803717	7990835	381363	17736944	1989314	0.500 200	20.0	1.00	50.0	5.00
Perfluorodecanoic acid (PFDA)		AveID	82137 22616781	3166735	155537	7324495	771905	0.500 200	20.0	1.00	50.0	5.00
8:2FTS		AveID	398457	39808 16111959	2224381	75731	4815680	4.79	0.479 192	19.2	0.958	47.9
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	285665	29823 12924122	1708231	57389	3741936	5.00	0.500 200	20.0	1.00	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	69270 23952412	3084031	139829	7241868	712852	0.482 193	19.3	0.964	48.2	4.82
Perfluoroundecanoic acid (PFUnA)		AveID	65000 16852945	2420719	119189	5437764	549708	0.500 200	20.0	1.00	50.0	5.00
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	267721	29965 11938061	1518918	53623	3414301	5.00	0.500 200	20.0	1.00	50.0
MeFOSA		AveID	343493	36069 16114020	1946985	70049	4407328	5.00	0.500 200	20.0	1.00	50.0
Perfluorododecanoic acid (PFDoA)		AveID	52807 17425873	2231794	103481	5072994	506369	0.500 200	20.0	1.00	50.0	5.00
N-EtFOSA-M		AveID	326877	30993 15780196	1813178	62962	4264314	5.00	0.500 200	20.0	1.00	50.0

FORM VI

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Perfluorotridecanoic Acid (PFTriA)		AveID	53320 16038809	2087859	109461	4950651	525090	0.500 200	20.0	1.00	50.0	5.00
Perfluorotetradecanoic acid (PFTeA)		AveID	98521 27310864	3678976	187123	8645519	900575	0.500 200	20.0	1.00	50.0	5.00
Perfluoro-n-hexadecanoic acid (PFHxDA)		L1ID	+++++ 17754908	2267892	173261	5318207	599529	+++++ 200	20.0	1.00	50.0	5.00
Perfluoro-n-octadecanoic acid (PFODA)		AveID	61549 18392980	2445236	114997	5869666	583761	0.500 200	20.0	1.00	50.0	5.00

Curve Type Legend:

AveID = Average isotope dilution
L1ID = Linear 1/conc IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 15-Dec-2016 12:29:18 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:11 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:48:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		18263829	52.5		105	1469089	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.535	0.007	1.000	155481	0.4986		99.7	1121	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		14121285	53.1		106	1079323	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	152321	0.5465		109	1332	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.848	0.001	1.000	216598	0.4473		101		
298.90 > 99.00	1.849	1.848	0.001	1.000	87630		2.47(0.00-0.00)	101		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.097	2.096	0.001	1.000	126429	0.5378		108	4416	
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.097	0.0		12655304	51.6		103	589404	
D 11 13C4-PFHpA										
367.00 > 322.00	2.430	2.426	0.004		12240718	54.1		108	647338	
12 Perfluoroheptanoic acid										M
363.00 > 319.00	2.430	2.428	0.002	1.000	129104	0.5388		108	1246	M
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.444	2.431	0.013	1.000	204063	0.5798		127		M
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.446	0.006		16163510	49.4		105	1405328	
D 14 13C4 PFOA										
417.00 > 372.00	2.782	2.783	-0.001		12504504	54.3		109	532215	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.782	2.783	-0.001	1.000	145696	0.5807		116	1257	
413.00 > 169.00	2.790	2.783	0.007	1.003	87089		1.67(0.90-1.10)	116	4416	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.790	2.790	0.0	1.000	134982	0.4770		100		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.151	3.118	0.033	1.000	116569	0.4564		98.4	7996	M
499.00 > 99.00	3.159	3.118	0.041	1.003	24244		4.81(0.90-1.10)	98.4	1329	M
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.151	0.0		12276070	49.3		103	1128009	
D 19 13C5 PFNA										
468.00 > 423.00	3.159	3.153	0.006		9455492	53.2		106	520740	
20 Perfluorononanoic acid										
463.00 > 419.00	3.159	3.155	0.004	1.000	90066	0.5004		100	1349	
D 21 13C8 FOSA										
506.00 > 78.00	3.490	3.488	0.002		20355431	53.0		106	727464	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.490	3.491	-0.001	1.000	195749	0.5155		103	25454	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.515	3.510	0.005	1.000	82137	0.5166		103	2772	
D 23 13C2 PFDA										
515.00 > 470.00	3.515	3.513	0.002		8422718	53.5		107	284895	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.826	3.822	0.004	1.000	69270	0.4619		95.8		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.834	3.839	-0.005	1.000	65000	0.5350		107	1918	
D 27 13C2 PFUnA										
565.00 > 520.00	3.843	3.842	0.001		6352135	54.2		108	398643	
D 30 13C2 PFDoA										
615.00 > 570.00	4.134	4.132	0.002		5815120	52.4		105	205155	
29 Perfluorododecanoic acid										M
613.00 > 569.00	4.141	4.136	0.005	1.000	52807	0.4946		98.9	1204	M
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.404	4.400	0.004	1.000	53320	0.5055		101	1256	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.643	4.641	0.002		11956257	52.6		105	663687	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.643	4.642	0.001	1.000	98521	0.5345		107	1284	
713.00 > 169.00	4.633	4.642	-0.009	0.998	17902		5.50(0.00-0.00)	107	7022	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.057	0.001		6574607	52.8		106	132486	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.059	-0.001	1.000	125860	0.5899		118	92.5	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	61549	0.5136		103	54.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L1_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:12 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d

Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N

Lims ID: IC L1

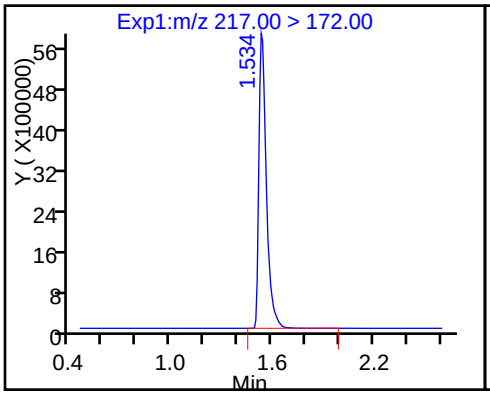
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4

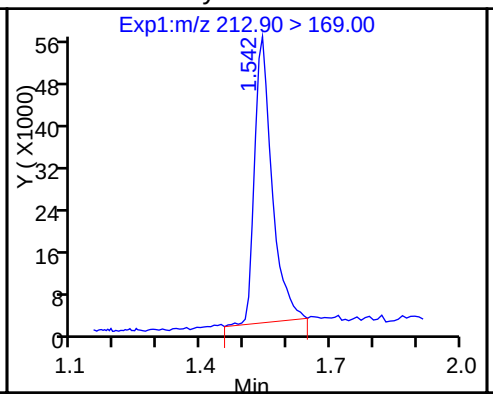
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

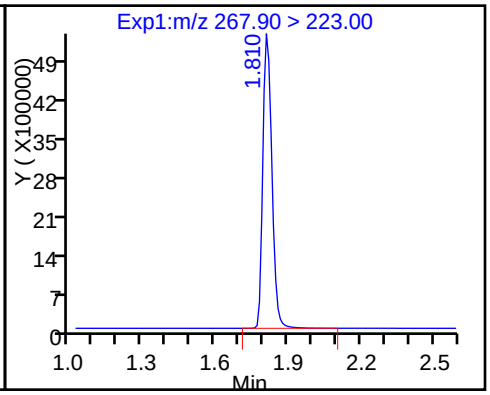
D 2 13C4 PFBA



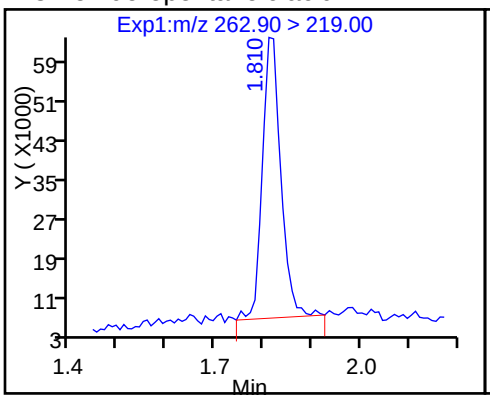
1 Perfluorobutyric acid



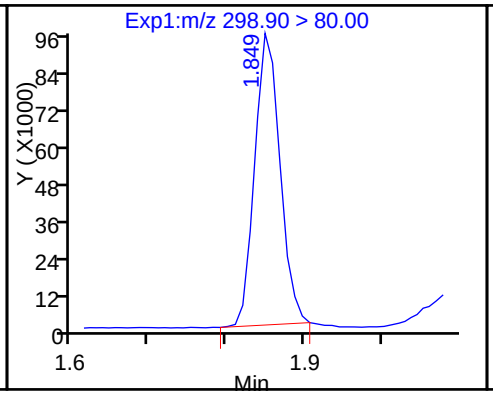
D 4 13C5-PFPeA



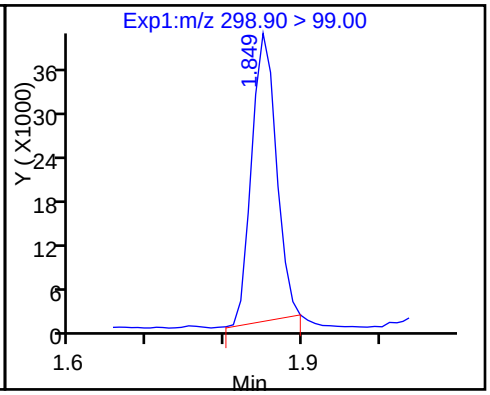
3 Perfluoropentanoic acid



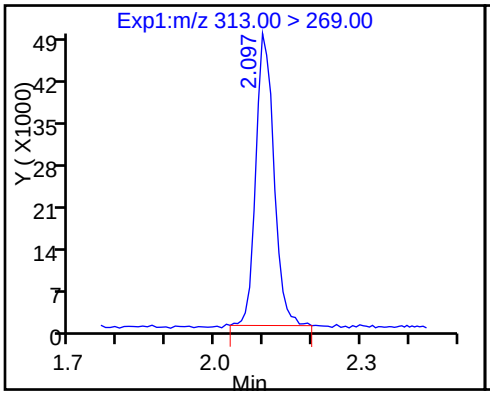
5 Perfluorobutanesulfonic acid



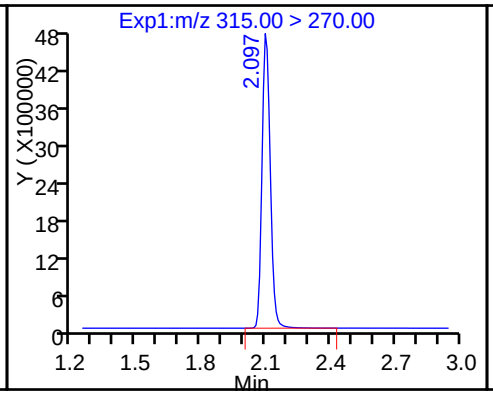
5 Perfluorobutanesulfonic acid



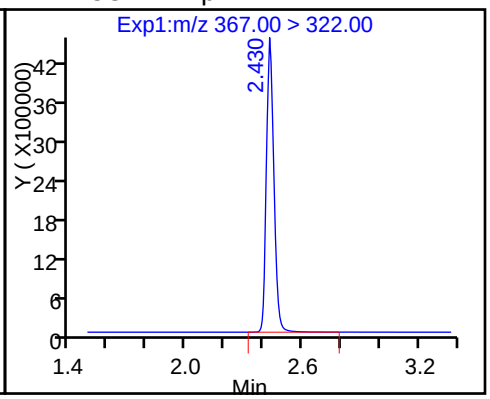
7 Perfluorohexanoic acid



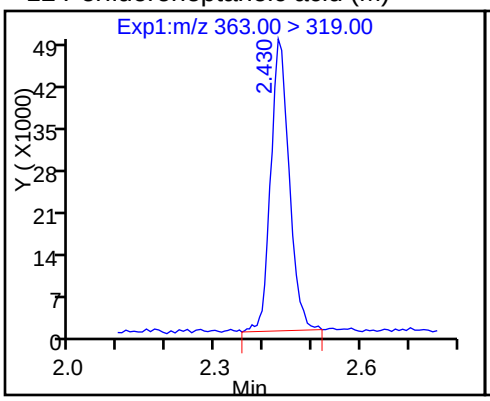
D 6 13C2 PFHxA



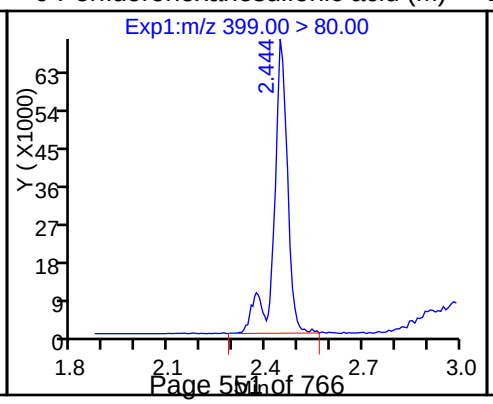
D 11 13C4-PFHpA



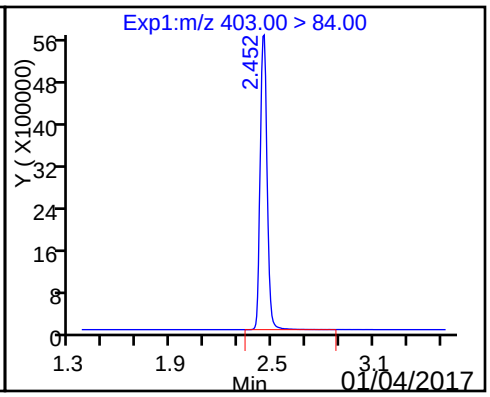
12 Perfluoroheptanoic acid (M)



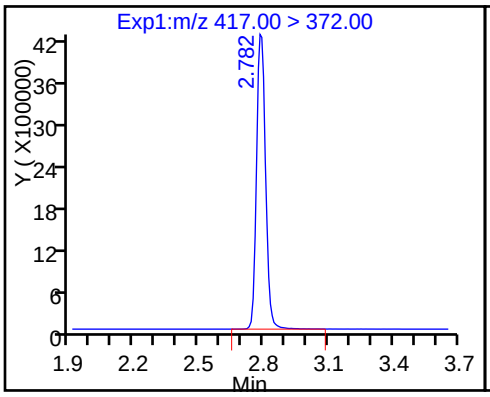
9 Perfluorohexanesulfonic acid (M)



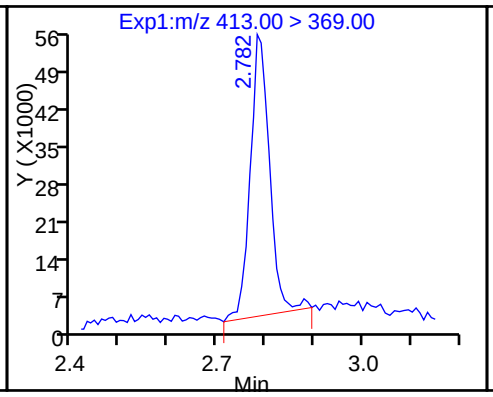
D 10 18O2 PFHxS



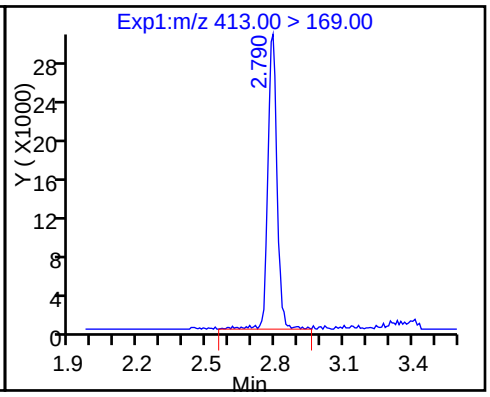
D 14 13C4 PFOA



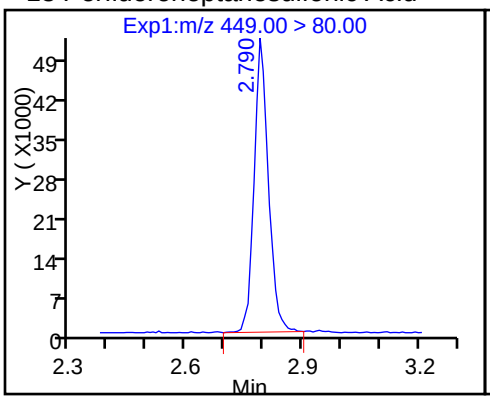
15 Perfluorooctanoic acid



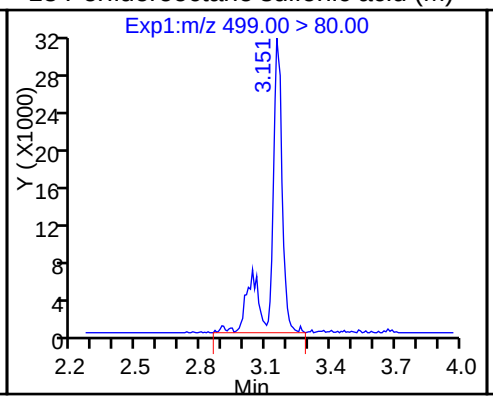
15 Perfluorooctanoic acid



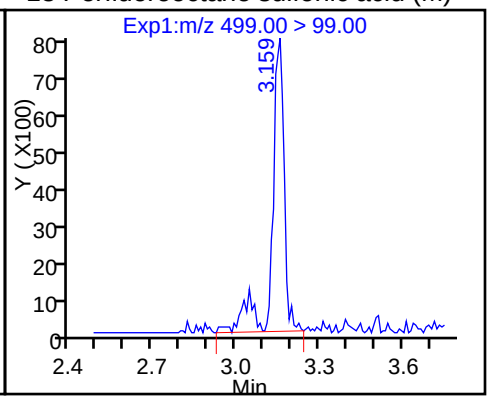
13 Perfluoroheptanesulfonic Acid



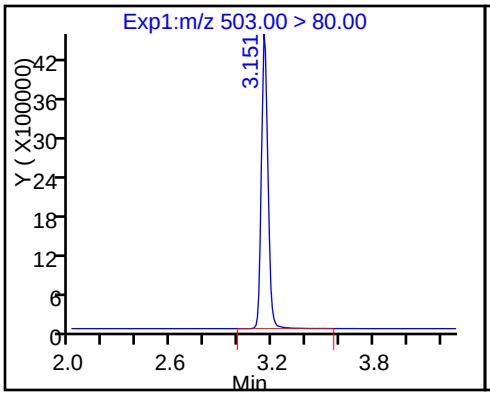
18 Perfluorooctane sulfonic acid (M)



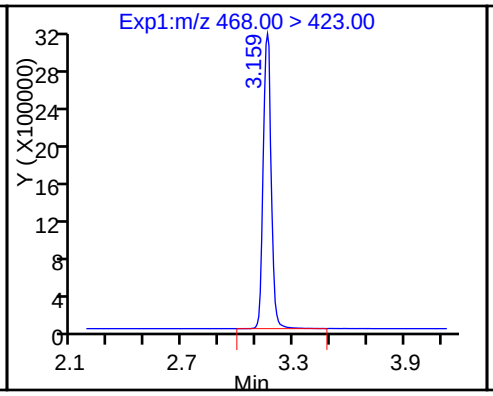
18 Perfluorooctane sulfonic acid (M)



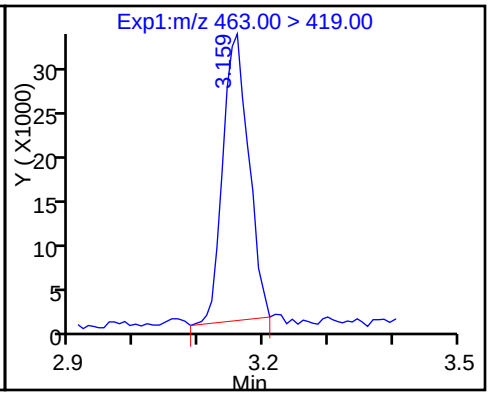
D 17 13C4 PFOS



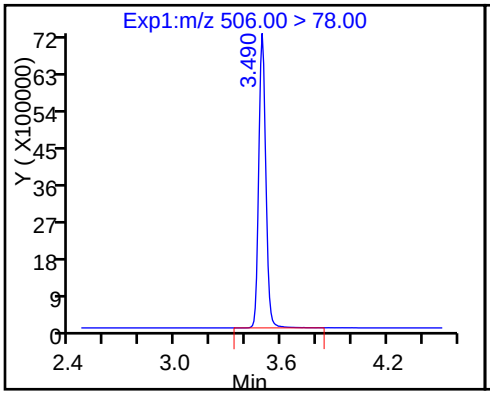
D 19 13C5 PFNA



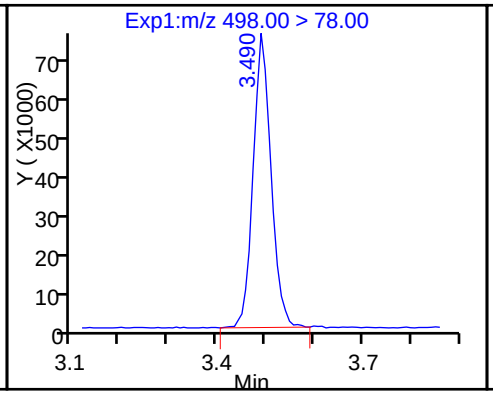
20 Perfluorononanoic acid



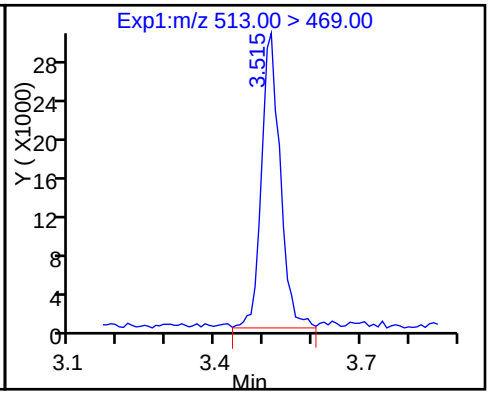
D 21 13C8 FOSA



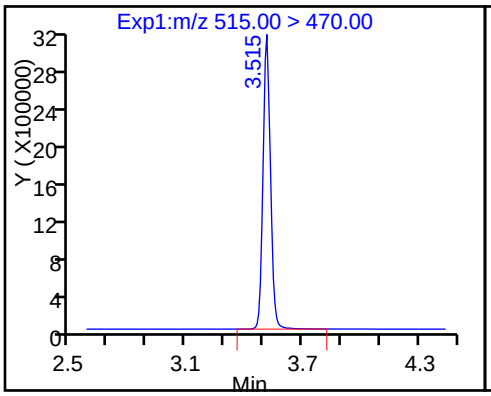
22 Perfluorooctane Sulfonamide



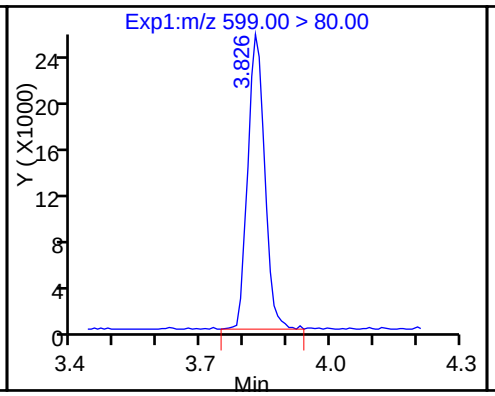
24 Perfluorodecanoic acid



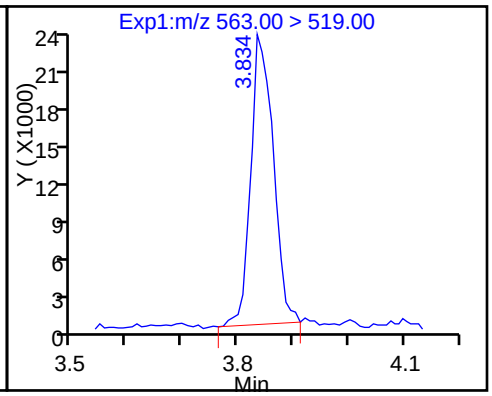
D 23 13C2 PFDA



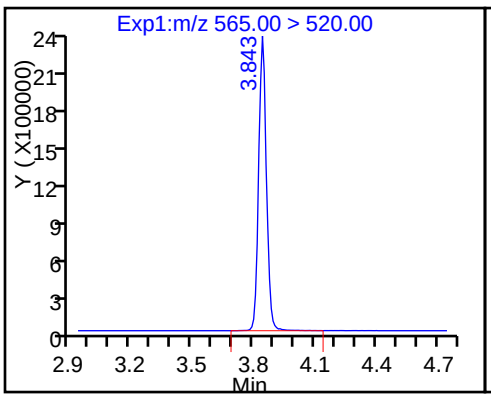
26 Perfluorodecane Sulfonic acid



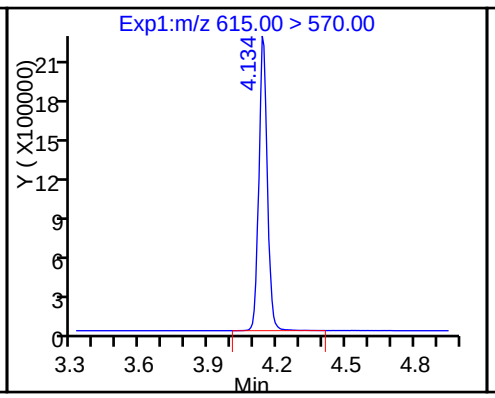
28 Perfluoroundecanoic acid



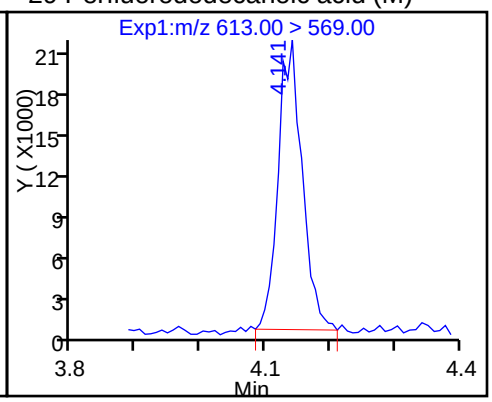
D 27 13C2 PFUnA



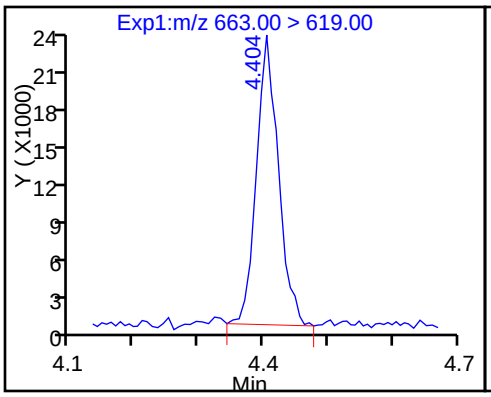
D 30 13C2 PFDoA



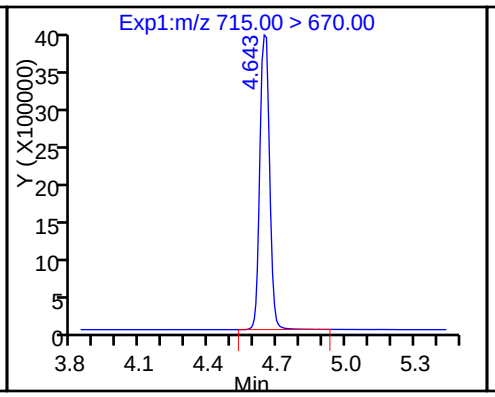
29 Perfluorododecanoic acid (M)



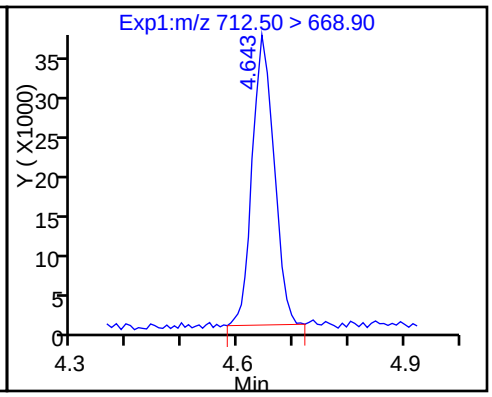
31 Perfluorotridecanoic acid



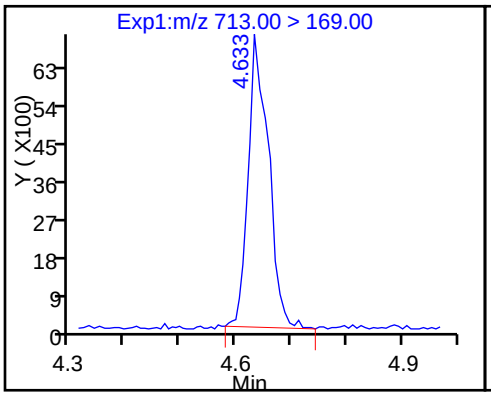
D 32 13C2-PFTeDA



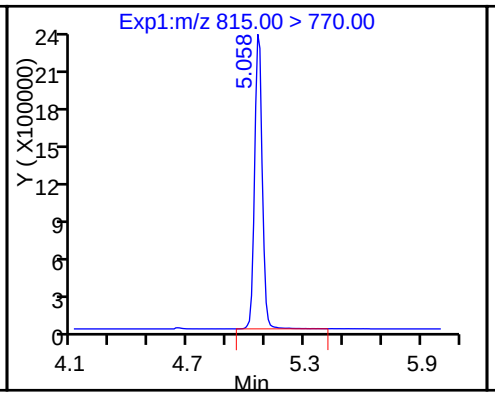
33 Perfluorotetradecanoic acid



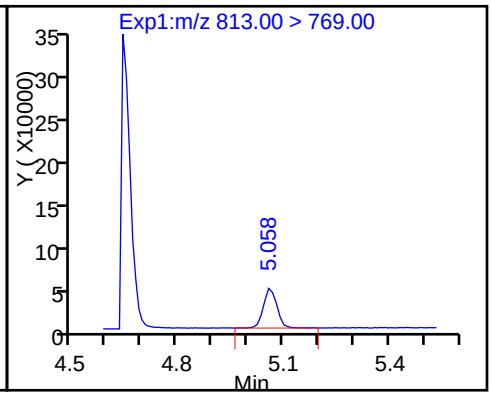
33 Perfluorotetradecanoic acid



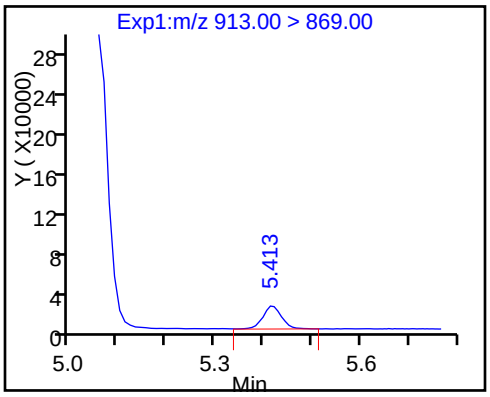
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

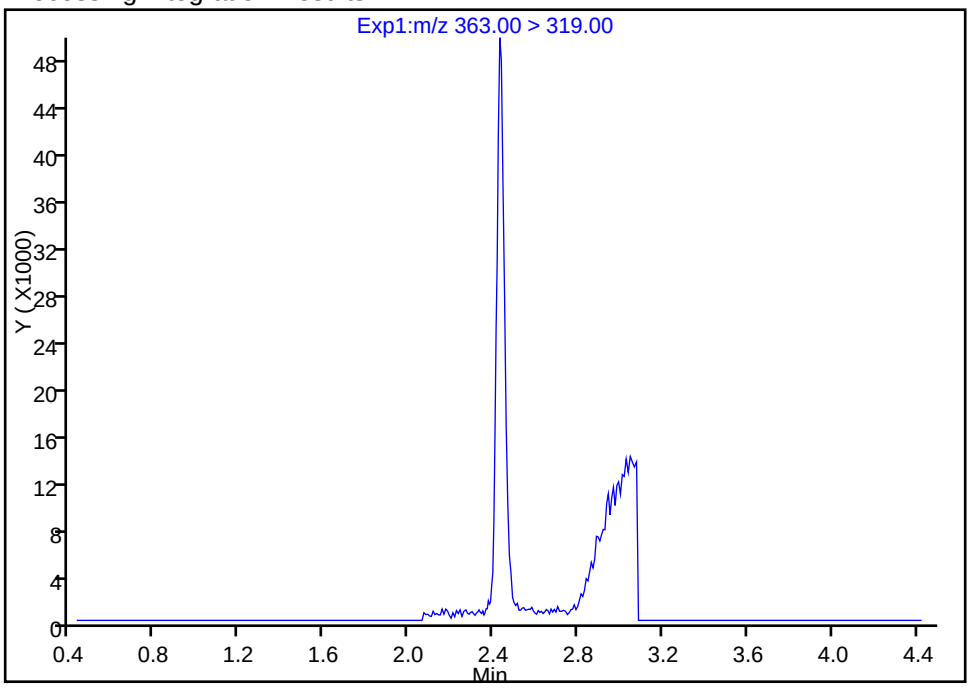
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

12 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

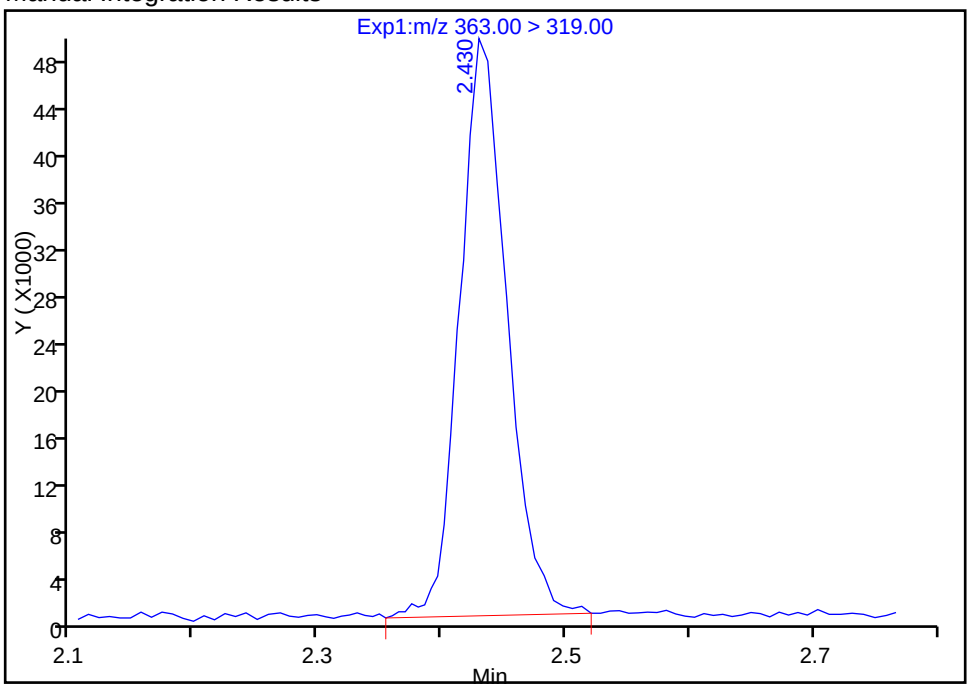
Not Detected
Expected RT: 2.43

Processing Integration Results



Manual Integration Results

RT: 2.43
Area: 129104
Amount: 0.538766
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

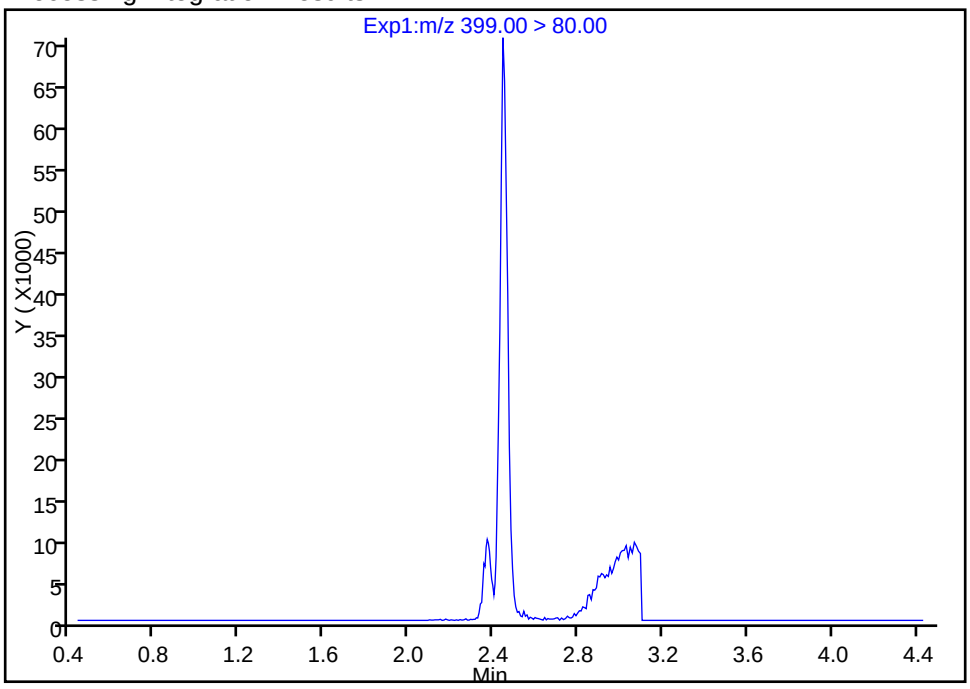
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d				
Injection Date:	15-Dec-2016 12:29:18	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	A8-PC\A8	ALS Bottle#:	37	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

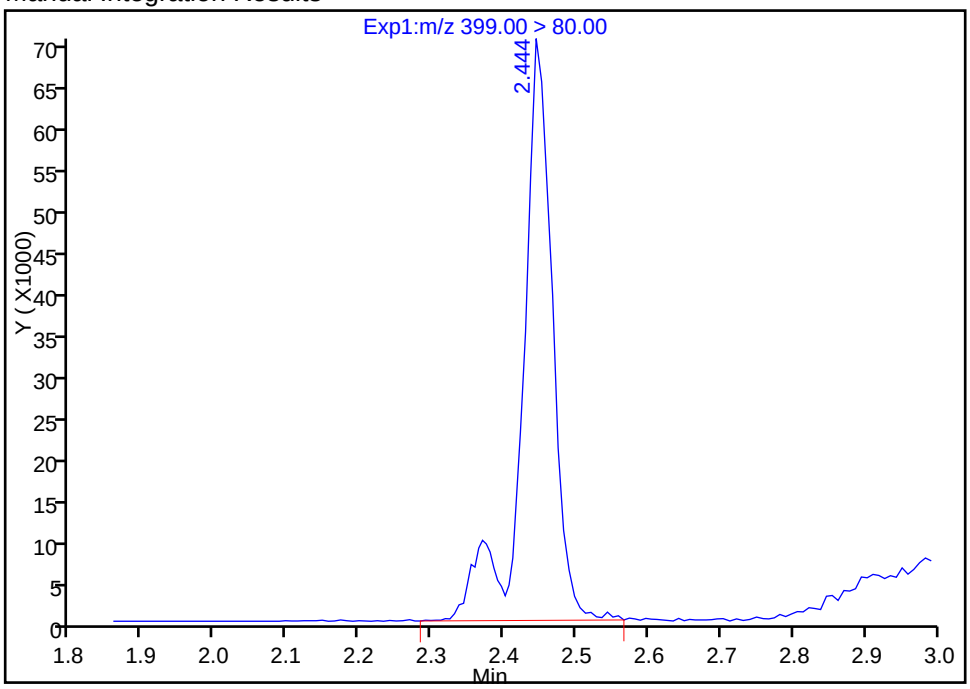
Not Detected
Expected RT: 2.43

Processing Integration Results



RT: 2.44
Area: 204063
Amount: 0.579783
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

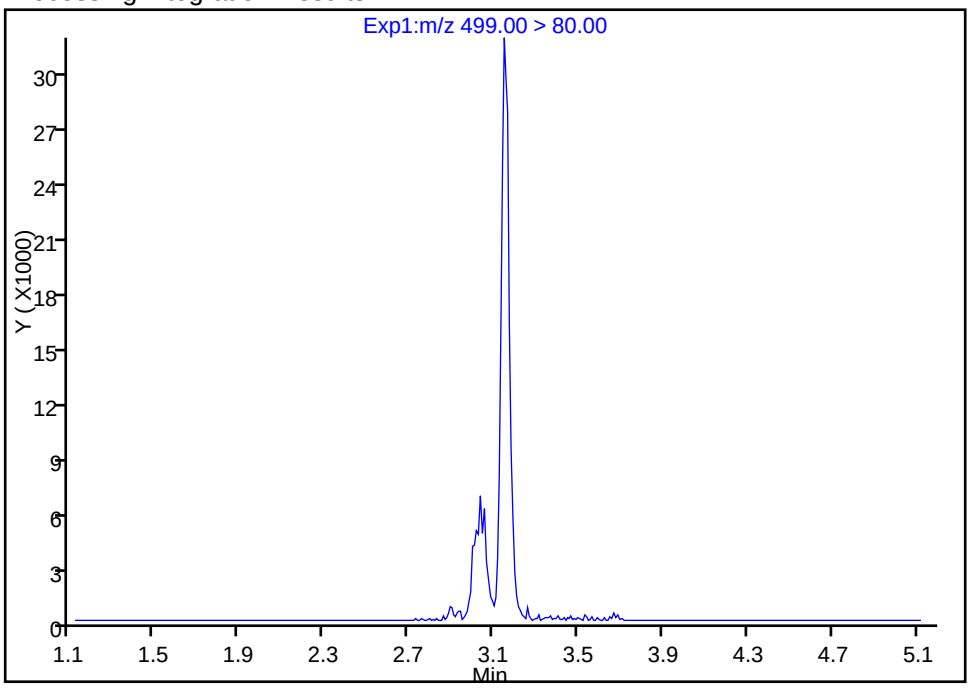
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d				
Injection Date:	15-Dec-2016 12:29:18	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	A8-PC\A8	ALS Bottle#:	37	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

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

Signal: 1

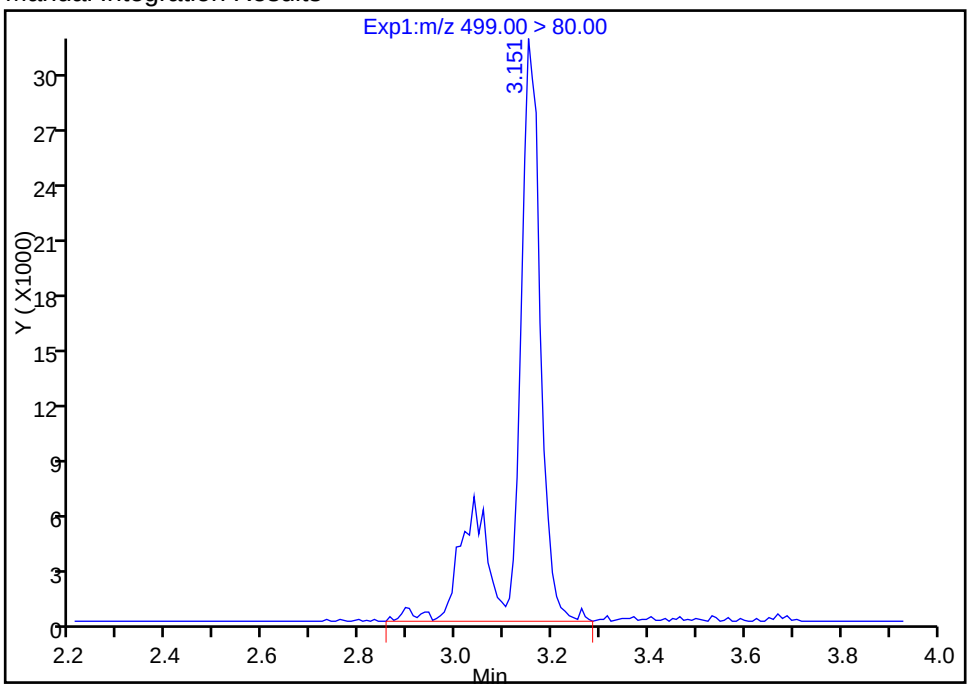
Processing Integration Results

Not Detected
Expected RT: 3.12



Manual Integration Results

RT: 3.15
Area: 116569
Amount: 0.456423
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

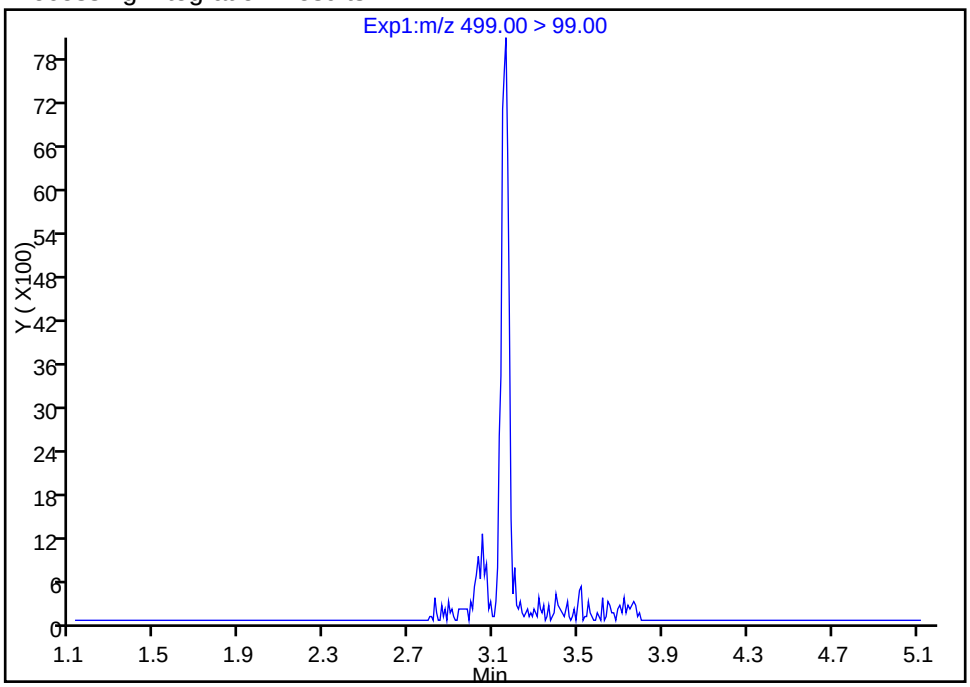
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

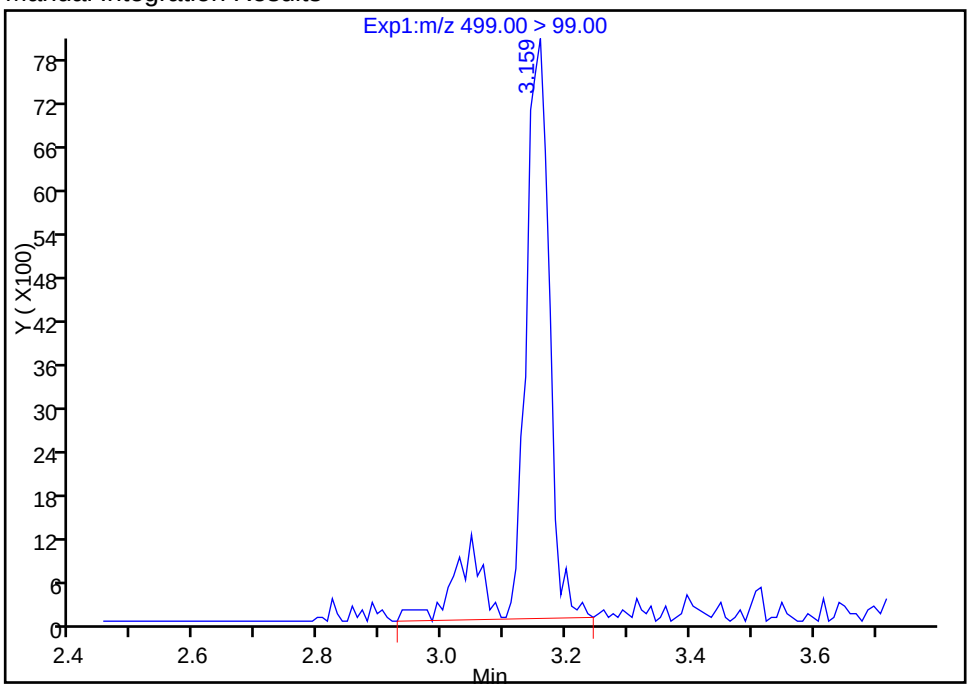
Processing Integration Results

Not Detected
Expected RT: 3.12



Manual Integration Results

RT: 3.16
Area: 24244
Amount: 0.456423
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento

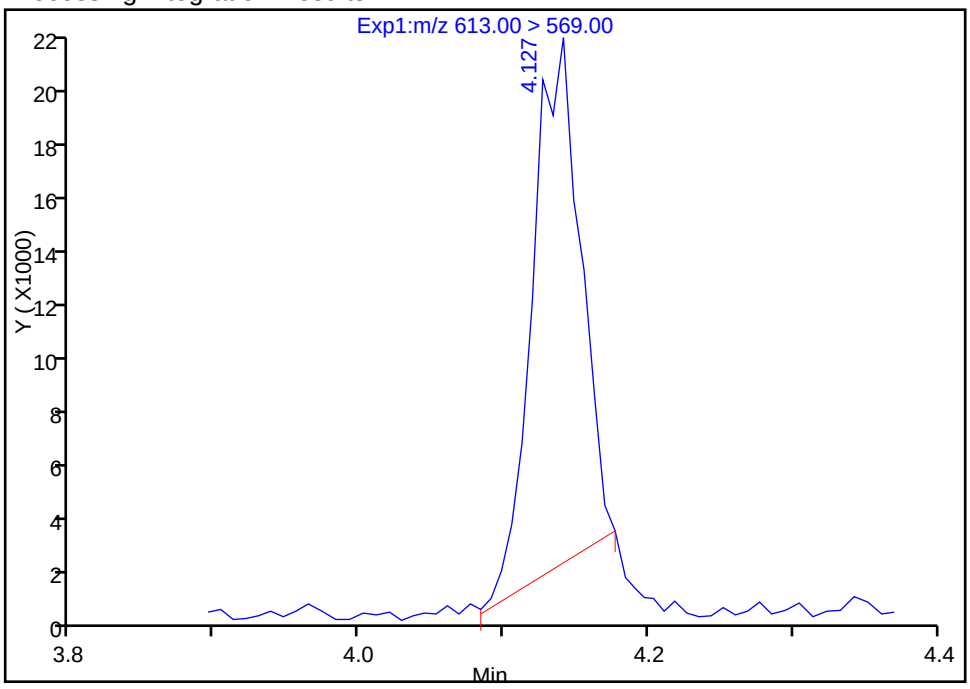
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

29 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 1

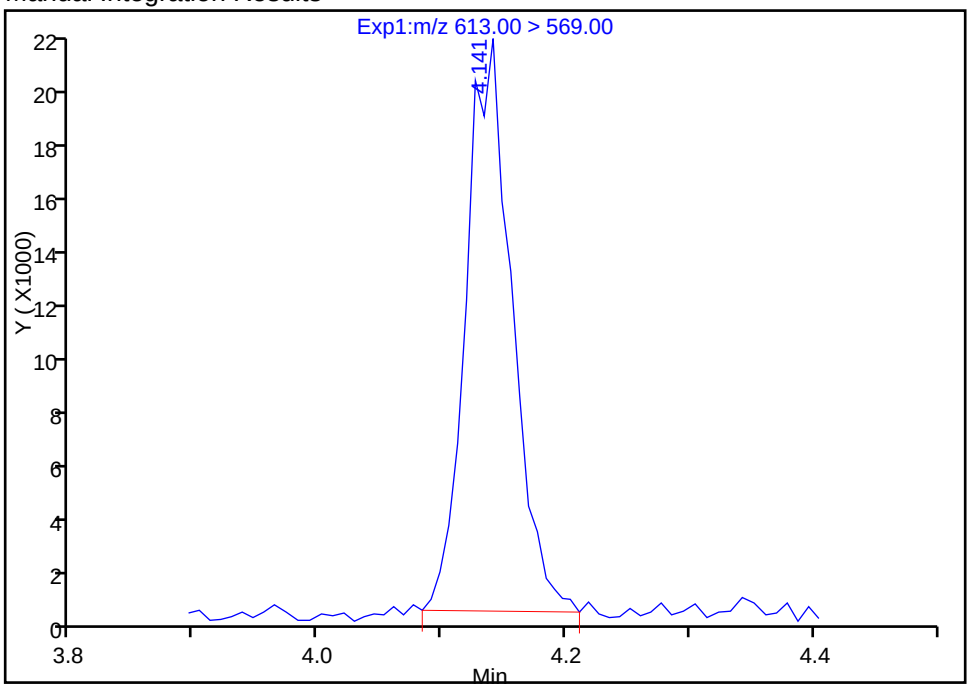
Processing Integration Results

RT: 4.13
Area: 43489
Amount: 0.419548
Amount Units: ng/ml



Manual Integration Results

RT: 4.14
Area: 52807
Amount: 0.494620
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 15-Dec-2016 12:36:48 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:15 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:50:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.530	1.534	-0.004		18201393	52.3		105	1000291	
1 Perfluorobutyric acid										
212.90 > 169.00	1.530	1.535	-0.005	1.000	310647	1.00		100.0	2583	
D 4 13C5-PFPeA										
267.90 > 223.00	1.805	1.810	-0.005		14067714	52.9		106	1093447	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.805	1.810	-0.005	1.000	287573	1.04		104	2935	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.844	1.848	-0.004	1.000	424227	0.8800		99.5		
298.90 > 99.00	1.844	1.848	-0.004	1.000	171864		2.47(0.00-0.00)	99.5		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.092	2.096	-0.004	1.000	239458	1.01		101	6854	
D 6 13C2 PFHxA										
315.00 > 270.00	2.092	2.097	-0.005		12814780	52.3		105	582538	
D 11 13C4-PFHpA										
367.00 > 322.00	2.423	2.426	-0.003		12248222	54.1		108	431068	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.430	2.428	0.002	1.000	237734	0.99		99.1	1884	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.445	2.431	0.014	1.000	348475	0.99		109		
D 10 18O2 PFHxS										
403.00 > 84.00	2.445	2.446	-0.001		16093048	49.2		104	960828	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.783	-0.002		12627691	54.8		110	657205	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.781	2.783	-0.002	1.000	254861	1.01		101	2003	
413.00 > 169.00	2.781	2.783	-0.002	1.000	159259		1.60(0.90-1.10)	101	7007	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.789	2.790	-0.001	1.000	265783	0.9254		97.2		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.149	3.118	0.031	1.000	220370	0.8502		91.6	15877	M
499.00 > 99.00	3.157	3.118	0.039	1.003	52990		4.16(0.90-1.10)	91.6	5530	M
D 17 13C4 PFOS										
503.00 > 80.00	3.149	3.151	-0.002		12459383	50.1		105	1105467	
D 19 13C5 PFNA										
468.00 > 423.00	3.149	3.153	-0.004		9537045	53.7		107	472742	
20 Perfluorononanoic acid										
463.00 > 419.00	3.157	3.155	0.002	1.000	188341	1.04		104	2906	
D 21 13C8 FOSA										
506.00 > 78.00	3.489	3.488	0.001		20238792	52.7		105	766772	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.489	3.491	-0.002	1.000	381363	1.01		101	46576	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.506	3.510	-0.004	1.000	155537	0.9716		97.2	5243	
D 23 13C2 PFDA										
515.00 > 470.00	3.514	3.513	0.001		8480447	53.9		108	439565	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.824	3.822	0.002	1.000	139829	0.9186		95.3		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.833	3.839	-0.006	1.000	119189	1.00		100	2937	
D 27 13C2 PFUnA										
565.00 > 520.00	3.842	3.842	0.0		6219248	53.0		106	280274	
D 30 13C2 PFDoA										
615.00 > 570.00	4.133	4.132	0.001		5822114	52.5		105	270055	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.133	4.136	-0.003	1.000	103481	0.9681		96.8	2745	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.396	4.400	-0.004	1.000	109461	1.04		104	2155	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.633	4.641	-0.008		11885446	52.3		105	710542	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.643	4.642	0.001	1.000	187123	1.01		101	2896	
713.00 > 169.00	4.633	4.642	-0.009	0.998	31916		5.86(0.00-0.00)	101	12057	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.047	5.057	-0.010		6699329	53.8		108	126940	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.059	-0.001	1.000	173261	1.01		101	135	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	114997	0.9585		95.8	91.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:16 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d

Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N

Lims ID: IC L2

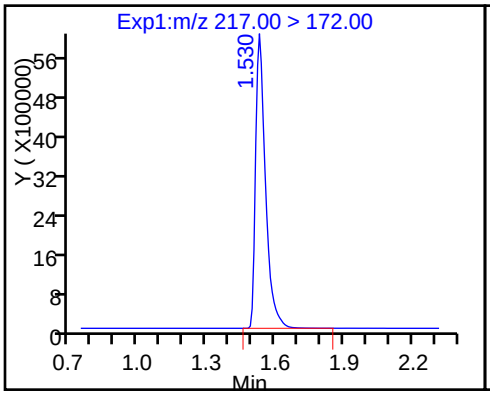
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

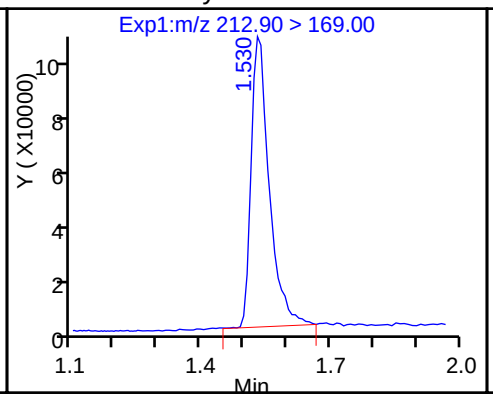
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

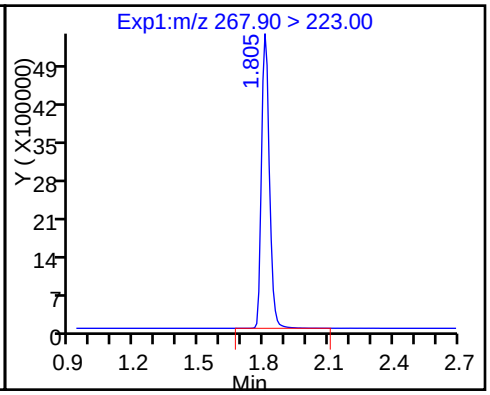
D 2 13C4 PFBA



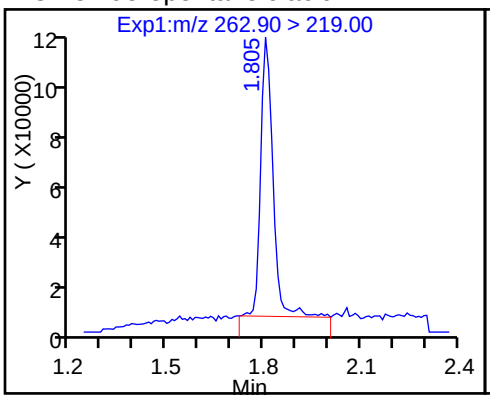
1 Perfluorobutyric acid



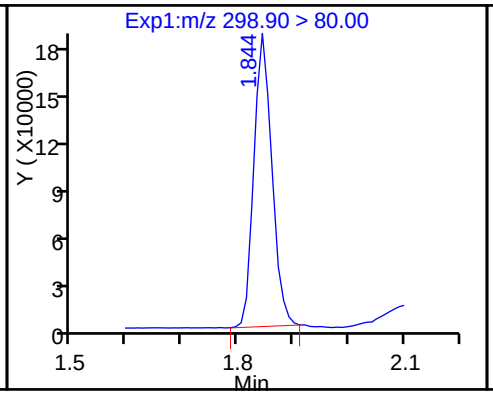
D 4 13C5-PFPeA



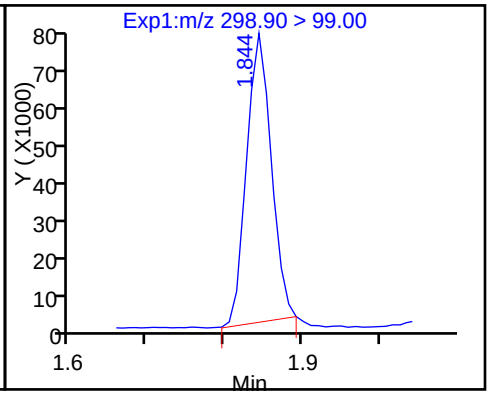
3 Perfluoropentanoic acid



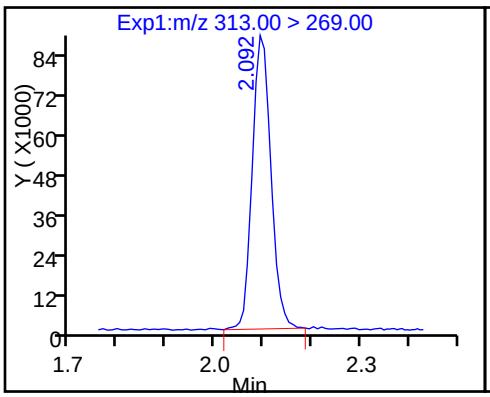
5 Perfluorobutanesulfonic acid



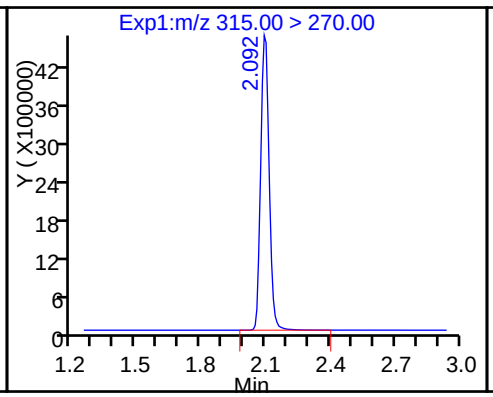
5 Perfluorobutanesulfonic acid



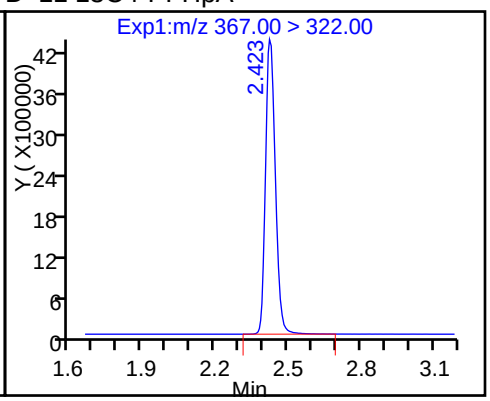
7 Perfluorohexanoic acid



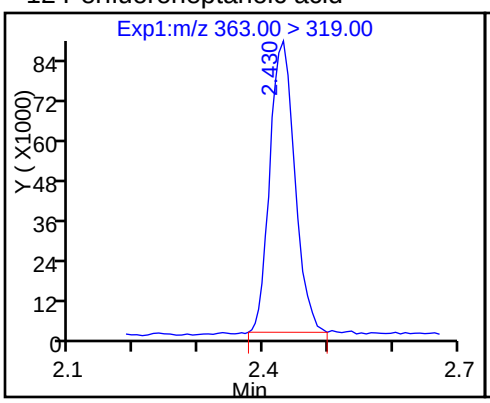
D 6 13C2 PFHxA



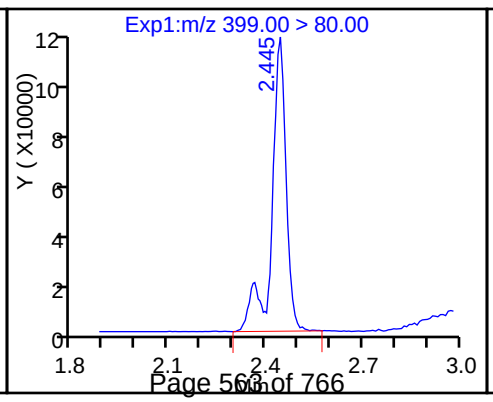
D 11 13C4-PFHpA



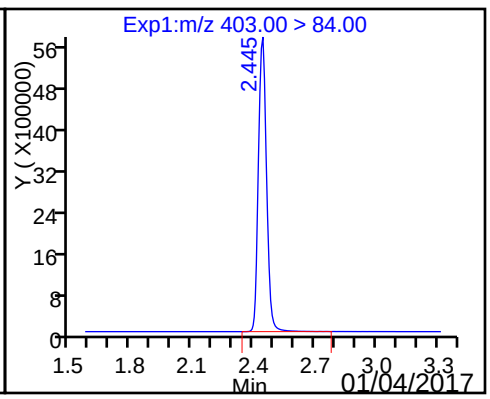
12 Perfluoroheptanoic acid



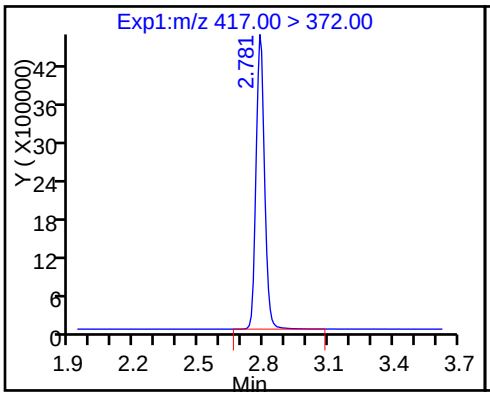
9 Perfluorohexanesulfonic acid



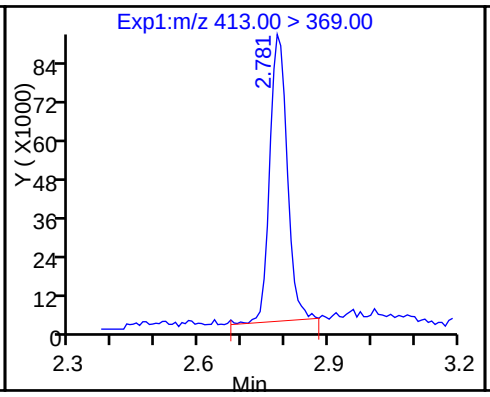
D 10 18O2 PFHxS



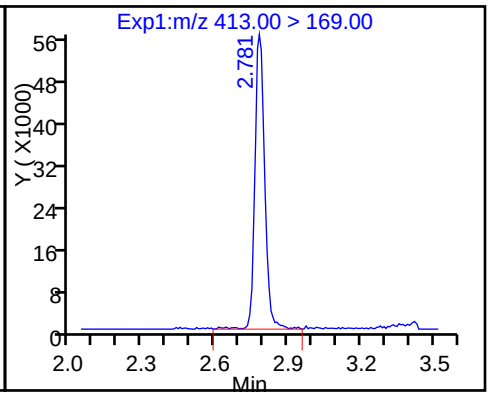
D 14 13C4 PFOA



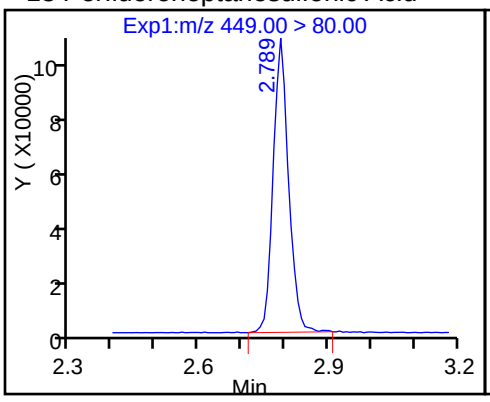
15 Perfluorooctanoic acid



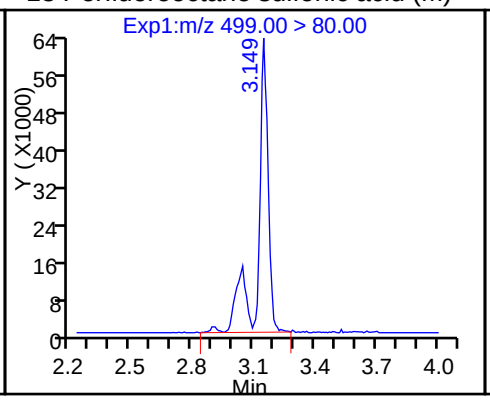
15 Perfluorooctanoic acid



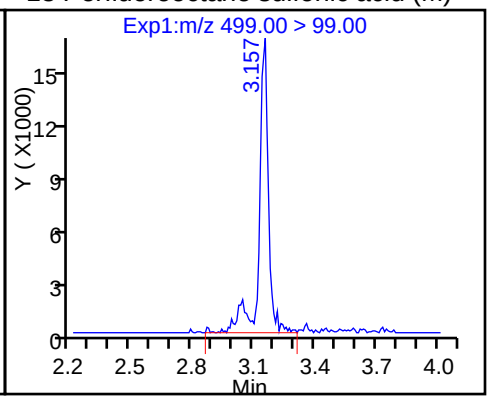
13 Perfluoroheptanesulfonic Acid



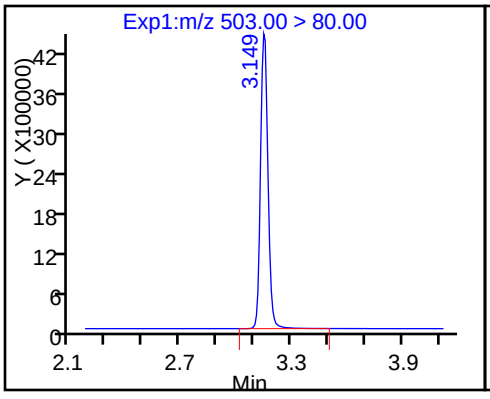
18 Perfluorooctane sulfonic acid (M)



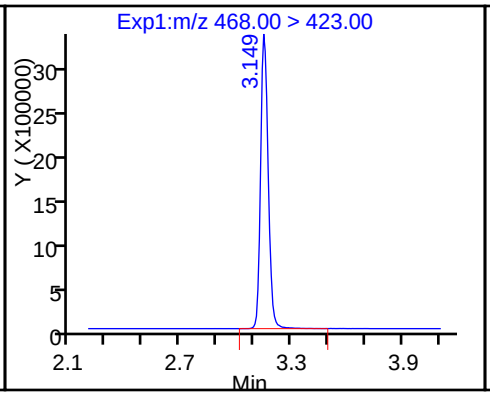
18 Perfluorooctane sulfonic acid (M)



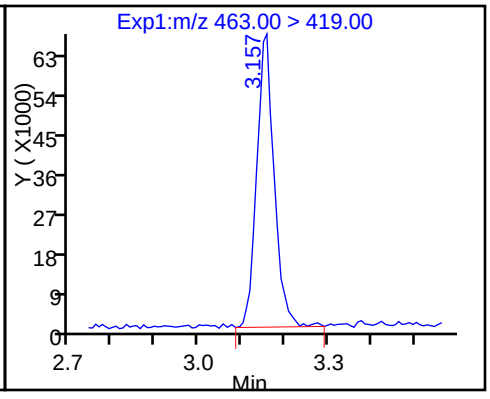
D 17 13C4 PFOS



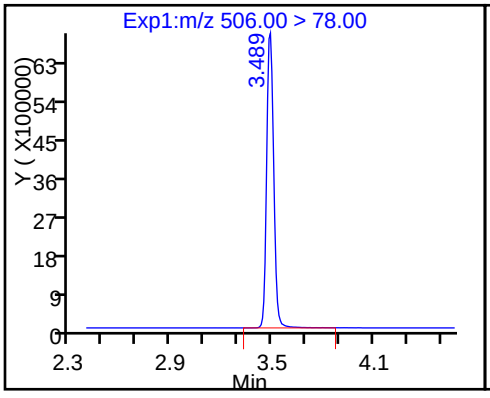
D 19 13C5 PFNA



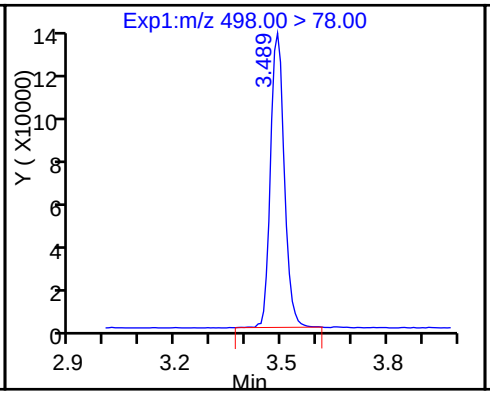
20 Perfluorononanoic acid



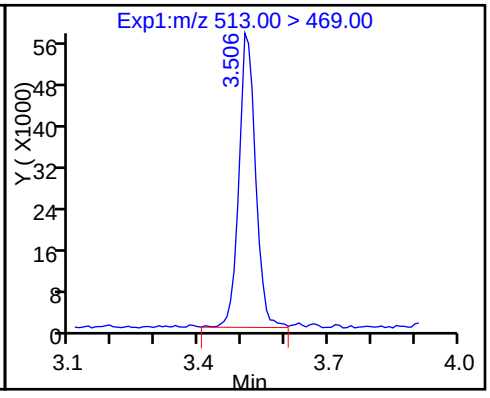
D 21 13C8 FOSA



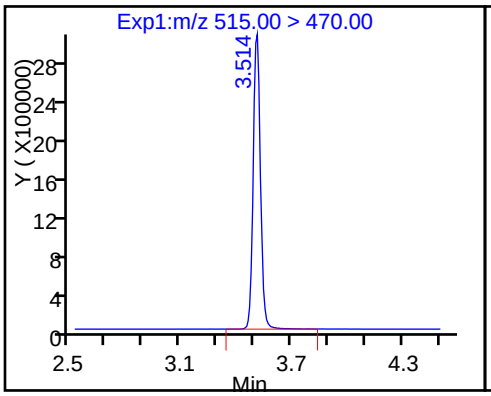
22 Perfluorooctane Sulfonamide



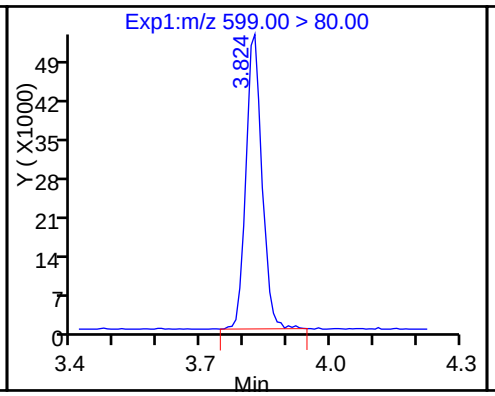
24 Perfluorodecanoic acid



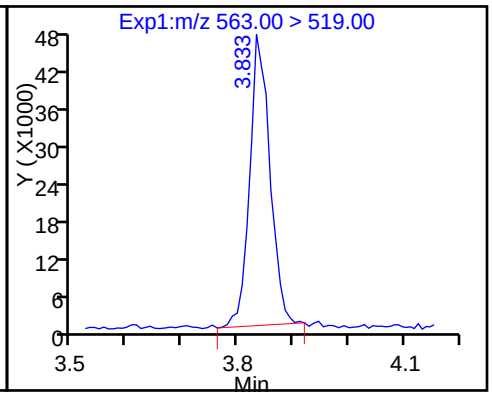
D 23 13C2 PFDA



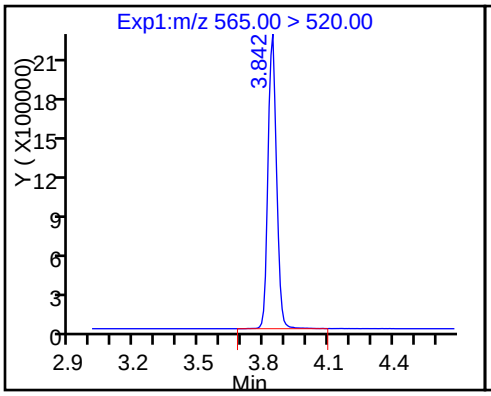
26 Perfluorodecane Sulfonic acid



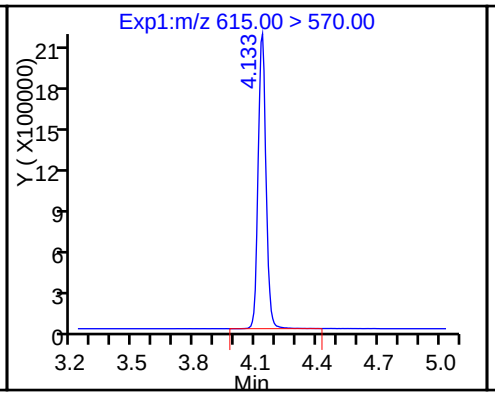
28 Perfluoroundecanoic acid



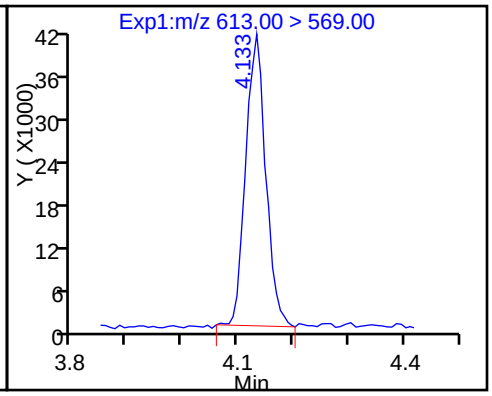
D 27 13C2 PFUnA



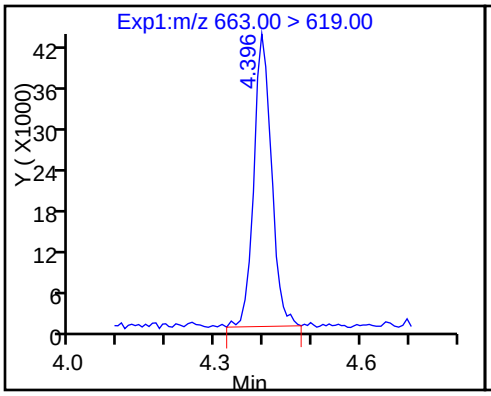
D 30 13C2 PFDoA



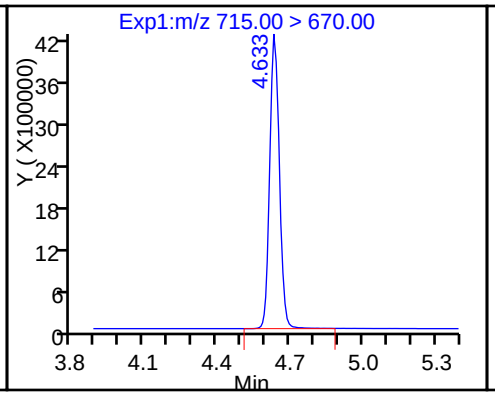
29 Perfluorododecanoic acid



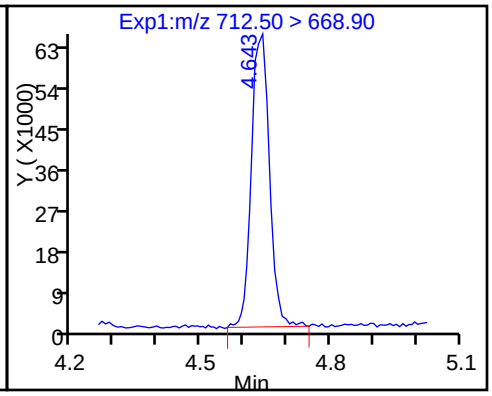
31 Perfluorotridecanoic acid



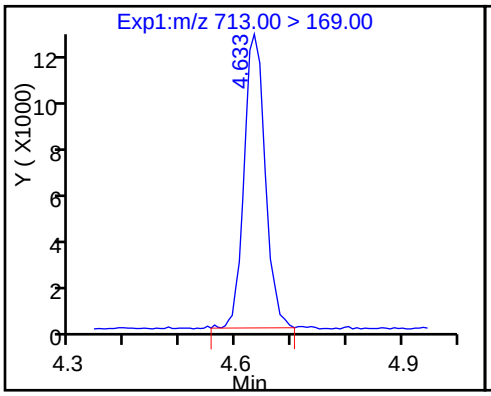
D 32 13C2-PFTeDA



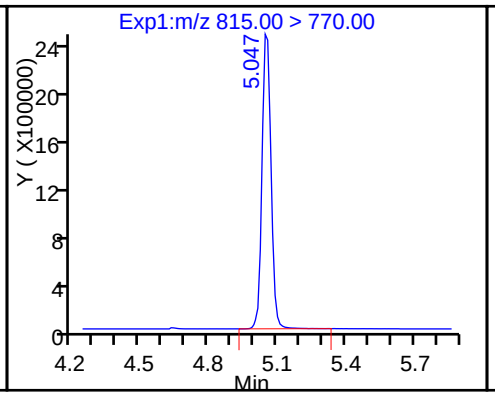
33 Perfluorotetradecanoic acid



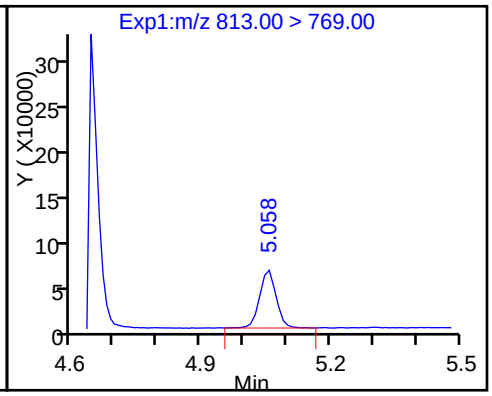
33 Perfluorotetradecanoic acid



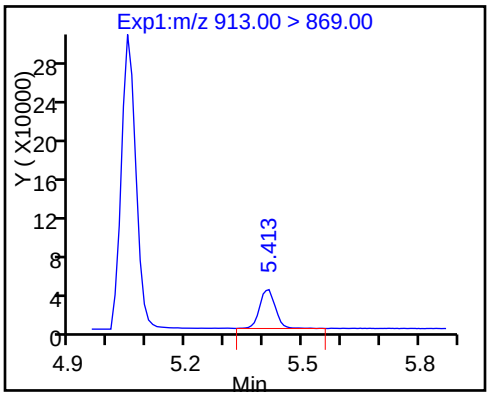
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

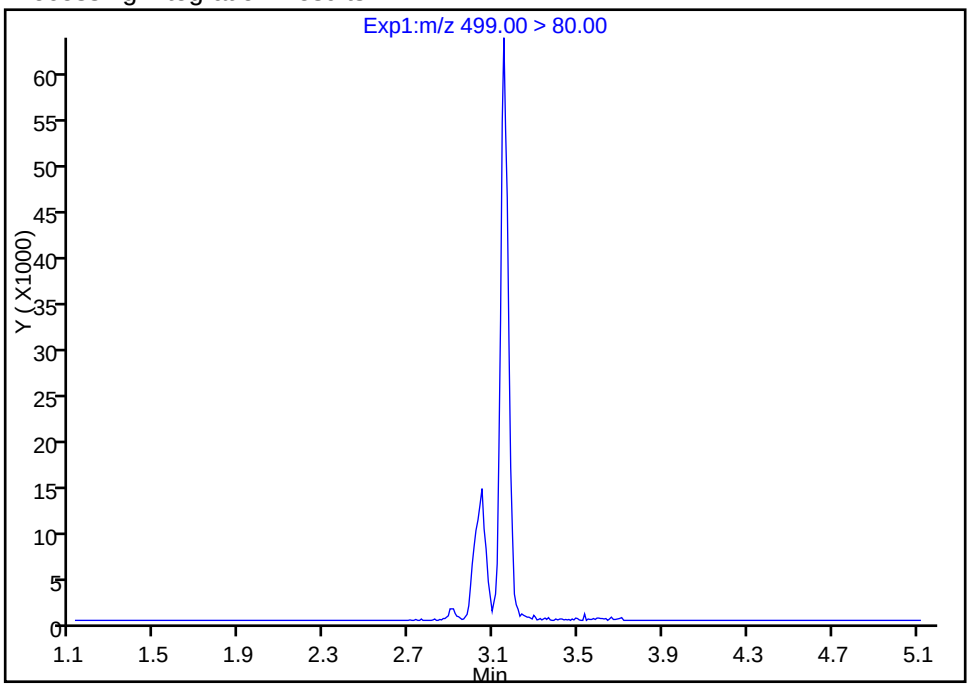
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d
Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

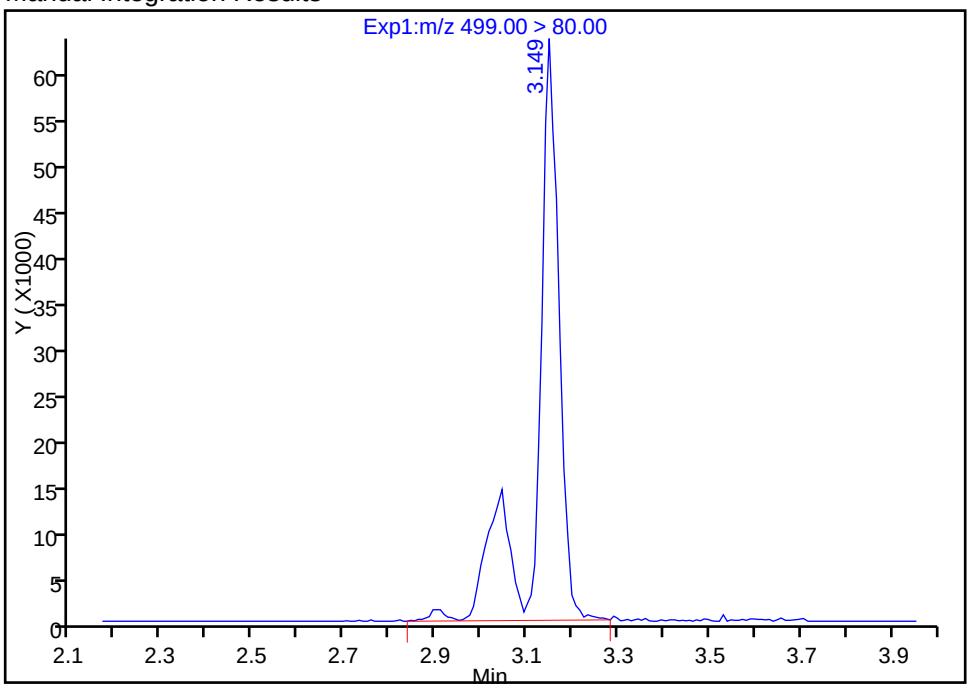
Not Detected
Expected RT: 3.12

Processing Integration Results



Manual Integration Results

RT: 3.15
Area: 220370
Amount: 0.850158
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:50:02
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

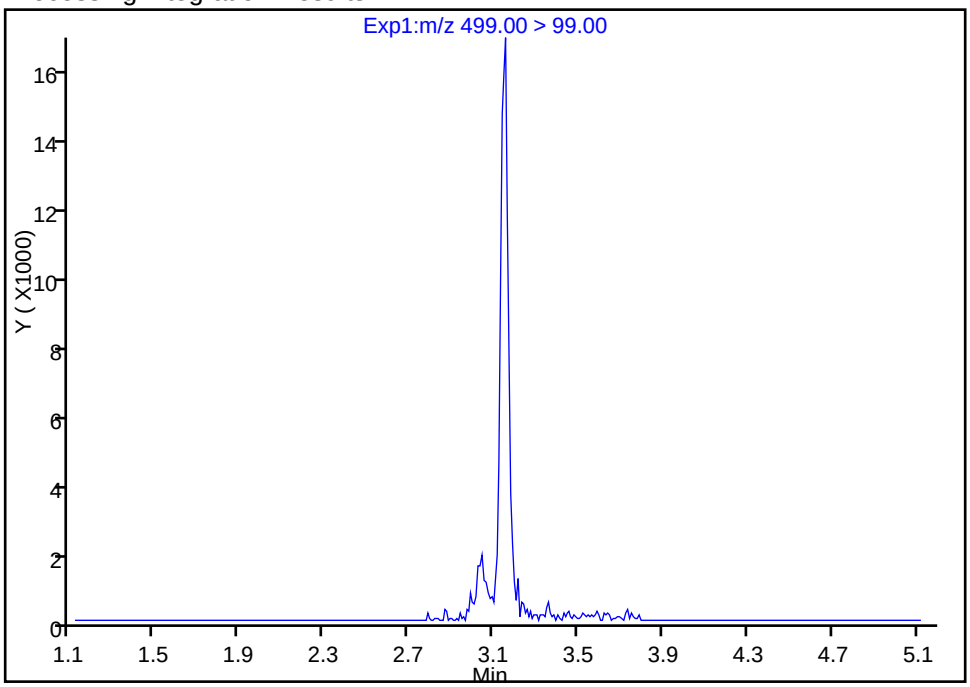
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d
Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

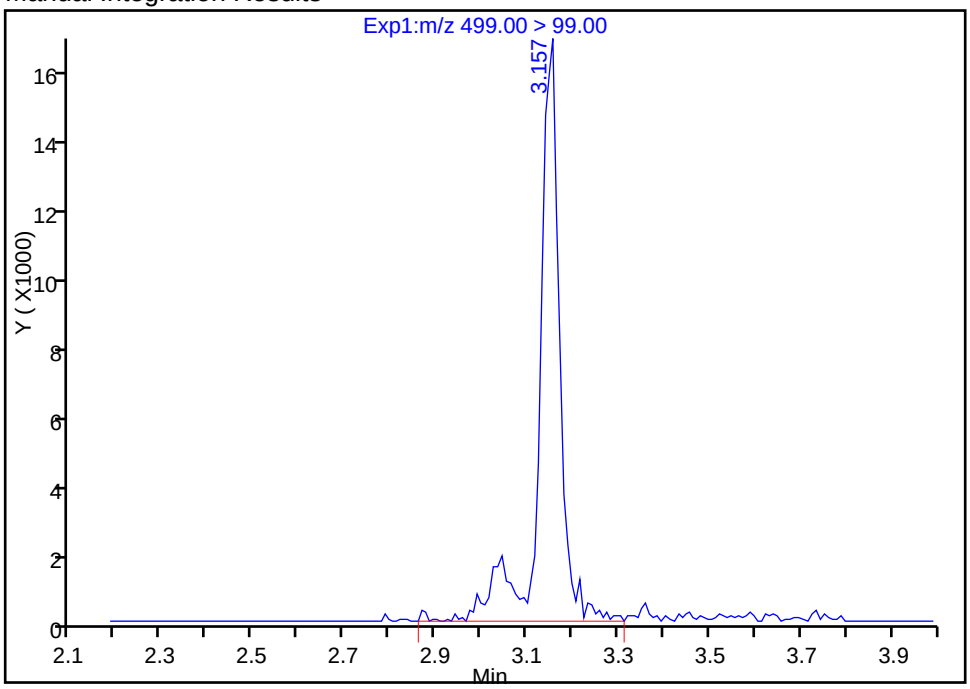
Not Detected
Expected RT: 3.12

Processing Integration Results



Manual Integration Results

RT: 3.16
Area: 52990
Amount: 0.850158
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:50:02
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 15-Dec-2016 12:44:16 ALS Bottle#: 39 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:18 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:50:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		18037108	51.9		104	828248	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.535	-0.001	1.000	1550440	5.03		101	13427	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		14063070	52.9		106	1078697	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	1358239	4.89		97.9	15178	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.848	0.001	1.000	2211602	4.55		103		
298.90 > 99.00	1.849	1.848	0.001	1.000	918055		2.41(0.00-0.00)	103		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.097	2.096	0.001	1.000	1183286	5.01		100	39266	
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.097	0.0		12709919	51.9		104	753338	
D 11 13C4-PFHpA										
367.00 > 322.00	2.425	2.426	-0.001		12260528	54.2		108	1467079	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.432	2.428	0.004	1.000	1175112	4.90		97.9	8914	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.364	2.431	-0.067	1.000	1543002	4.37		96.0		
D 10 18O2 PFHxS										
403.00 > 84.00	2.447	2.446	0.001		16222736	49.6		105	651458	
D 14 13C4 PFOA										
417.00 > 372.00	2.783	2.783	0.0		12635065	54.8		110	746410	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.783	2.783	0.0	1.000	1239541	4.89		97.8	9812	
413.00 > 169.00	2.783	2.783	0.0	1.000	731249		1.70(0.90-1.10)	97.8	28264	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.792	2.790	0.002	1.000	1351160	4.69		98.6		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.153	3.118	0.035	1.000	1150410	4.43		95.5	65030	
499.00 > 99.00	3.153	3.118	0.035	1.000	246751		4.66(0.90-1.10)	95.5	15530	
D 17 13C4 PFOS										
503.00 > 80.00	3.153	3.151	0.002		12484772	50.2		105	473035	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.153	0.0		9777609	55.0		110	653324	
20 Perfluorononanoic acid										
463.00 > 419.00	3.153	3.155	-0.002	1.000	902512	4.85		97.0	13825	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.488	-0.004		20034933	52.2		104	309657	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.492	3.491	0.001	1.000	1989314	5.32		106	140153	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.510	-0.001	1.000	771905	4.97		99.3	27905	
D 23 13C2 PFDA										
515.00 > 470.00	3.509	3.513	-0.004		8234678	52.3		105	259288	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.819	3.822	-0.003	1.000	712852	4.67		97.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.837	3.839	-0.002	1.000	549708	4.59		91.8	14816	
D 27 13C2 PFUnA										
565.00 > 520.00	3.845	3.842	0.003		6262617	53.4		107	379922	
D 30 13C2 PFDoA										
615.00 > 570.00	4.129	4.132	-0.003		5779875	52.1		104	227122	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.136	4.136	0.0	1.000	506369	4.77		95.4	11299	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.400	-0.002	1.000	525090	5.01		100	10475	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.645	4.641	0.004		12248242	53.9		108	1049274	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.645	4.642	0.003	1.000	900575	4.92		98.3	12522	
713.00 > 169.00	4.635	4.642	-0.007	0.998	149199		6.04(0.00-0.00)	98.3	58819	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.057	0.002		6542972	52.5		105	140605	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.059	0.0	1.000	599529	4.89		97.7	502	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.414	5.414	0.0	1.000	583761	4.90		98.0	536	

Reagents:

LCPFC-L3_00020 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:19 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_006.d

Injection Date: 15-Dec-2016 12:44:16 Instrument ID: A8_N

Lims ID: IC L3

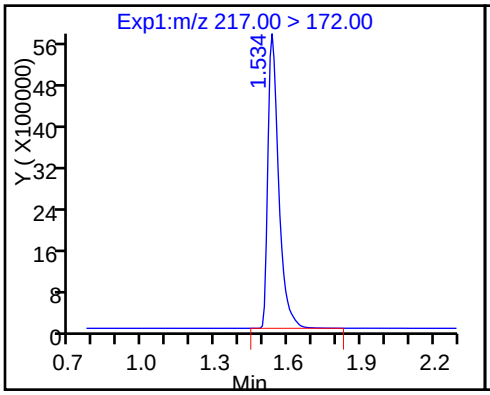
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 39 Worklist Smp#: 6

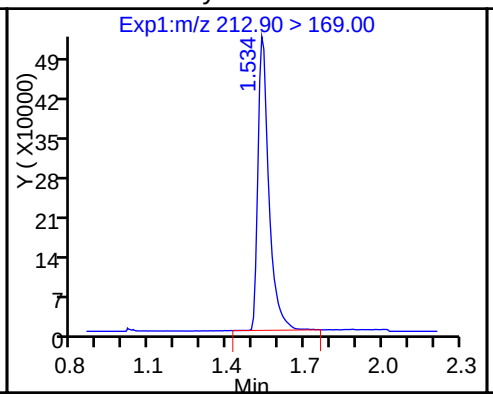
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

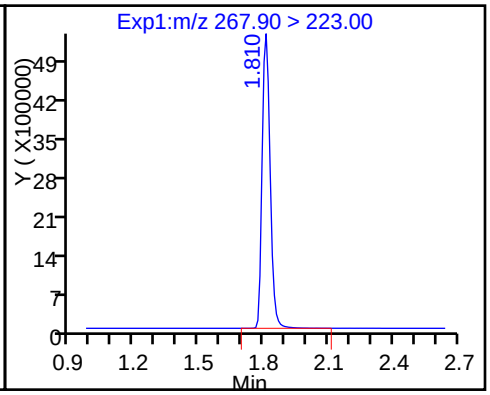
D 2 13C4 PFBA



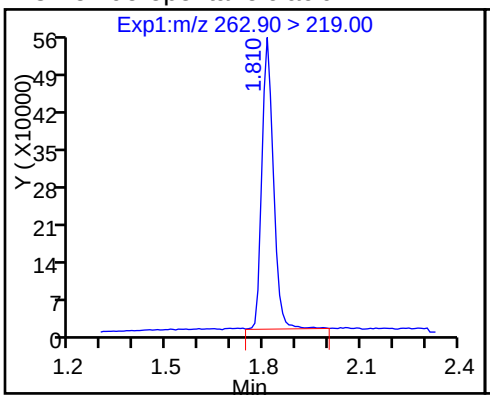
1 Perfluorobutyric acid



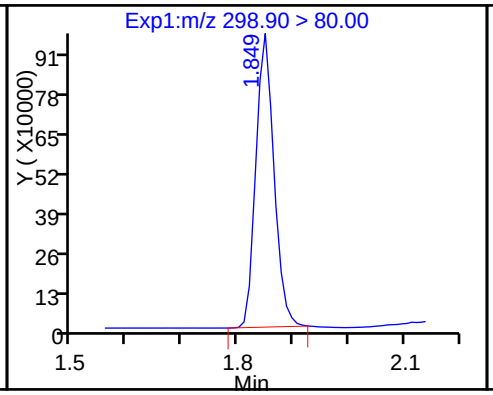
D 4 13C5-PFPeA



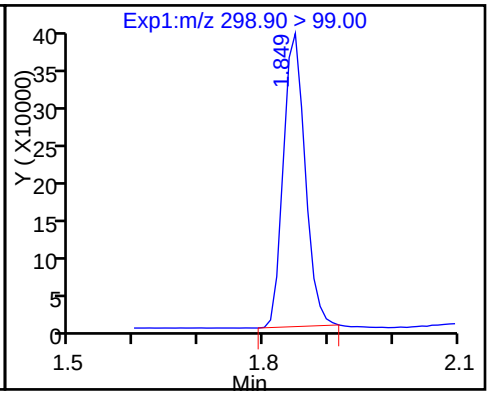
3 Perfluoropentanoic acid



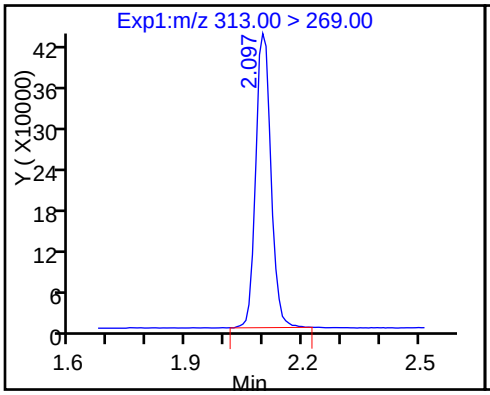
5 Perfluorobutanesulfonic acid



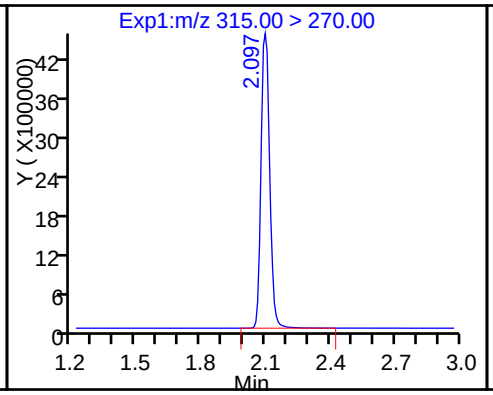
5 Perfluorobutanesulfonic acid



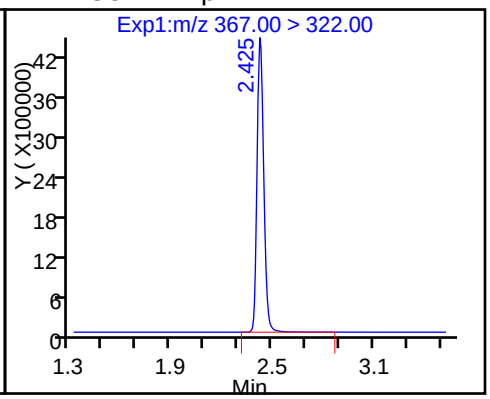
7 Perfluorohexanoic acid



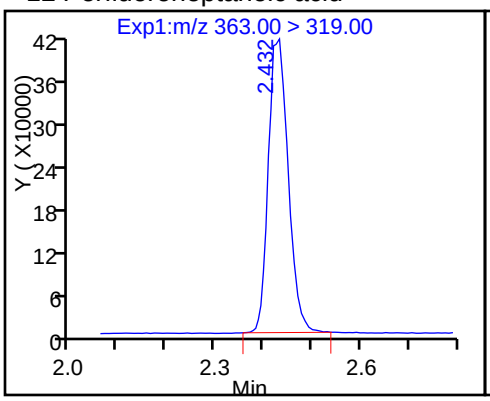
D 6 13C2 PFHxA



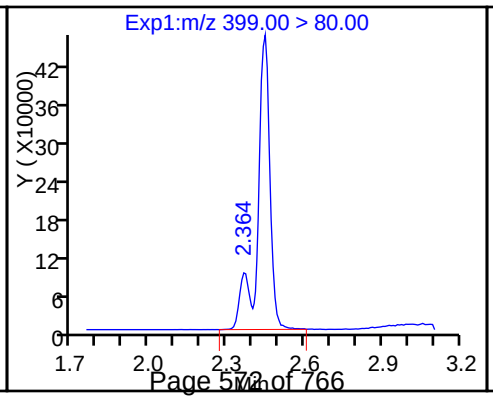
D 11 13C4-PFHpA



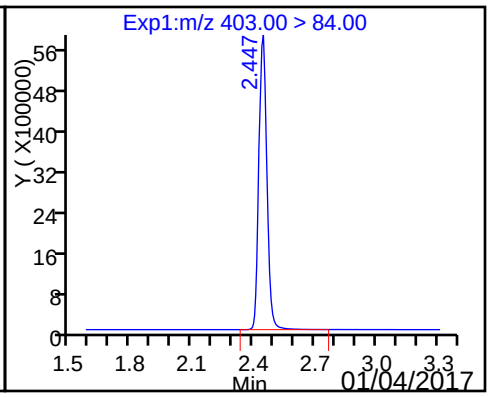
12 Perfluoroheptanoic acid



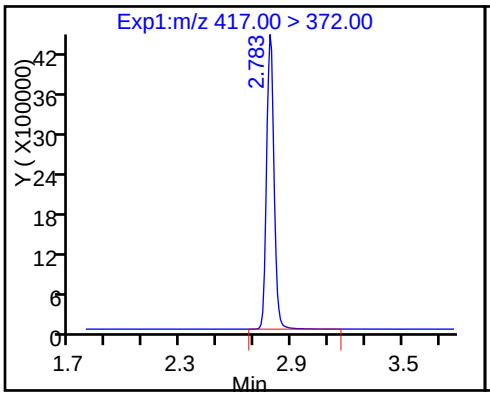
9 Perfluorohexanesulfonic acid



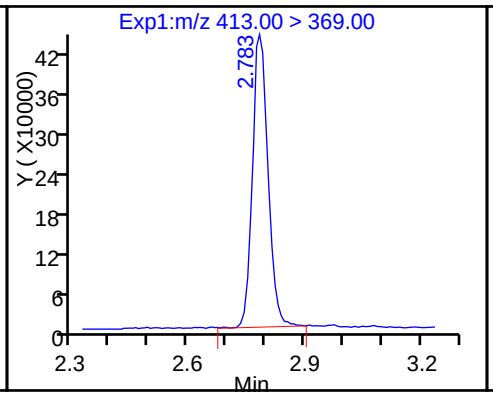
D 10 18O2 PFHxS



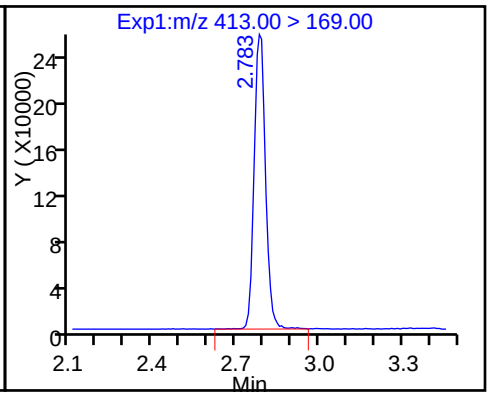
D 14 13C4 PFOA



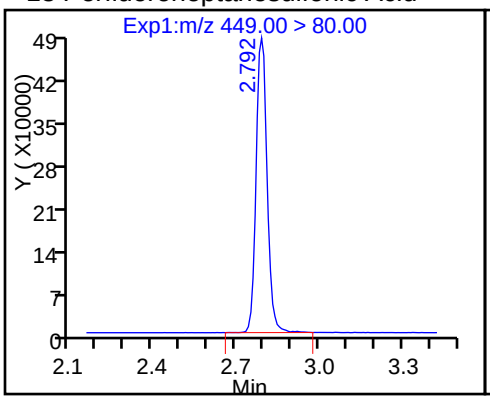
15 Perfluorooctanoic acid



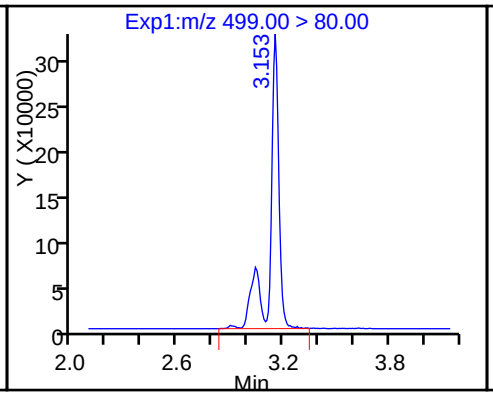
15 Perfluorooctanoic acid



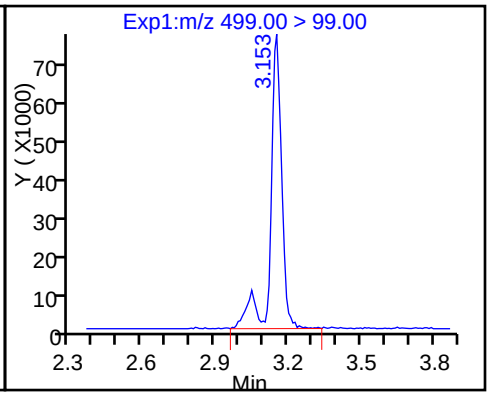
13 Perfluoroheptanesulfonic Acid



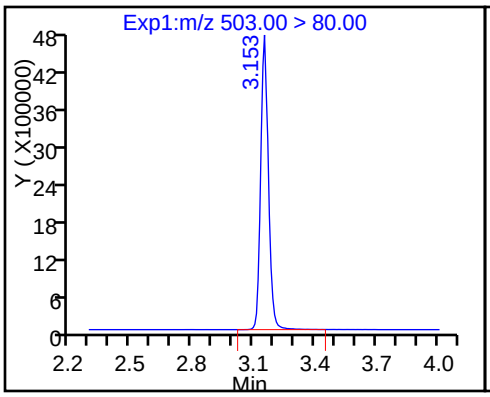
18 Perfluorooctane sulfonic acid



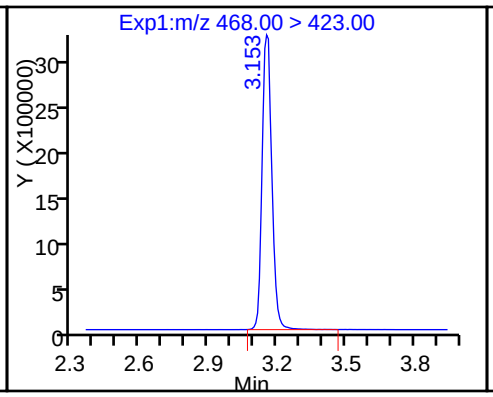
18 Perfluorooctane sulfonic acid



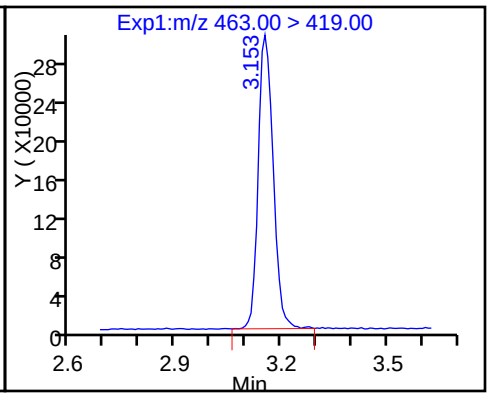
D 17 13C4 PFOS



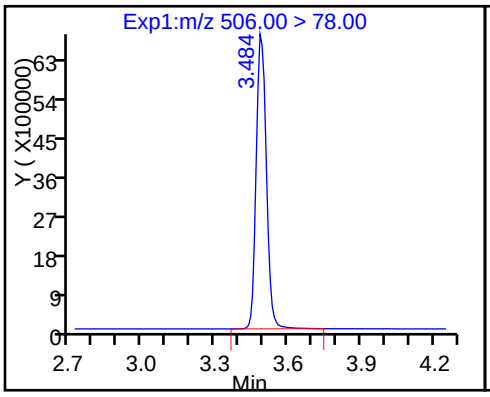
D 19 13C5 PFNA



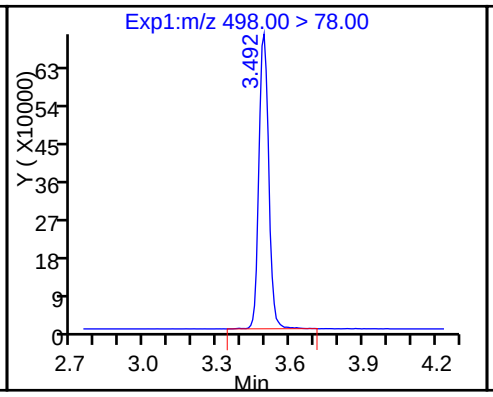
20 Perfluorononanoic acid



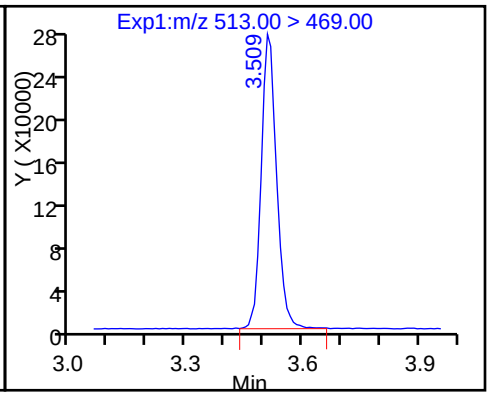
D 21 13C8 FOSA



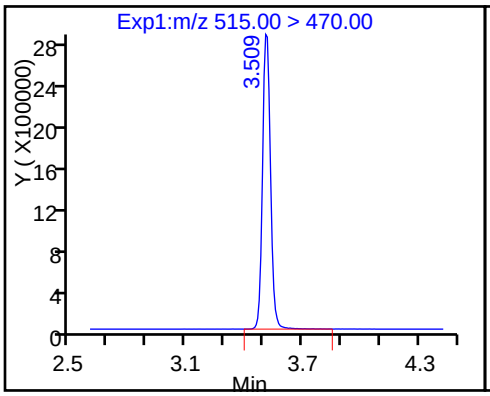
22 Perfluorooctane Sulfonamide



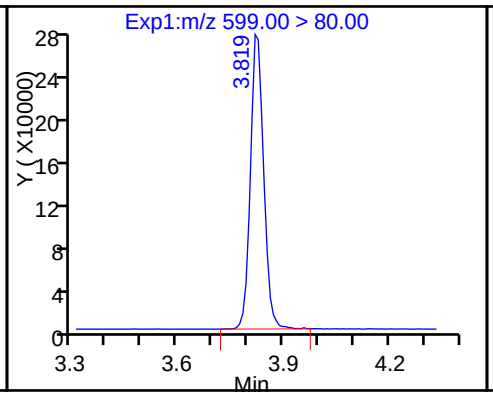
24 Perfluorodecanoic acid



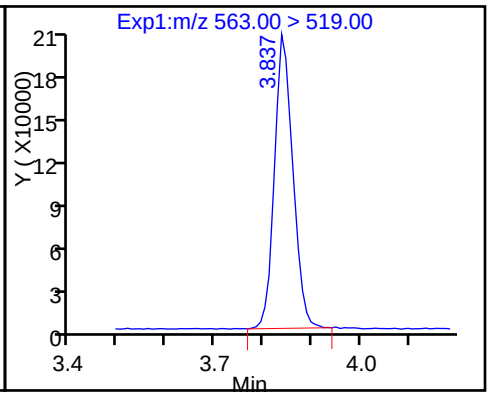
D 23 13C2 PFDA



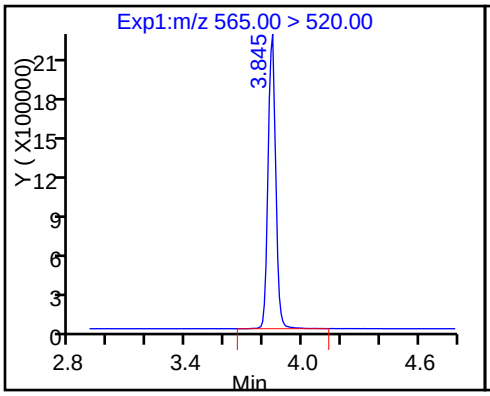
26 Perfluorodecane Sulfonic acid



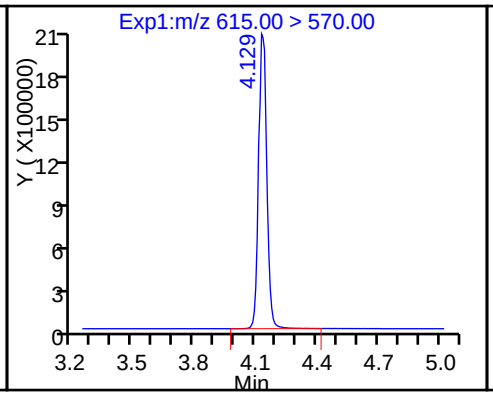
28 Perfluoroundecanoic acid



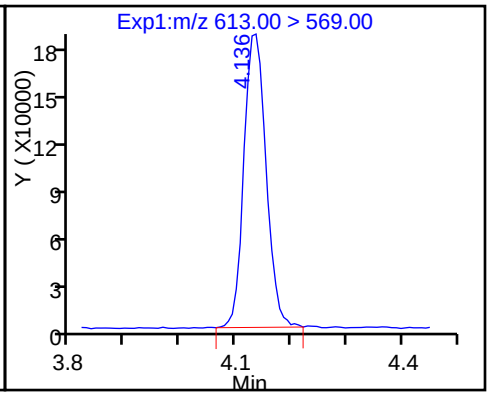
D 27 13C2 PFUnA



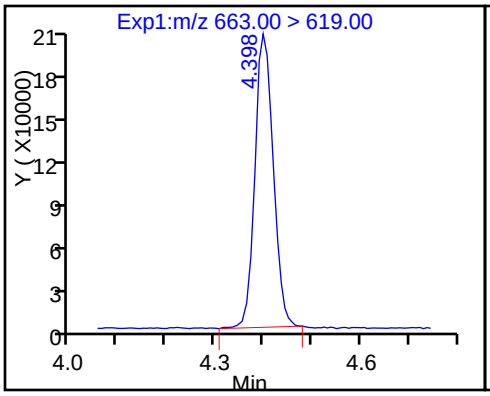
D 30 13C2 PFDoA



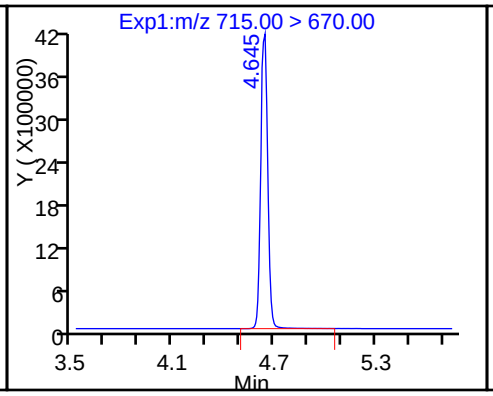
29 Perfluorododecanoic acid



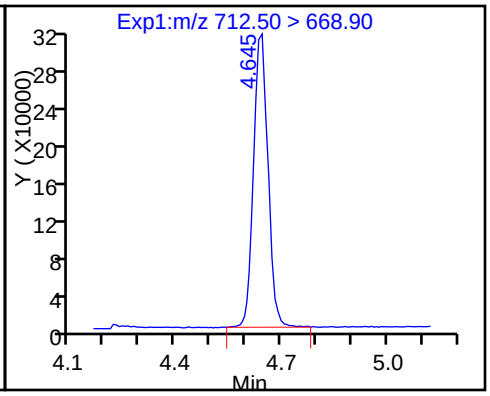
31 Perfluorotridecanoic acid



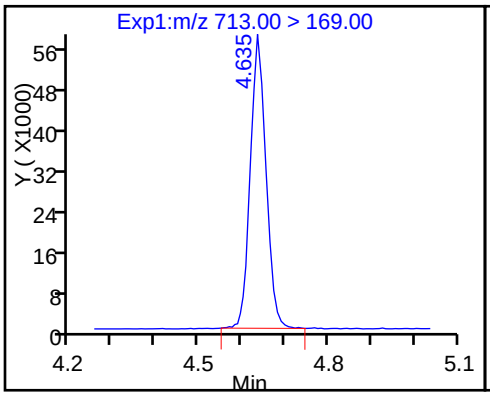
D 32 13C2-PFTeDA



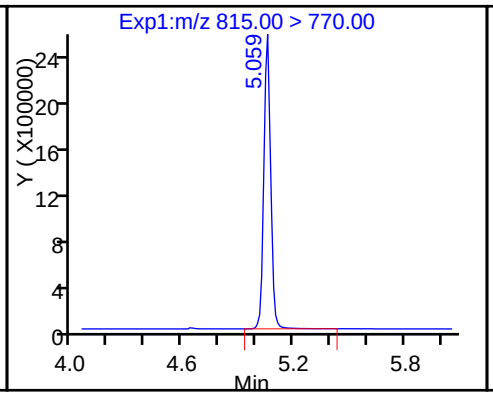
33 Perfluorotetradecanoic acid



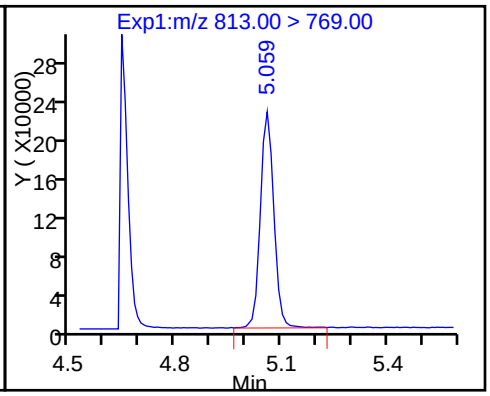
33 Perfluorotetradecanoic acid



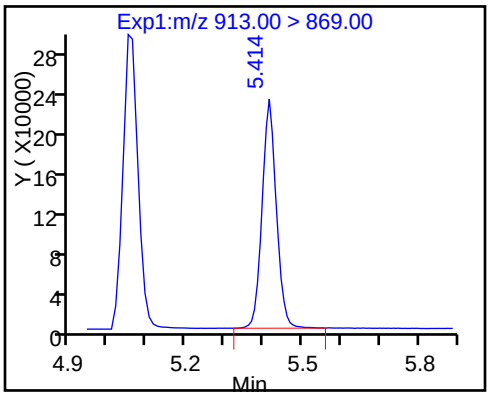
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_007.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 15-Dec-2016 12:51:47 ALS Bottle#: 40 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:21 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:46:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		17585378	50.6		101	1140977	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.535	-0.001	1.000	6690917	22.3		111	52374	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		13617158	51.2		102	860552	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	5770240	21.5		107	61088	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.848	0.001	1.000	9860707	20.5		116		
298.90 > 99.00	1.849	1.848	0.001	1.000	4111615		2.40(0.00-0.00)	116		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.093	2.096	-0.003	1.000	4929766	21.0		105	144495	
D 6 13C2 PFHxA										
315.00 > 270.00	2.102	2.097	0.005		12608210	51.4		103	627430	
D 11 13C4-PFHpA										
367.00 > 322.00	2.426	2.426	0.0		11788221	52.1		104	459454	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.426	2.428	-0.002	1.000	4747711	20.6		103	44179	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.440	2.431	0.009	1.000	6624638	18.9		104		
D 10 18O2 PFHxS										
403.00 > 84.00	2.440	2.446	-0.006		16062766	49.1		104	697379	
D 14 13C4 PFOA										
417.00 > 372.00	2.785	2.783	0.002		11818203	51.3		103	403727	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.785	2.783	0.002	1.000	5109766	21.6		108	40900	
413.00 > 169.00	2.785	2.783	0.002	1.000	3083663		1.66(0.90-1.10)	108	124075	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.785	2.790	-0.005	1.000	6014021	21.4		112		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.129	3.118	0.011	1.000	5058824	20.0		108	109804	
499.00 > 99.00	3.153	3.118	0.035	1.008	1125313		4.50(0.90-1.10)	108	92390	
D 17 13C4 PFOS										
503.00 > 80.00	3.153	3.151	0.002		12183062	49.0		102	250792	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.153	0.0		9236073	52.0		104	341338	
20 Perfluorononanoic acid										
463.00 > 419.00	3.153	3.155	-0.002	1.000	3562981	20.3		101	53054	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.488	-0.004		19703272	51.3		103	612200	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.492	3.491	0.001	1.000	7990835	21.7		109	298669	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.510	-0.001	1.000	3166735	20.6		103	81817	
D 23 13C2 PFDA										
515.00 > 470.00	3.517	3.513	0.004		8134734	51.7		103	195073	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.827	3.822	0.005	1.000	3084031	20.7		107		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.844	3.839	0.005	1.000	2420719	20.3		102	65024	
D 27 13C2 PFUnA										
565.00 > 520.00	3.835	3.842	-0.007		6226562	53.1		106	471162	
D 30 13C2 PFDoA										
615.00 > 570.00	4.135	4.132	0.003		5816809	52.4		105	222845	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.135	4.136	-0.001	1.000	2231794	20.9		104	47124	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.400	-0.002	1.000	2087859	19.8		98.9	37986	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.644	4.641	0.003		11655048	51.3		103	471362	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.644	4.642	0.002	1.000	3678976	20.0		99.8	48461	
713.00 > 169.00	4.635	4.642	-0.007	0.998	596997		6.16(0.00-0.00)	99.8	56132	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.057	0.002		6335821	50.9		102	120381	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.059	0.0	1.000	2267892	19.9		99.3	1990	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	2445236	20.4		102	2369	

Reagents:

LCPFC-L4_00024 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:22 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_007.d

Injection Date: 15-Dec-2016 12:51:47 Instrument ID: A8_N

Lims ID: IC L4

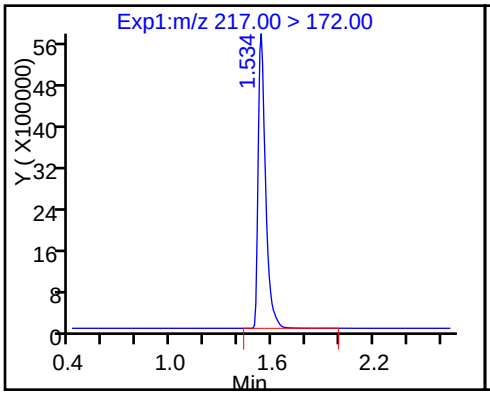
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7

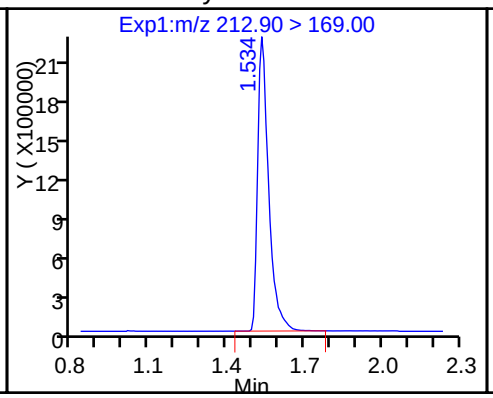
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

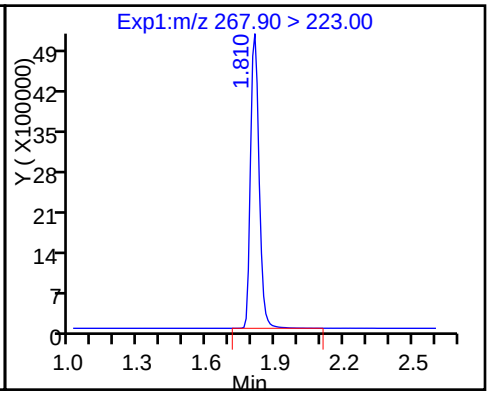
D 2 13C4 PFBA



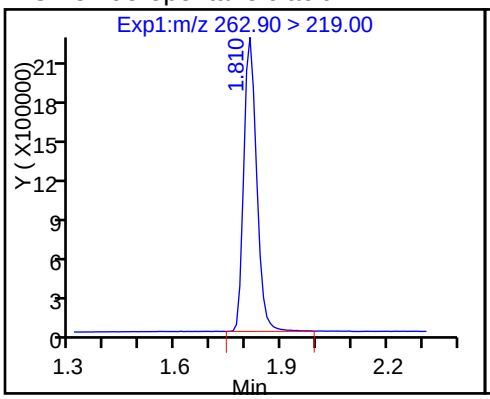
1 Perfluorobutyric acid



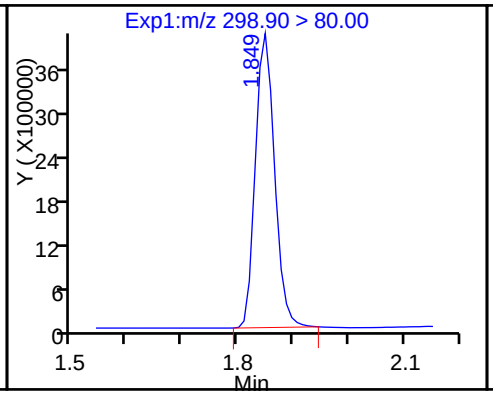
D 4 13C5-PFPeA



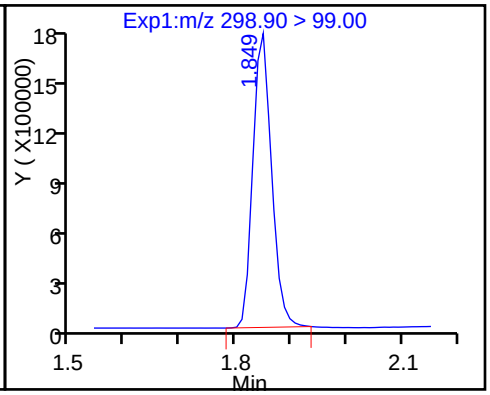
3 Perfluoropentanoic acid



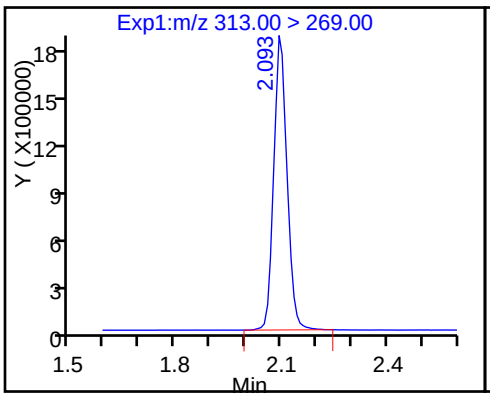
5 Perfluorobutanesulfonic acid



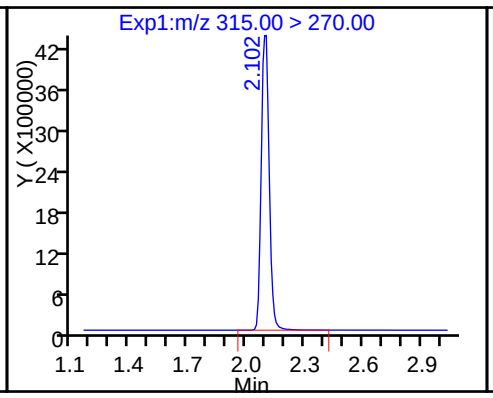
5 Perfluorobutanesulfonic acid



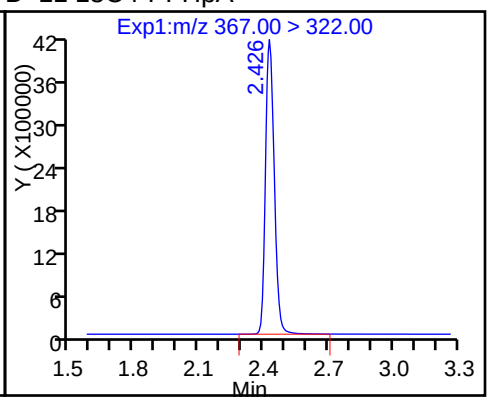
7 Perfluorohexanoic acid



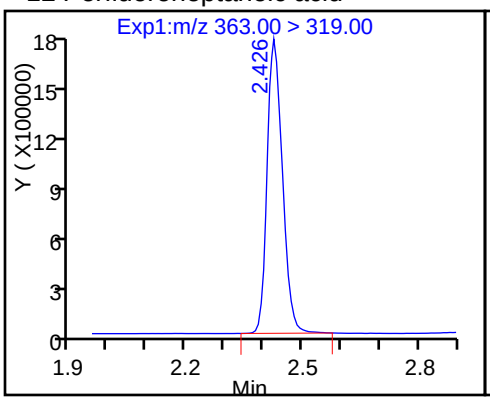
D 6 13C2 PFHxA



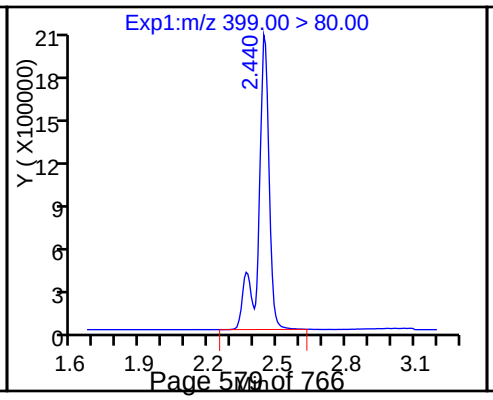
D 11 13C4-PFHpA



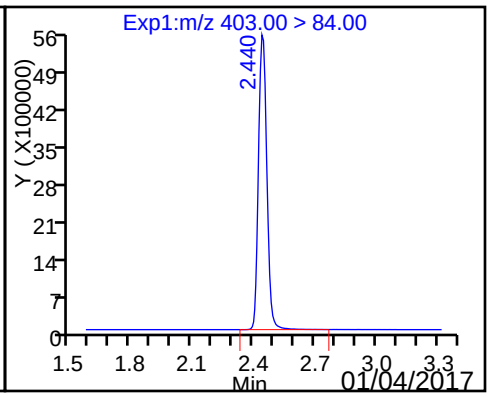
12 Perfluoroheptanoic acid



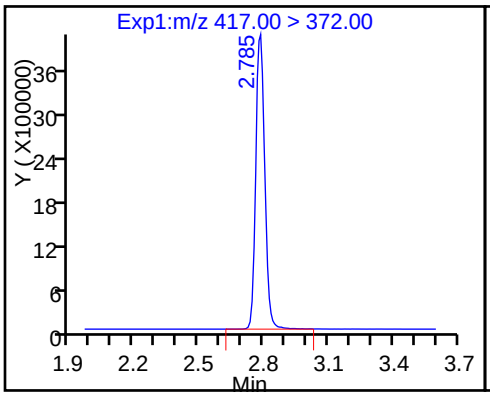
9 Perfluorohexanesulfonic acid



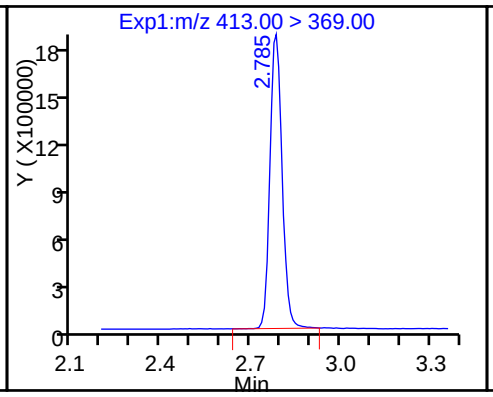
D 10 18O2 PFHxS



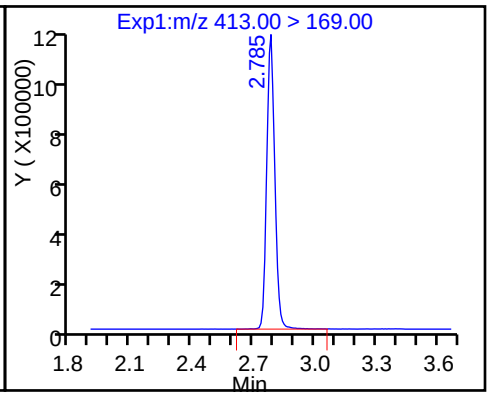
D 14 13C4 PFOA



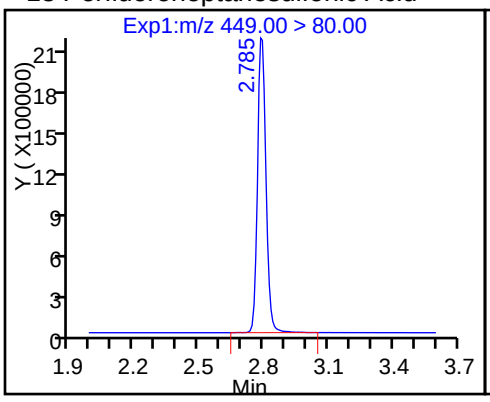
15 Perfluorooctanoic acid



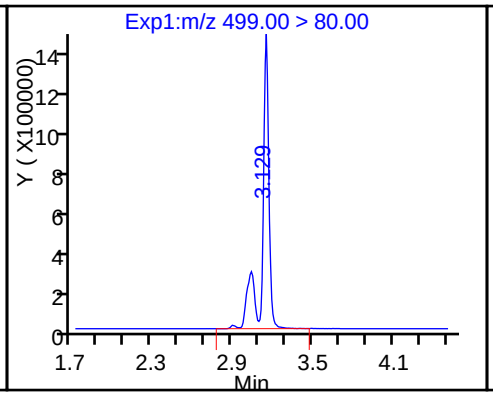
15 Perfluorooctanoic acid



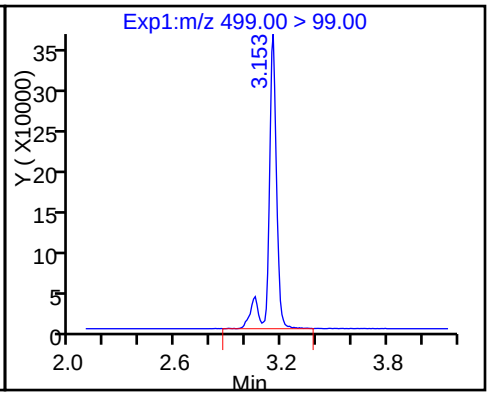
13 Perfluoroheptanesulfonic Acid



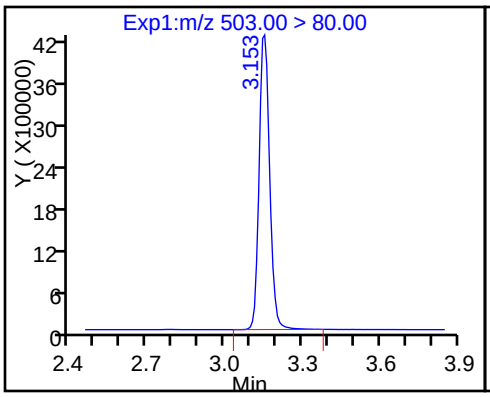
18 Perfluorooctane sulfonic acid



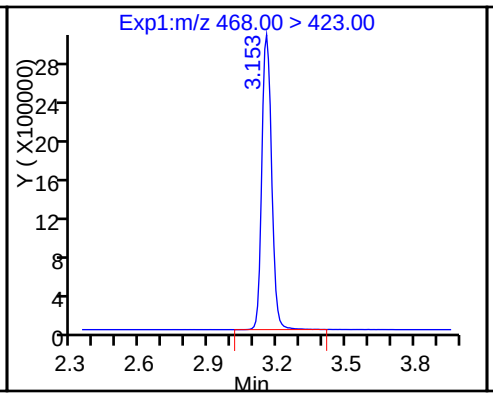
18 Perfluorooctane sulfonic acid



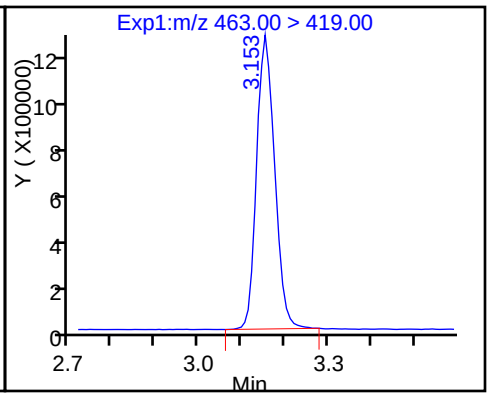
D 17 13C4 PFOS



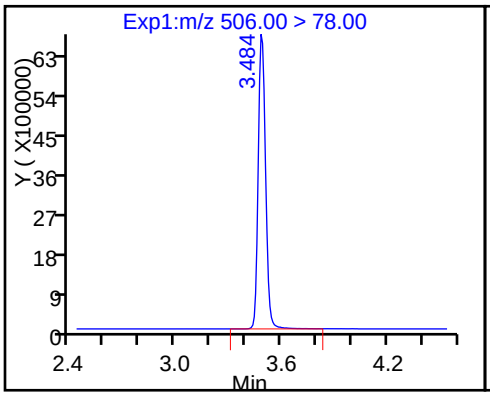
D 19 13C5 PFNA



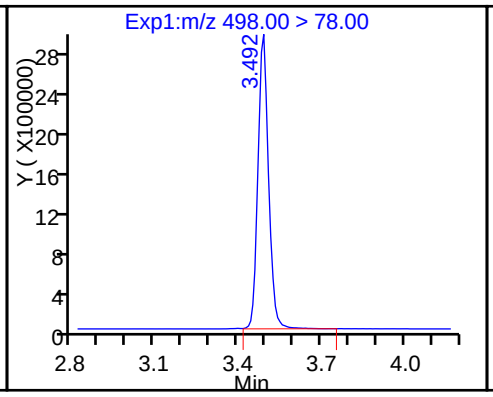
20 Perfluorononanoic acid



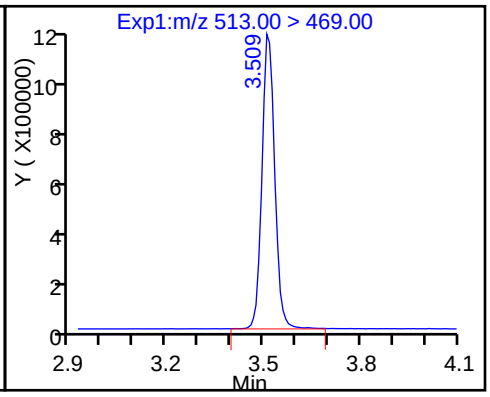
D 21 13C8 FOSA



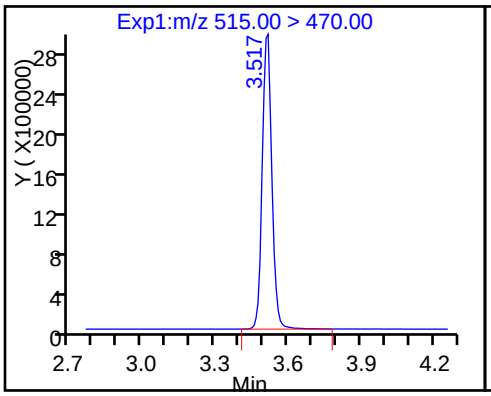
22 Perfluorooctane Sulfonamide



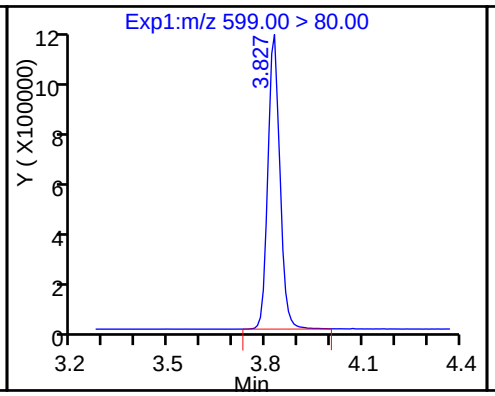
24 Perfluorodecanoic acid



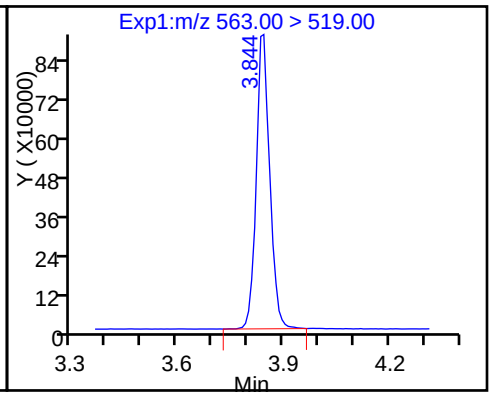
D 23 13C2 PFDA



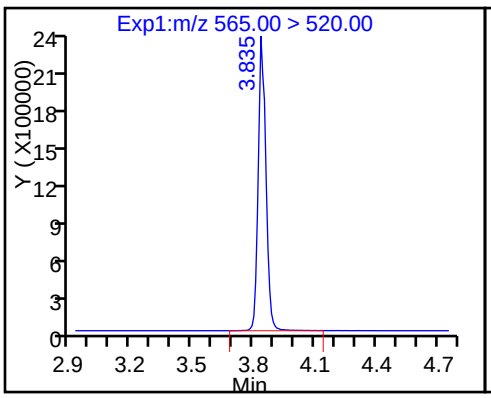
26 Perfluorodecane Sulfonic acid



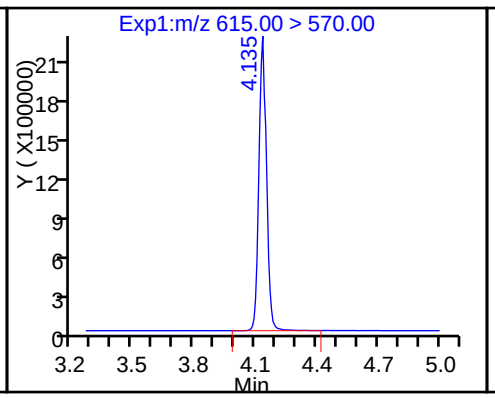
28 Perfluoroundecanoic acid



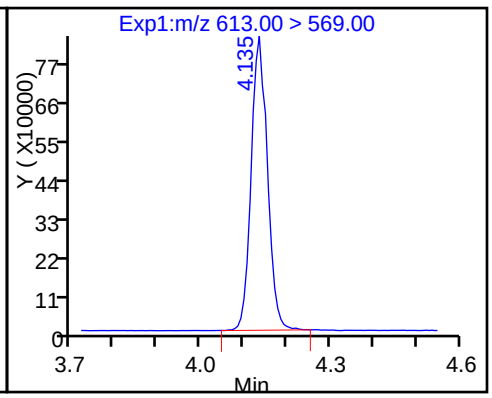
D 27 13C2 PFUnA



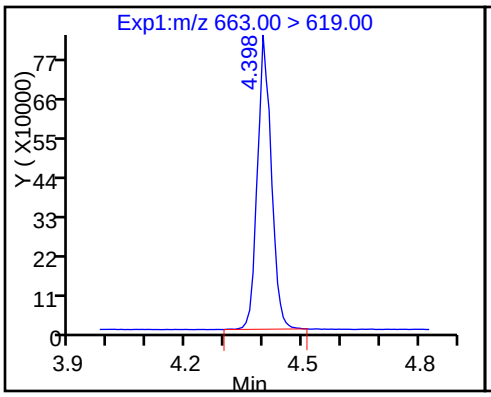
D 30 13C2 PFDoA



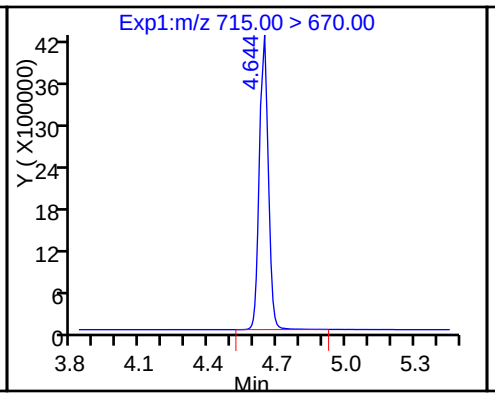
29 Perfluorododecanoic acid



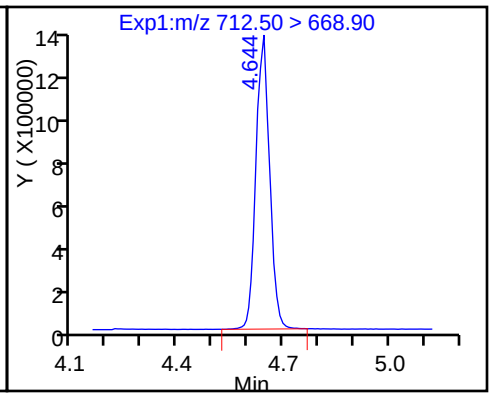
31 Perfluorotridecanoic acid



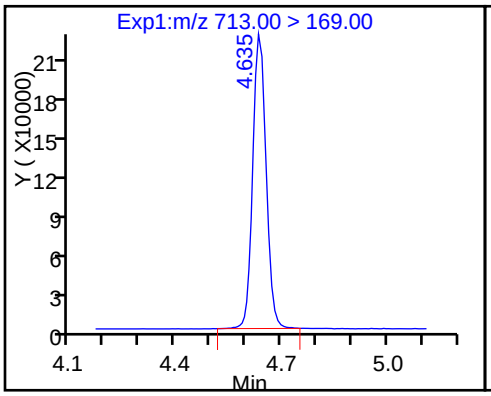
D 32 13C2-PFTeDA



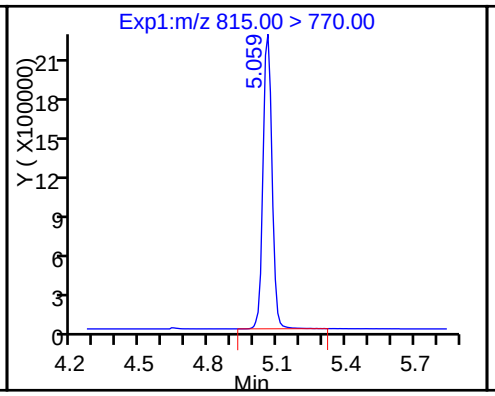
33 Perfluorotetradecanoic acid



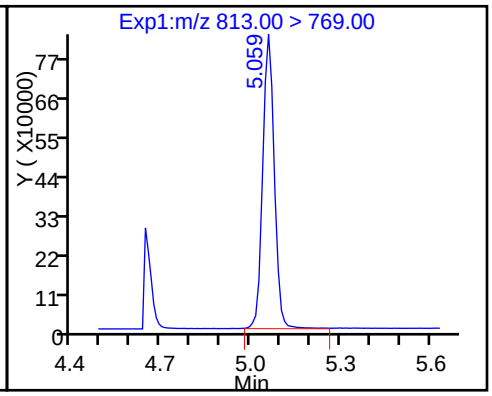
33 Perfluorotetradecanoic acid



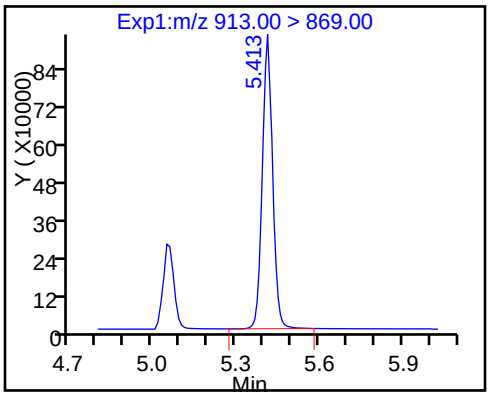
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 15-Dec-2016 12:59:16 ALS Bottle#: 41 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:24 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:51:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.533	1.534	-0.001		17274187	49.7		99.4	927175	
1 Perfluorobutyric acid										
212.90 > 169.00	1.533	1.535	-0.002	1.000	15411527	52.3		105	124871	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		13053659	49.1		98.1	1261104	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	13161065	51.1		102	158308	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.848	0.0	1.000	21559838	47.1		107		
298.90 > 99.00	1.848	1.848	0.0	1.000	10128422		2.13(0.00-0.00)	107		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.098	2.096	0.002	1.000	11507044	50.0		99.9	330809	
D 6 13C2 PFHxA										
315.00 > 270.00	2.098	2.097	0.001		12399280	50.6		101	688050	
D 11 13C4-PFHpA										
367.00 > 322.00	2.424	2.426	-0.002		10801604	47.7		95.4	530896	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.424	2.428	-0.004	1.000	10799449	51.1		102	85838	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.446	2.431	0.015	1.000	15253691	45.8		101		
D 10 18O2 PFHxS										
403.00 > 84.00	2.446	2.446	0.0		15278828	46.7		98.8	1046737	
D 14 13C4 PFOA										
417.00 > 372.00	2.782	2.783	-0.001		11142777	48.4		96.7	755641	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.782	2.783	-0.001	1.000	11435583	51.2		102	92940	
413.00 > 169.00	2.782	2.783	-0.001	1.000	6849991		1.67(0.90-1.10)	102	293728	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.791	2.790	0.001	1.000	13639927	49.5		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.151	3.118	0.033	1.000	11741891	47.2		102	399791	
499.00 > 99.00	3.151	3.118	0.033	1.000	2632984		4.46(0.90-1.10)	102	139087	
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.151	0.0		11946650	48.0		100	237614	
D 19 13C5 PFNA										
468.00 > 423.00	3.151	3.153	-0.002		8581504	48.3		96.6	574194	
20 Perfluorononanoic acid										
463.00 > 419.00	3.151	3.155	-0.004	1.000	8246252	50.5		101	123521	
D 21 13C8 FOSA										
506.00 > 78.00	3.490	3.488	0.002		18804188	49.0		97.9	642404	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.490	3.491	-0.001	1.000	17736944	50.6		101	676782	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.507	3.510	-0.003	1.000	7324495	50.6		101	172410	
D 23 13C2 PFDA										
515.00 > 470.00	3.516	3.513	0.003		7671861	48.8		97.5	212001	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.818	3.822	-0.004	1.000	7241868	49.6		103		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.844	3.839	0.005	1.000	5437764	50.3		101	105822	
D 27 13C2 PFUnA										
565.00 > 520.00	3.844	3.842	0.002		5657823	48.3		96.5	259964	
D 30 13C2 PFDoA										
615.00 > 570.00	4.135	4.132	0.003		5404154	48.7		97.4	211794	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.135	4.136	-0.001	1.000	5072994	51.1		102	98593	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.400	-0.002	1.000	4950651	50.5		101	84213	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.645	4.641	0.004		10950502	48.2		96.3	504805	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.645	4.642	0.003	1.000	8645519	50.5		101	145963	
713.00 > 169.00	4.635	4.642	-0.007	0.998	1380699		6.26(0.00-0.00)	101	249413	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.057	0.002		6027362	48.4		96.8	112750	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.059	0.0	1.000	5318207	51.0		102	4484	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	5869666	52.7		105	5549	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:25 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_008.d

Injection Date: 15-Dec-2016 12:59:16 Instrument ID: A8_N

Lims ID: IC L5

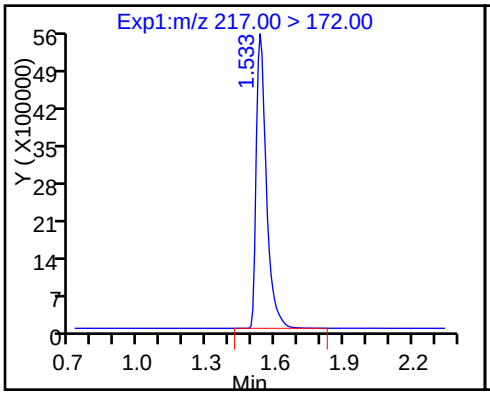
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 8

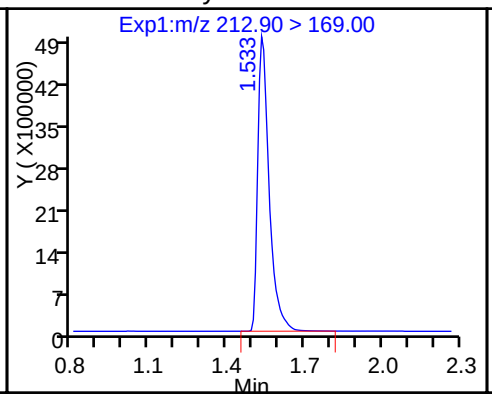
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

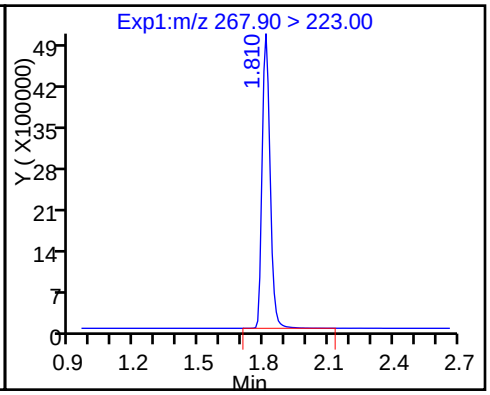
D 2 13C4 PFBA



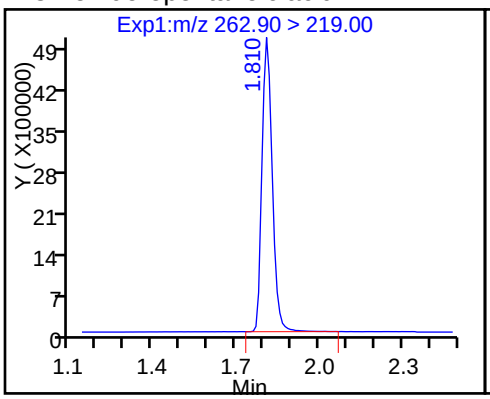
1 Perfluorobutyric acid



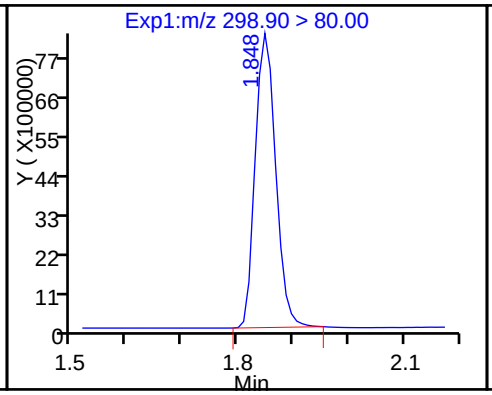
D 4 13C5-PFPeA



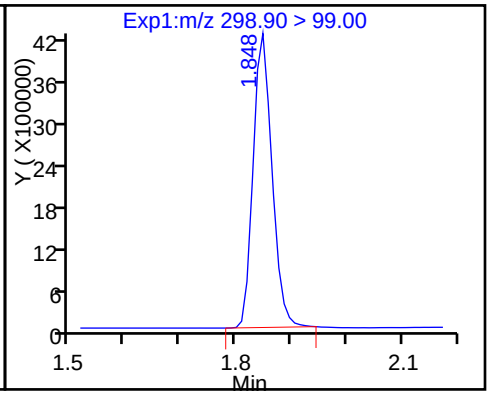
3 Perfluoropentanoic acid



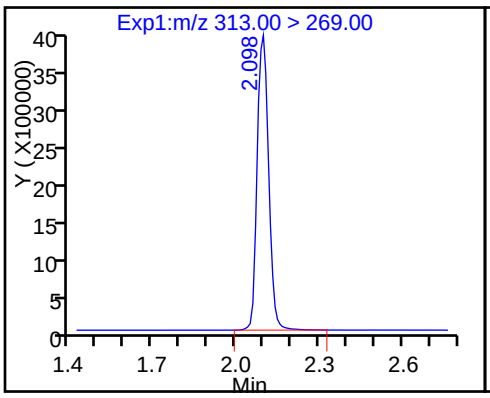
5 Perfluorobutanesulfonic acid



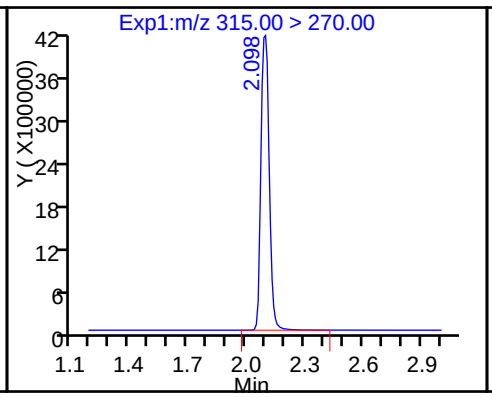
5 Perfluorobutanesulfonic acid



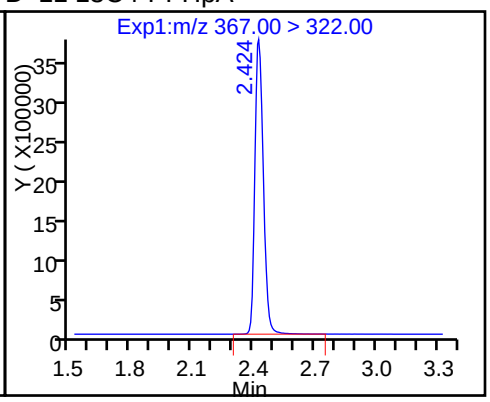
7 Perfluorohexanoic acid



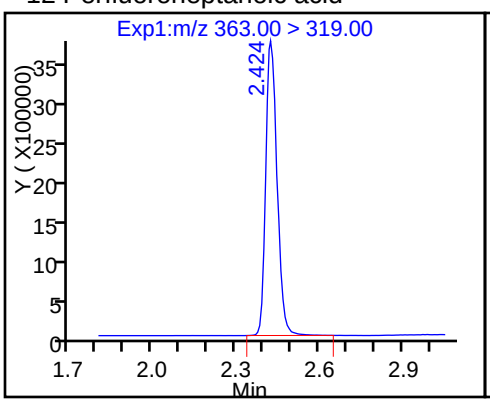
D 6 13C2 PFHxA



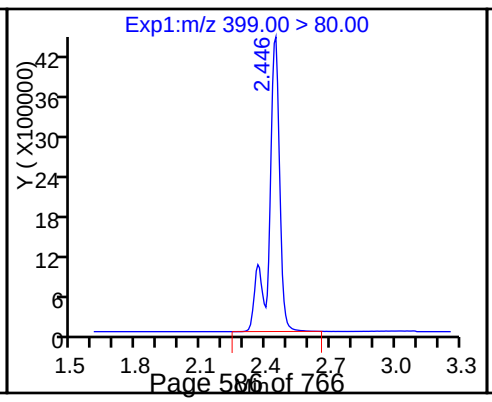
D 11 13C4-PFHpA



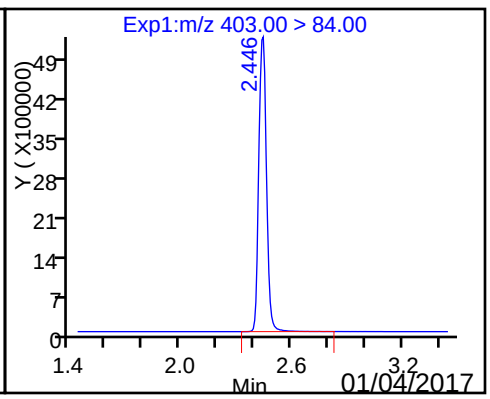
12 Perfluoroheptanoic acid



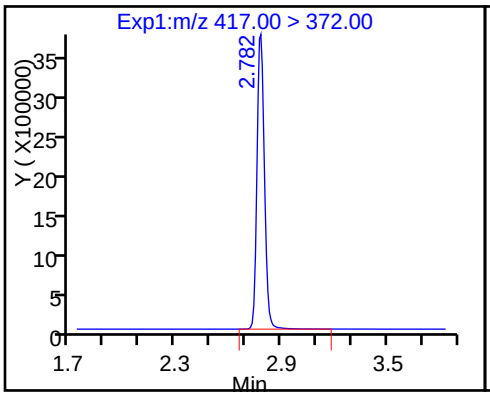
9 Perfluorohexanesulfonic acid



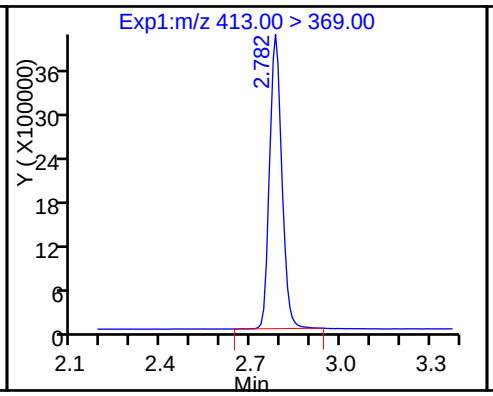
D 10 18O2 PFHxS



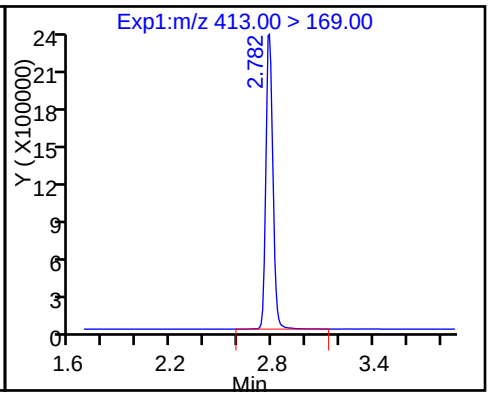
D 14 13C4 PFOA



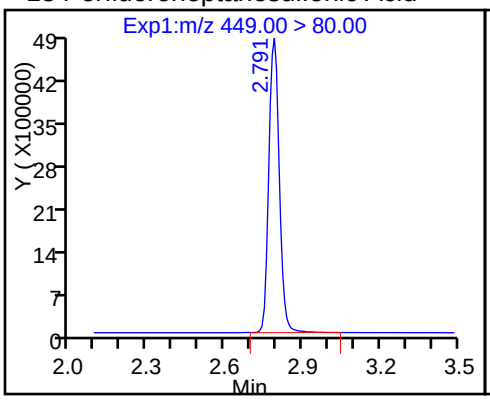
15 Perfluorooctanoic acid



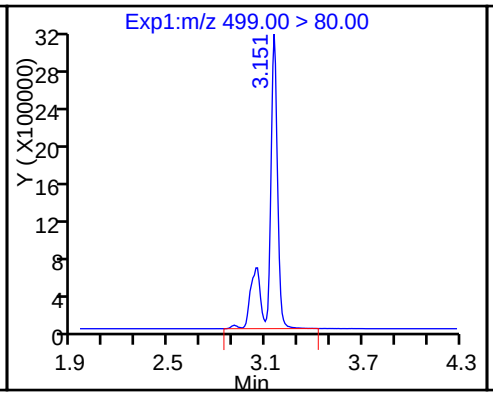
15 Perfluorooctanoic acid



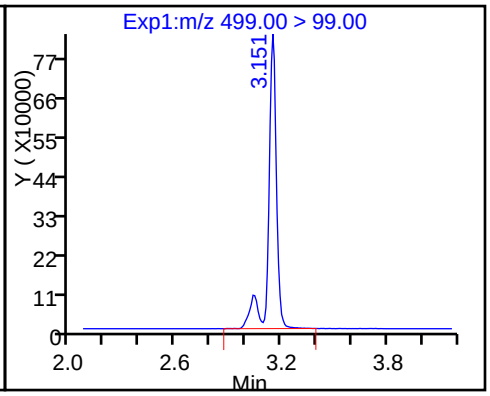
13 Perfluoroheptanesulfonic Acid



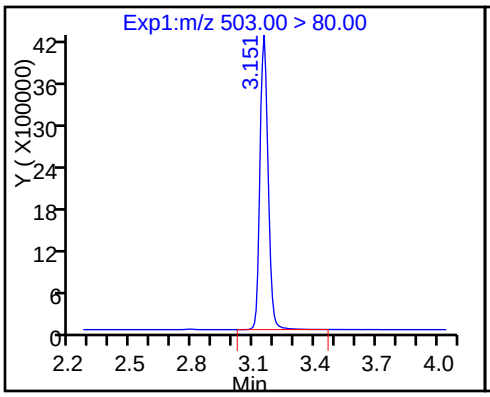
18 Perfluorooctane sulfonic acid



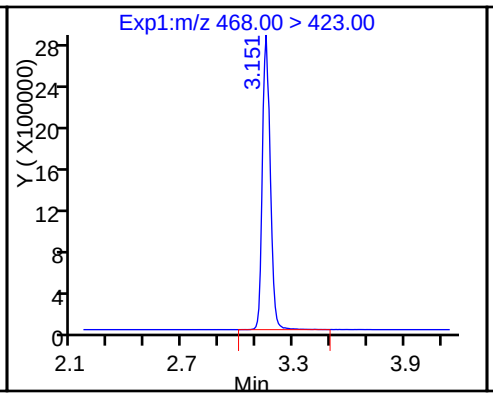
18 Perfluorooctane sulfonic acid



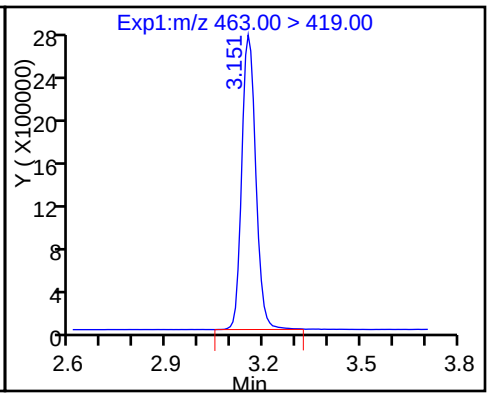
D 17 13C4 PFOS



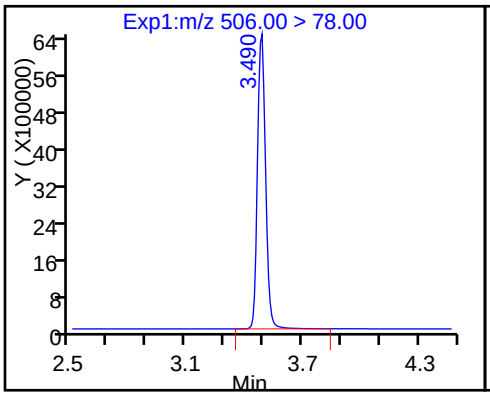
D 19 13C5 PFNA



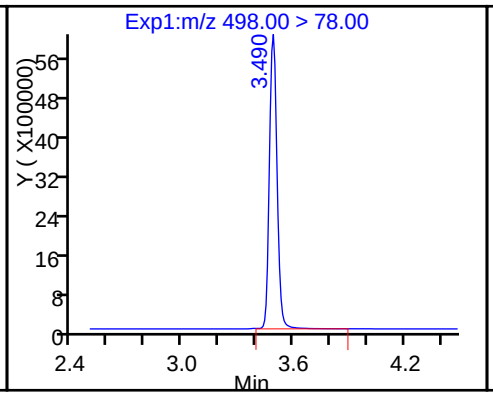
20 Perfluorononanoic acid



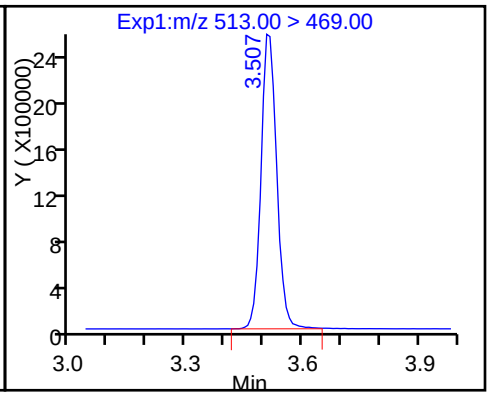
D 21 13C8 FOSA



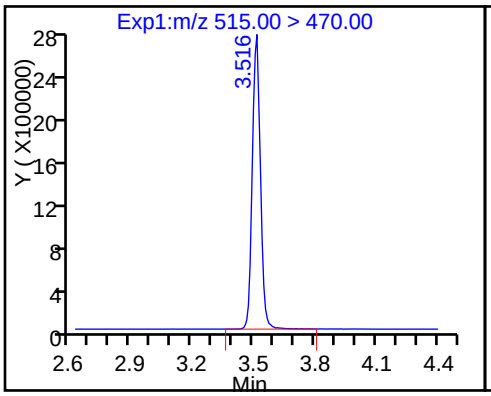
22 Perfluorooctane Sulfonamide



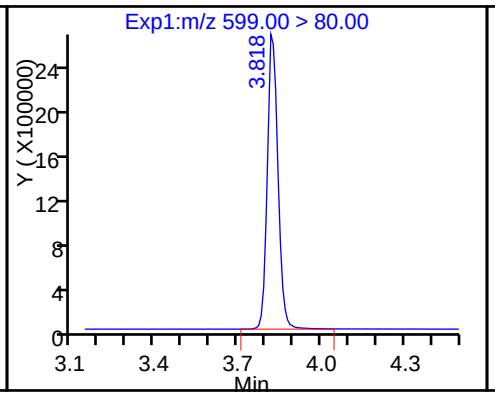
24 Perfluorodecanoic acid



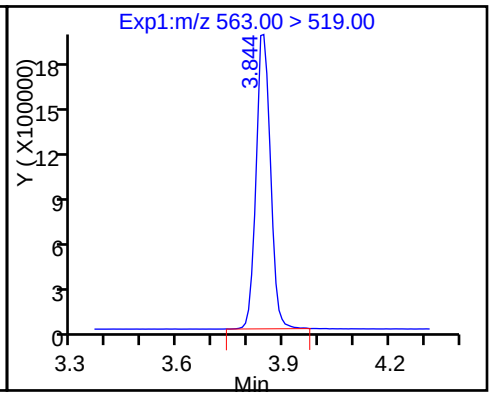
D 23 13C2 PFDA



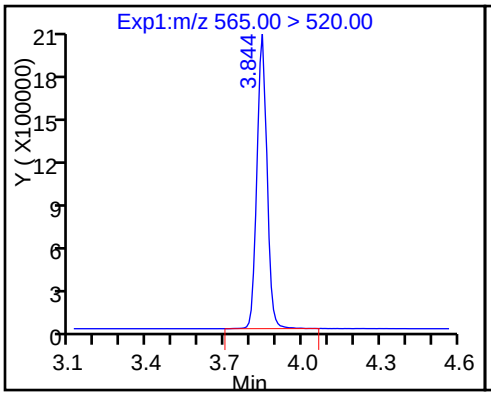
26 Perfluorodecane Sulfonic acid



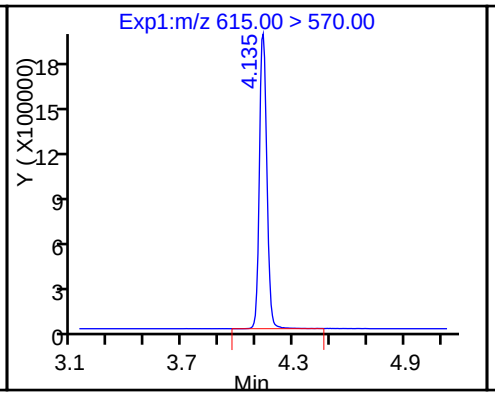
28 Perfluoroundecanoic acid



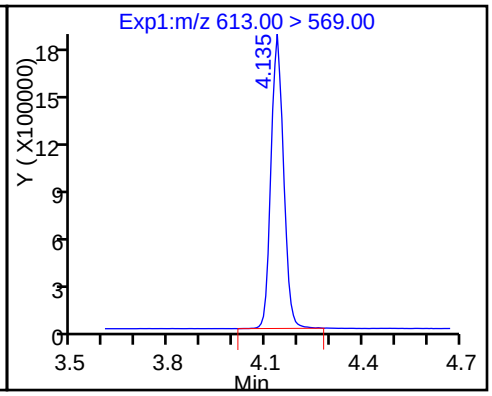
D 27 13C2 PFUnA



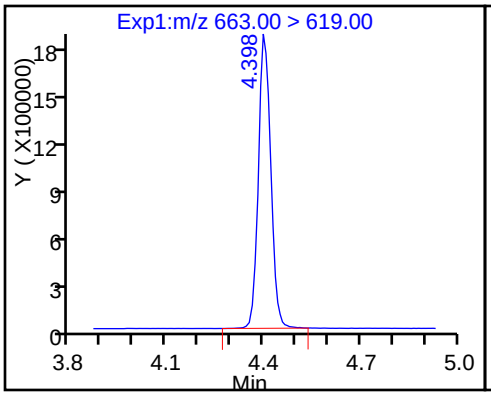
D 30 13C2 PFDoA



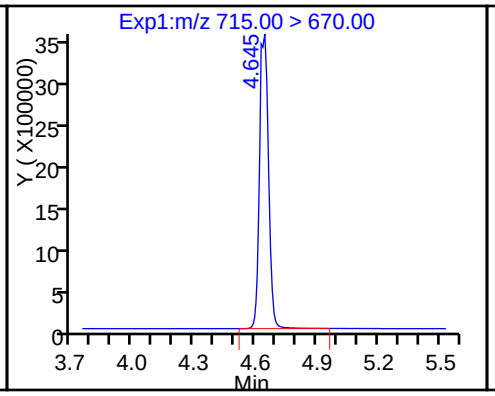
29 Perfluorododecanoic acid



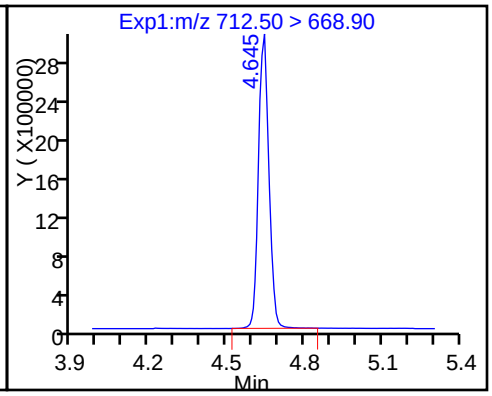
31 Perfluorotridecanoic acid



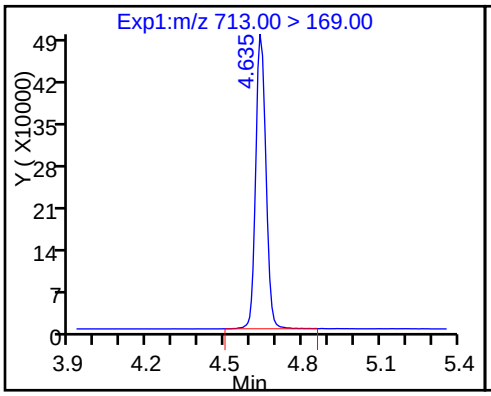
D 32 13C2-PFTeDA



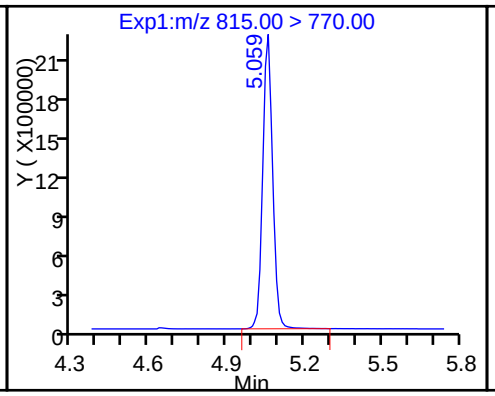
33 Perfluorotetradecanoic acid



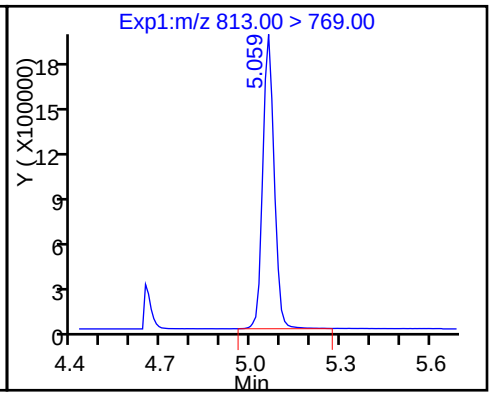
33 Perfluorotetradecanoic acid



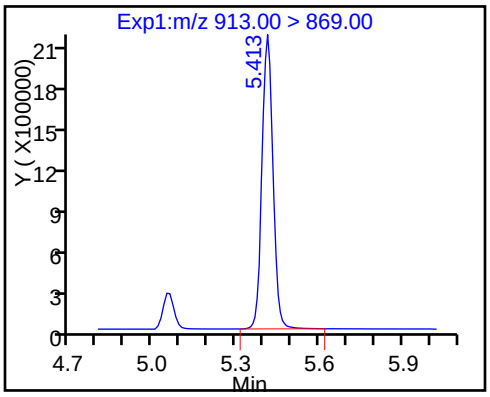
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 15-Dec-2016 13:06:46 ALS Bottle#: 42 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:27 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:51:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.537	1.534	0.003		14961055	43.0		86.0	920014	
1 Perfluorobutyric acid										
212.90 > 169.00	1.537	1.535	0.002	1.000	42763611	167.4		83.7	246189	
D 4 13C5-PFPeA										
267.90 > 223.00	1.813	1.810	0.003		10898820	41.0		81.9	1007026	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.813	1.810	0.003	1.000	34291076	159.4		79.7	297823	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.848	0.004	1.000	50724469	130.5		73.8		
298.90 > 99.00	1.842	1.848	-0.006	0.995	28243355		1.80(0.00-0.00)	73.8		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.096	2.096	0.0	1.000	33223923	172.9		86.4	549724	
D 6 13C2 PFHxA										
315.00 > 270.00	2.096	2.097	-0.001		10345480	42.2		84.4	508201	
D 11 13C4-PFHpA										
367.00 > 322.00	2.426	2.426	0.0		8564025	37.8		75.7	487796	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.426	2.428	-0.002	1.000	30234194	180.3		90.2	213534	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.444	2.431	0.013	1.000	46223186	163.6		89.9		
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.446	-0.002		12974829	39.7		83.9	628886	
D 14 13C4 PFOA										
417.00 > 372.00	2.783	2.783	0.0		8380251	36.4		72.8	402245	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.783	2.783	0.0	1.000	30784387	183.1		91.5	229181	
413.00 > 169.00	2.783	2.783	0.0	1.000	20338648		1.51(0.90-1.10)	91.5	70063	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.791	2.790	0.001	1.000	38459925	166.5		87.5		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.977	3.118	-0.141	1.000	40073141	192.2		104	5896	
499.00 > 99.00	3.152	3.118	0.034	1.059	9632026		4.16(0.90-1.10)	104	407968	
D 17 13C4 PFOS										
503.00 > 80.00	3.152	3.151	0.001		10019454	40.3		84.2	105595	
D 19 13C5 PFNA										
468.00 > 423.00	3.152	3.153	-0.001		6718354	37.8		75.6	515582	
20 Perfluorononanoic acid										
463.00 > 419.00	3.160	3.155	0.005	1.000	24793148	193.9		96.9	307568	
D 21 13C8 FOSA										
506.00 > 78.00	3.491	3.488	0.003		16105707	41.9		83.9	486146	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.491	3.491	0.0	1.000	47803717	159.1		79.6	542400	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.516	3.510	0.006	1.000	22616781	191.8		95.9	376094	
D 23 13C2 PFDA										
515.00 > 470.00	3.508	3.513	-0.005		6246112	39.7		79.4	243806	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.819	3.822	-0.004	1.000	23952412	195.7		101		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.845	3.839	0.006	1.000	16852945	197.7		98.9	570796	
D 27 13C2 PFUnA										
565.00 > 520.00	3.845	3.842	0.003		4456593	38.0		76.0	208308	
D 30 13C2 PFDoA										
615.00 > 570.00	4.129	4.132	-0.003		4649092	41.9		83.8	168499	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.136	4.136	0.0	1.000	17425873	204.2		102	228085	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.407	4.400	0.007	1.000	16038809	190.2		95.1	237459	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.635	4.641	-0.006		9520749	41.9		83.7	374846	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.635	4.642	-0.007	1.000	27310864	185.3		92.7	329988	
713.00 > 169.00	4.635	4.642	-0.007	1.000	4963804		5.50(0.00-0.00)	92.7	195544	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.060	5.057	0.003		5190172	41.7		83.3	150380	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.060	5.059	0.001	1.000	17754908	199.3		99.6	19037	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.414	5.414	0.0	1.000	18392980	192.0		96.0	19845	

Reagents:

LCPFC-L6_00020 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:28 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_009.d

Injection Date: 15-Dec-2016 13:06:46 Instrument ID: A8_N

Lims ID: IC L6

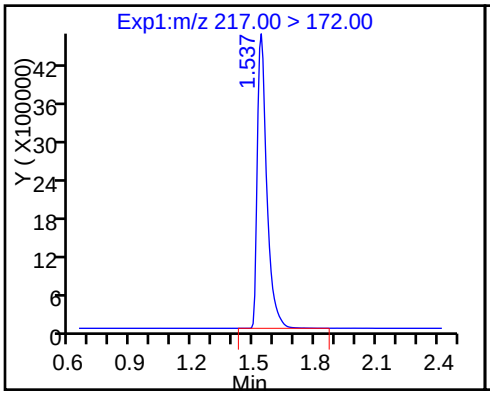
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9

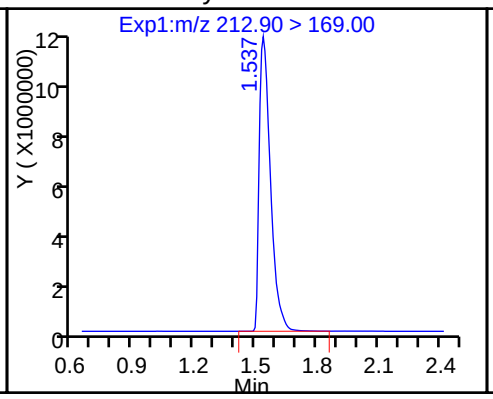
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

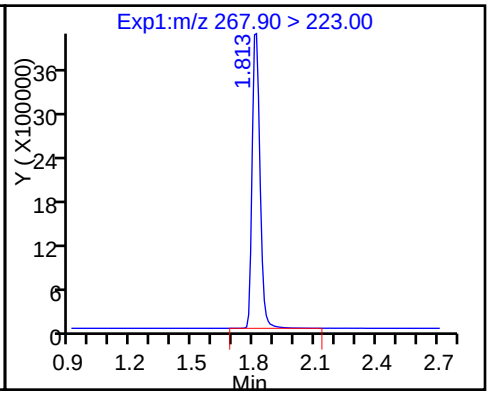
D 2 13C4 PFBA



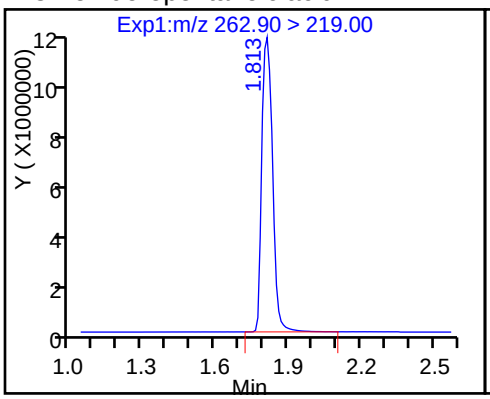
1 Perfluorobutyric acid



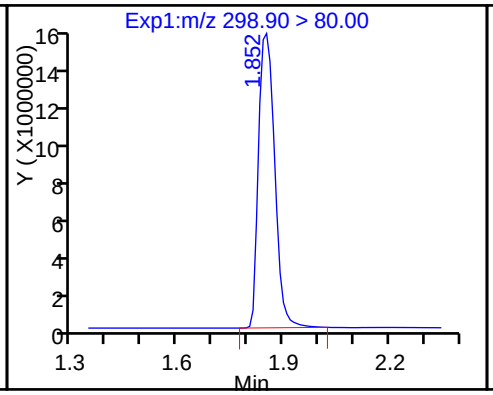
D 4 13C5-PFPeA



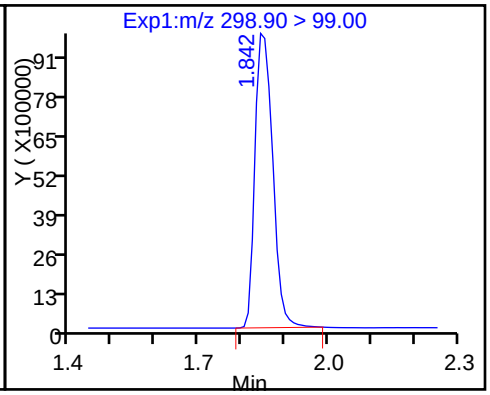
3 Perfluoropentanoic acid



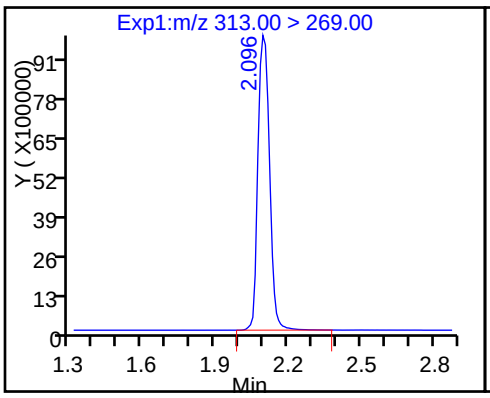
5 Perfluorobutanesulfonic acid



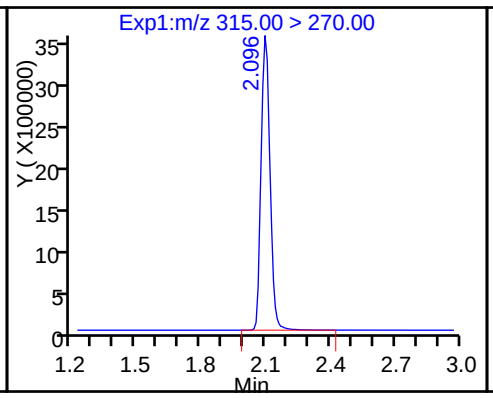
5 Perfluorobutanesulfonic acid



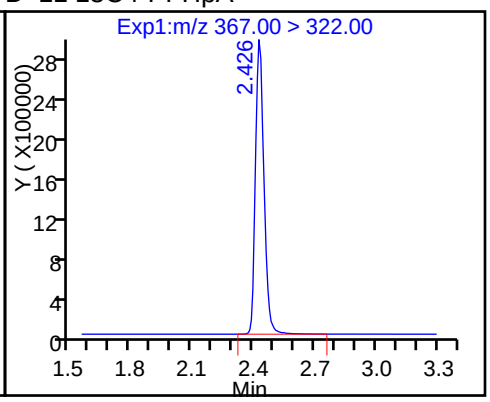
7 Perfluorohexanoic acid



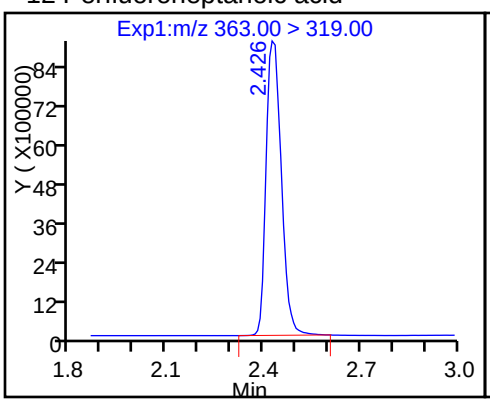
D 6 13C2 PFHxA



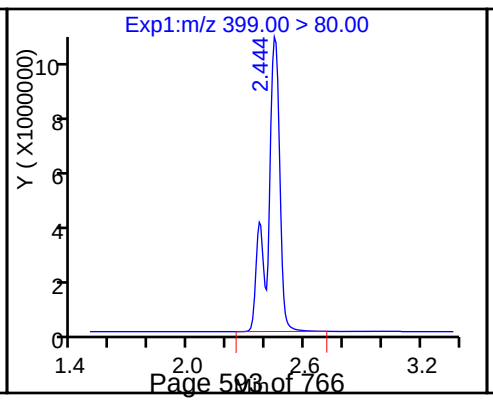
D 11 13C4-PFHpA



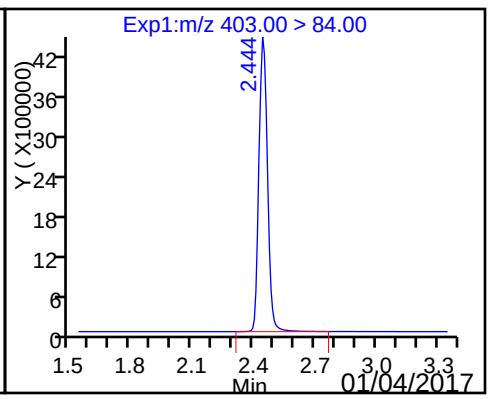
12 Perfluoroheptanoic acid



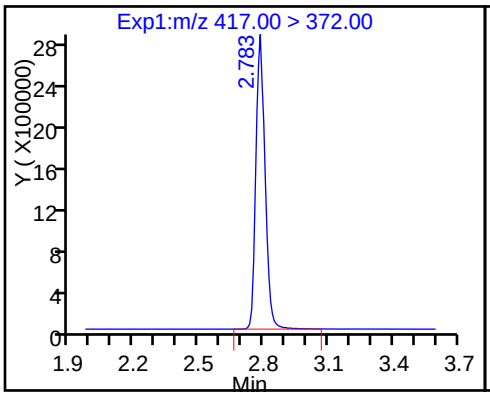
9 Perfluorohexanesulfonic acid



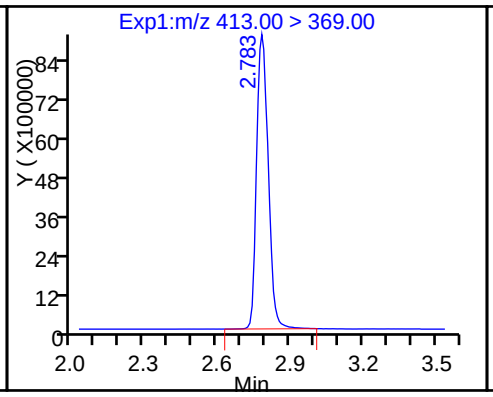
D 10 18O2 PFHxS



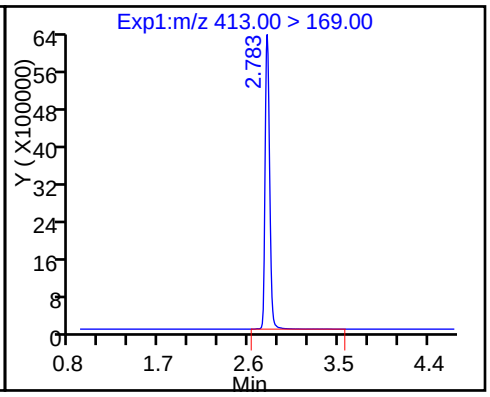
D 14 13C4 PFOA



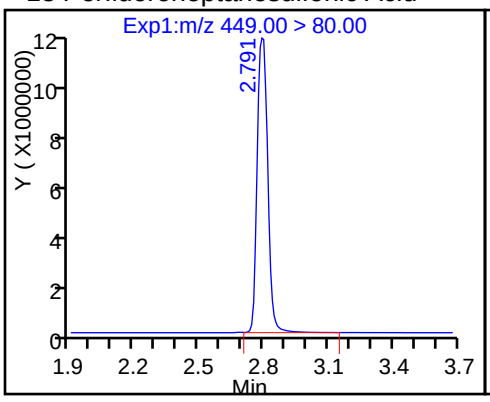
15 Perfluorooctanoic acid



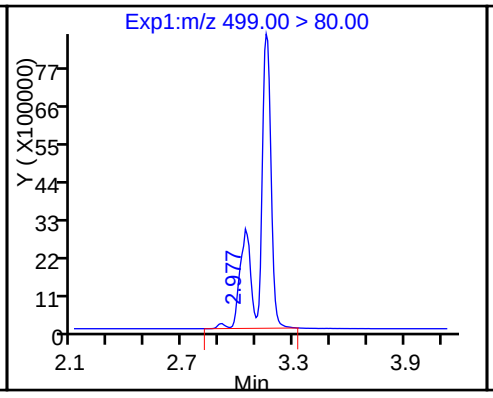
15 Perfluorooctanoic acid



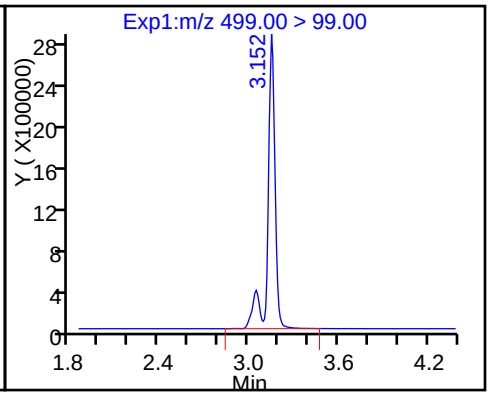
13 Perfluoroheptanesulfonic Acid



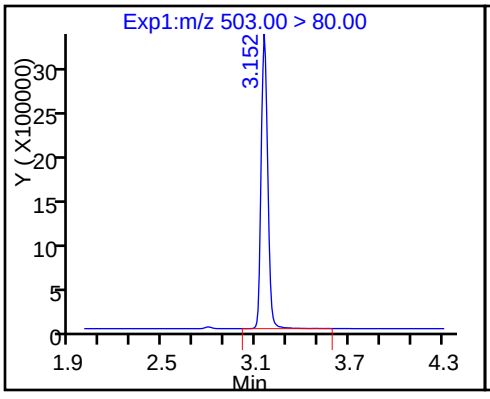
18 Perfluorooctane sulfonic acid



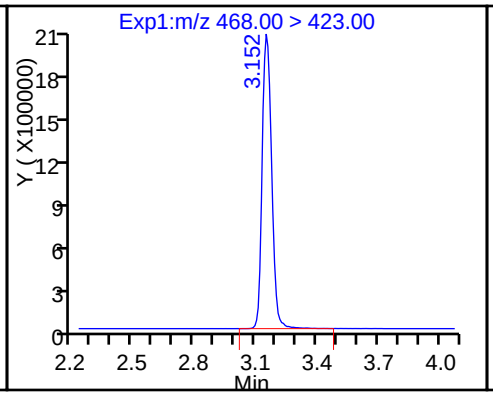
18 Perfluorooctane sulfonic acid



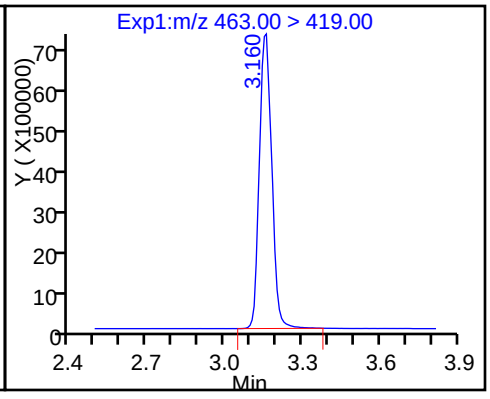
D 17 13C4 PFOS



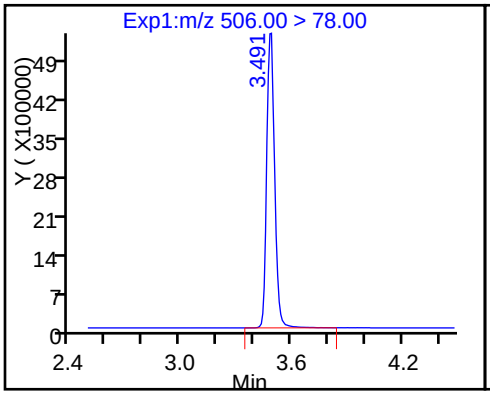
D 19 13C5 PFNA



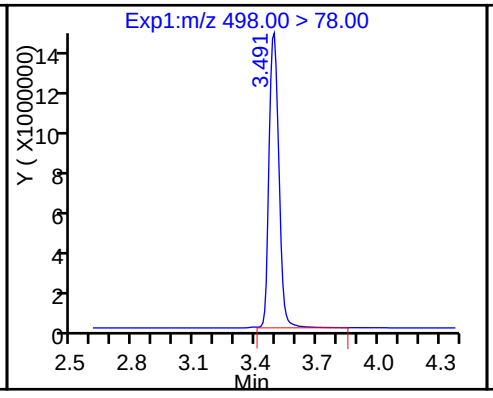
20 Perfluorononanoic acid



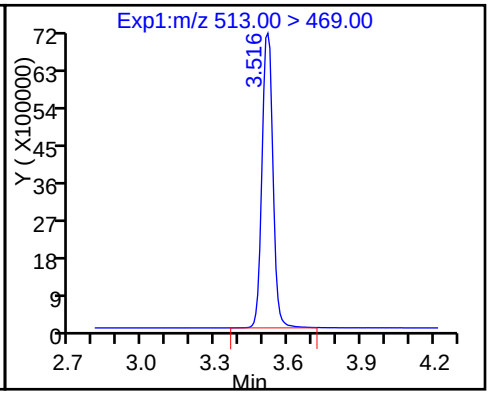
D 21 13C8 FOSA



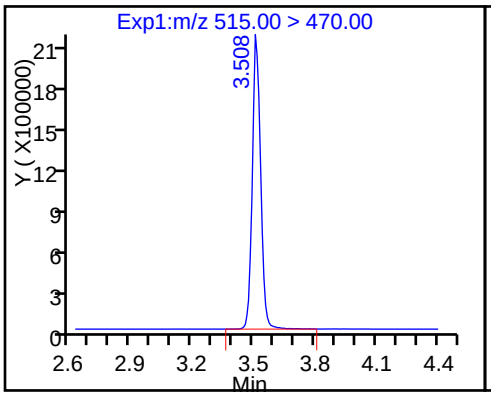
22 Perfluorooctane Sulfonamide



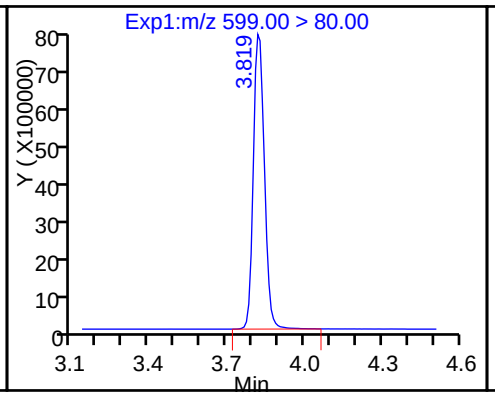
24 Perfluorodecanoic acid



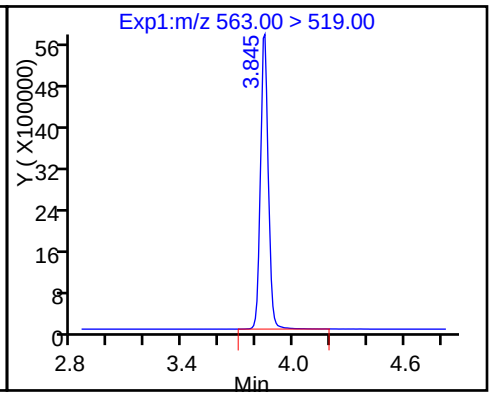
D 23 13C2 PFDA



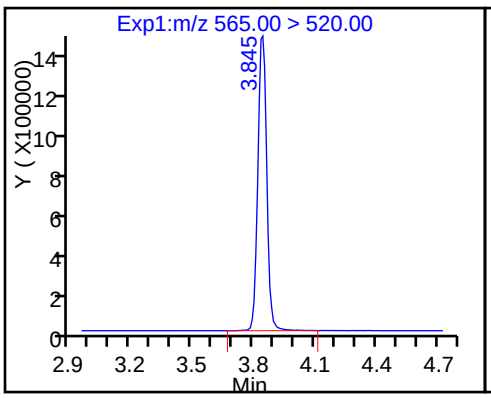
26 Perfluorodecane Sulfonic acid



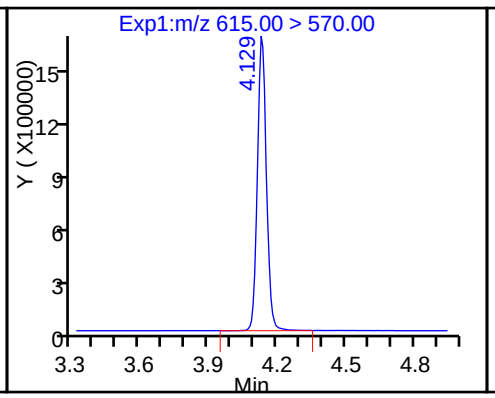
28 Perfluoroundecanoic acid



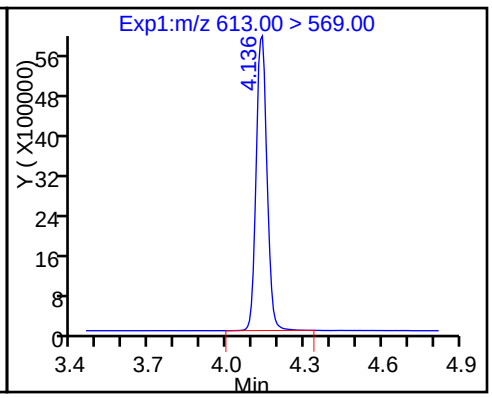
D 27 13C2 PFUnA



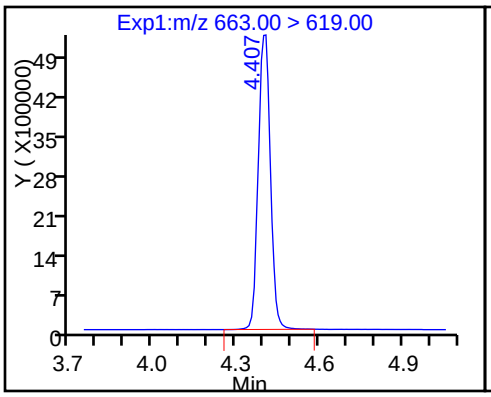
D 30 13C2 PFDoA



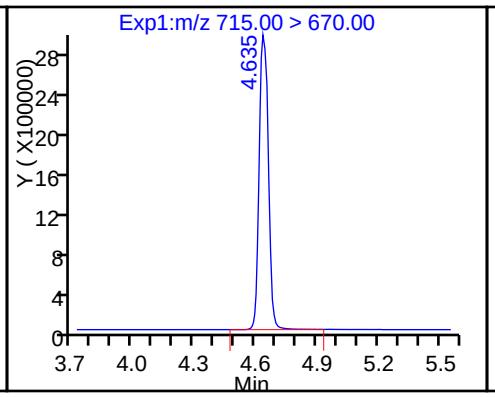
29 Perfluorododecanoic acid



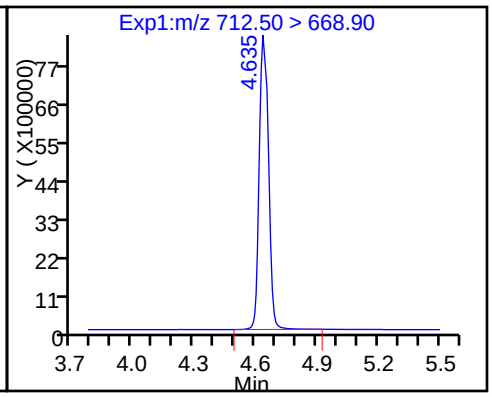
31 Perfluorotridecanoic acid



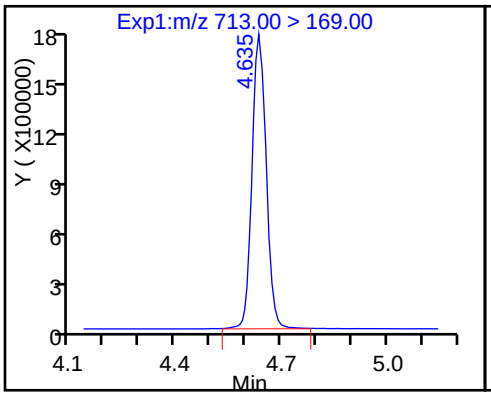
D 32 13C2-PFTeDA



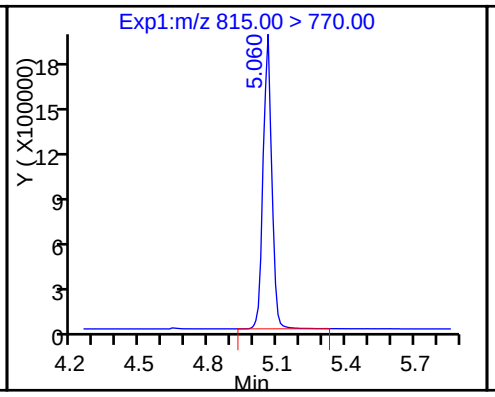
33 Perfluorotetradecanoic acid



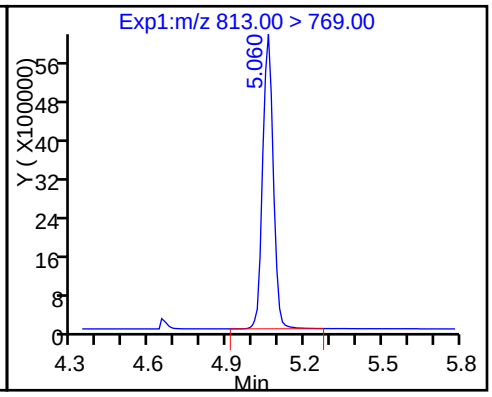
33 Perfluorotetradecanoic acid



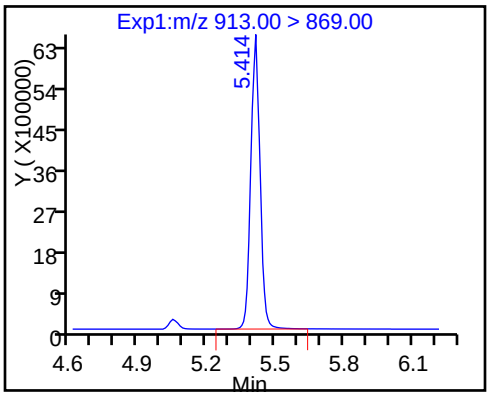
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016BB_013.d
Lims ID: IC L1 Add-on
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 15-Dec-2016 13:41:05 ALS Bottle#: 46 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:44 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:37:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.760	2.767	-0.007		5352965	45.8		96.3		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.776	2.768	0.008	1.000	48011	0.4779		101		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.511	3.511	0.0	1.000	39808	0.4671		97.5		
D 42 M2-8:2FTS										
529.00 > 509.00	3.511	3.513	-0.002		4817997	44.8		93.6		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.684	3.676	0.008		3634985	48.3		96.5		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.684	3.681	0.003	1.000	29823	0.4637		92.7		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.848	3.842	0.006		3889792	49.6		99.3		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.865	3.854	0.011	1.005	29965	0.4858		97.2		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.988	3.992	-0.004		4325034	45.5		91.0		
54 MeFOSA										
512.00 > 169.00	3.998	3.999	-0.001	1.000	36069	0.4978		99.6		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.180	4.180	0.0		3792851	44.2		88.4		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.187	4.187	0.0	1.000	30993	0.4729		94.6		

Reagents:

LCPFC2-L1_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:45 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016BB_013.d

Injection Date: 15-Dec-2016 13:41:05 Instrument ID: A8_N

Lims ID: IC L1 Add-on

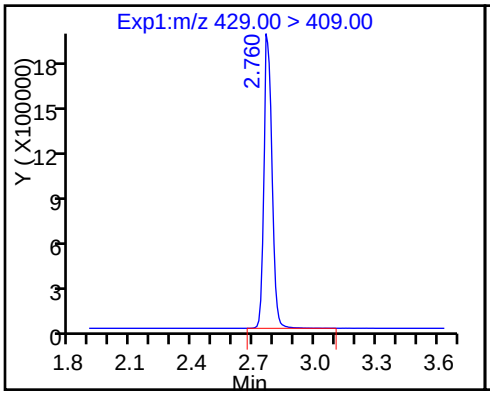
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 46 Worklist Smp#: 13

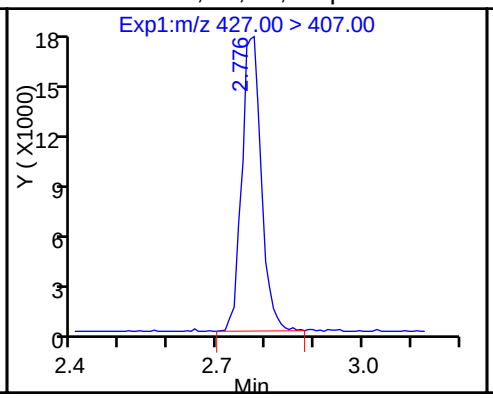
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

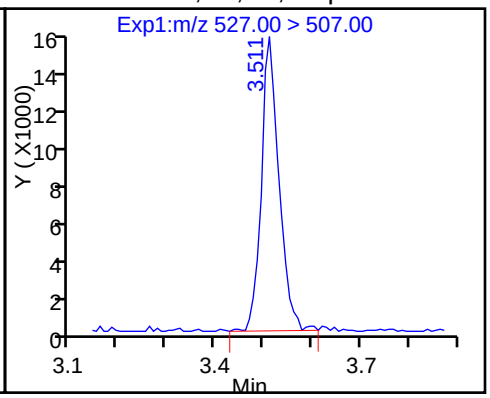
D 47 M2-6:2FTS



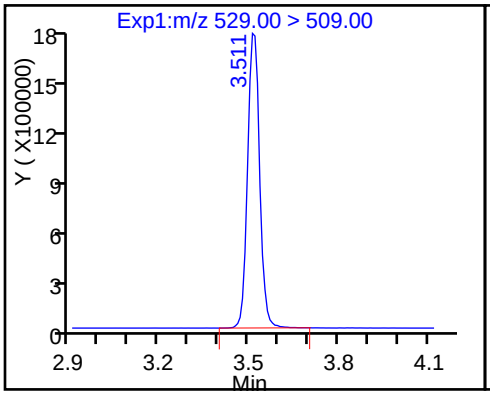
48 Sodium 1H,1H,2H,2H-perfluorooctane



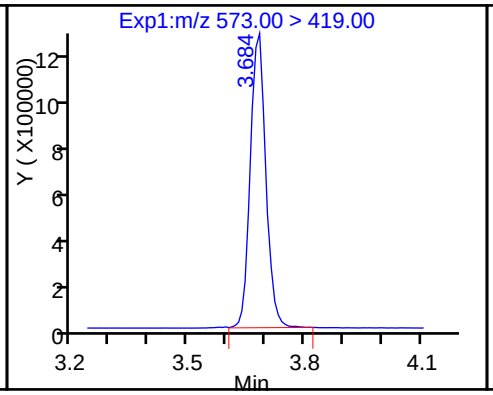
43 Sodium 1H,1H,2H,2H-perfluorooctane



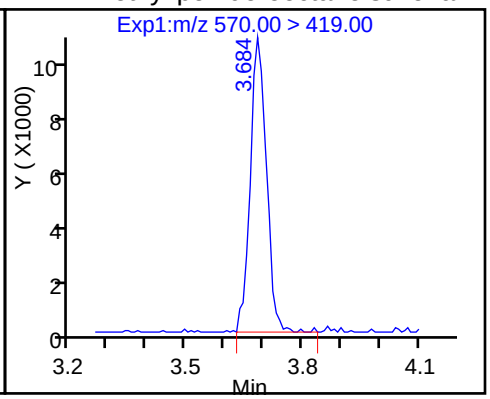
D 42 M2-8:2FTS



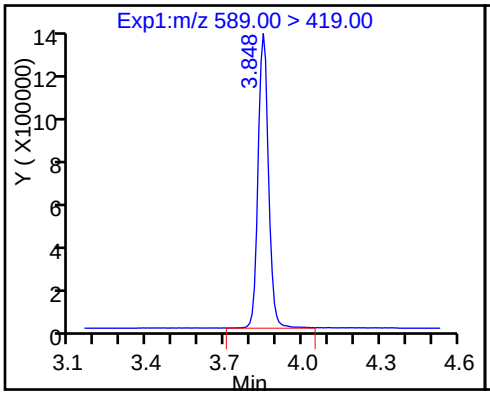
D 45 d3-NMeFOSAA



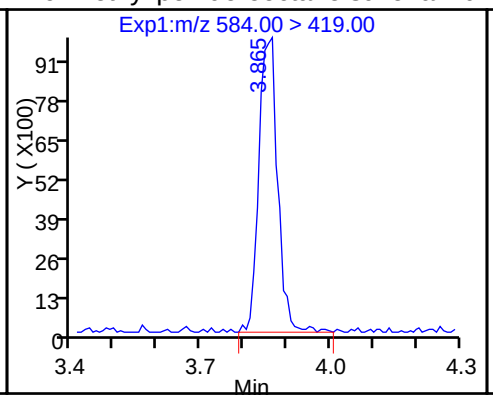
44 N-methyl perfluorooctane sulfonami



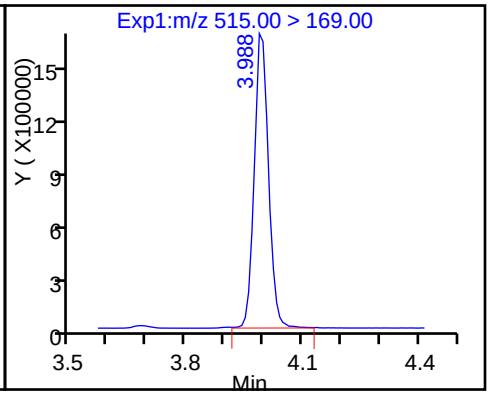
D 46 d5-NEtFOSAA



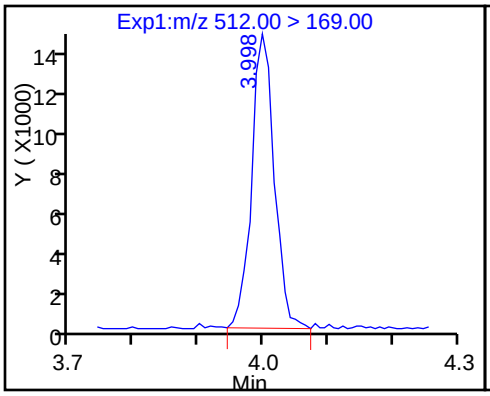
49 N-ethyl perfluorooctane sulfonamid



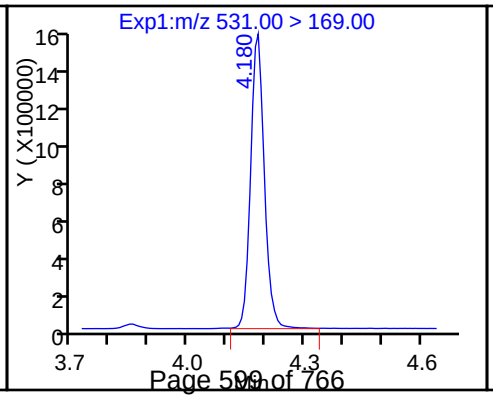
D 52 d-N-MeFOSA-M



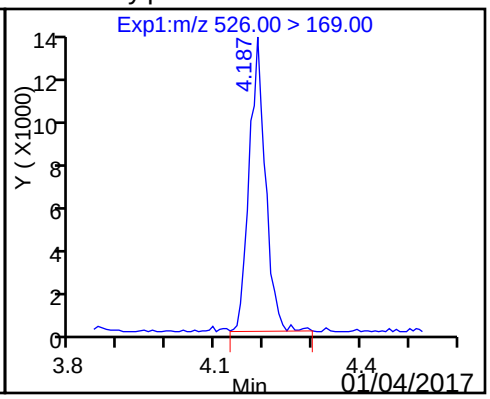
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_014.d
Lims ID: IC L2 Add-on
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 15-Dec-2016 13:48:34 ALS Bottle#: 47 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:46 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:38:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.761	2.767	-0.006		5108306	43.7		91.9		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.761	2.768	-0.007	1.000	106947	1.12		118		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.502	3.511	-0.009	0.998	75731	0.9308		97.2		
D 42 M2-8:2FTS										
529.00 > 509.00	3.511	3.513	-0.002		4599569	42.8		89.4		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.673	3.676	-0.003		3559083	47.2		94.5		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.673	3.681	-0.008	1.000	57389	0.9114		91.1		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.838	3.842	-0.004		3757014	48.0		95.9		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.855	3.854	0.001	1.005	53623	0.9000		90.0		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.987	3.992	-0.005		4639527	48.8		97.6		
54 MeFOSA										
512.00 > 169.00	3.997	3.999	-0.002	1.000	70049	0.9013		90.1		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.172	4.180	-0.008		4109875	47.9		95.8		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.179	4.187	-0.008	1.000	62962	0.8865		88.7		

Reagents:

LCPFC2-L2_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:47 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_014.d

Injection Date: 15-Dec-2016 13:48:34 Instrument ID: A8_N

Lims ID: IC L2 Add-on

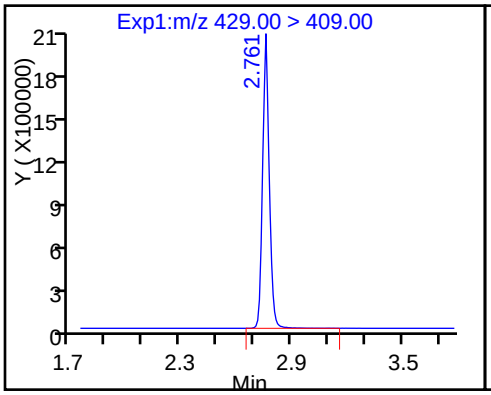
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 47 Worklist Smp#: 14

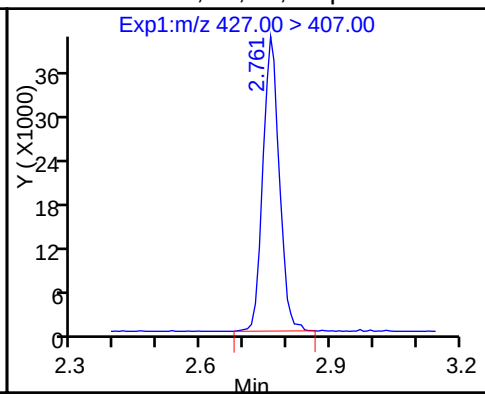
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

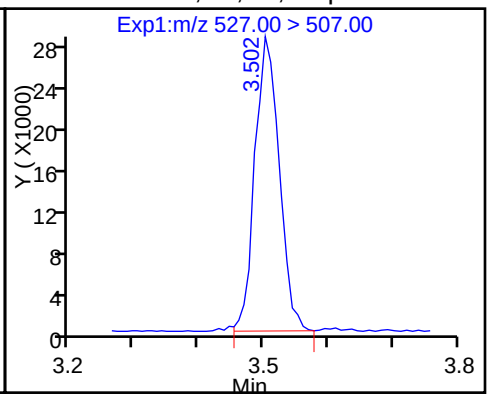
D 47 M2-6:2FTS



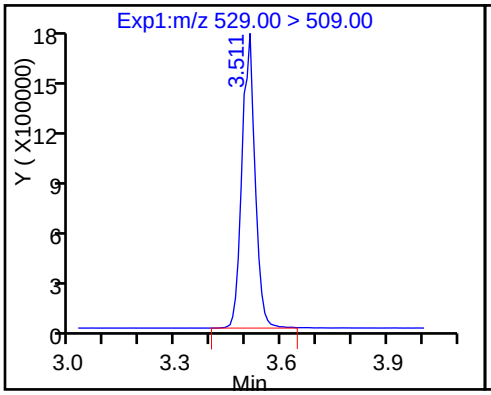
48 Sodium 1H,1H,2H,2H-perfluorooctane



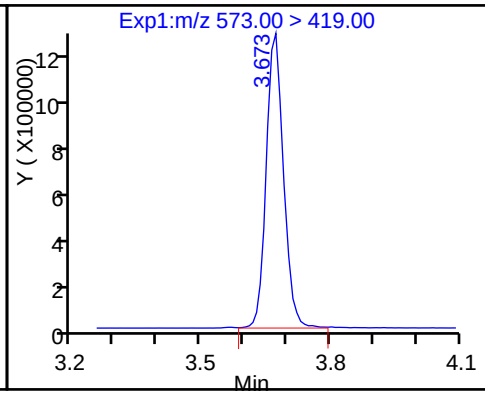
43 Sodium 1H,1H,2H,2H-perfluorooctane



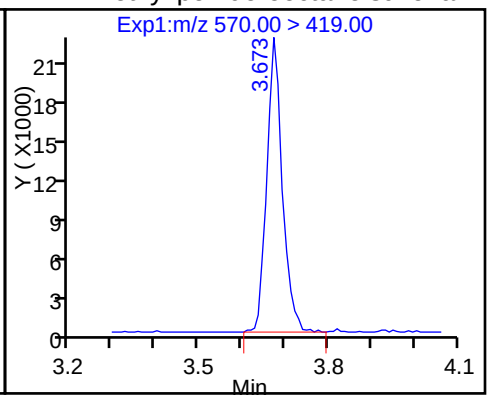
D 42 M2-8:2FTS



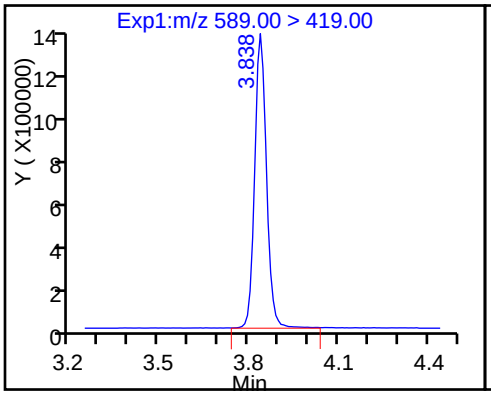
D 45 d3-NMeFOSAA



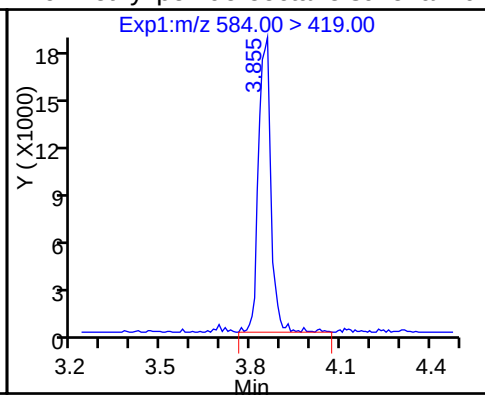
44 N-methyl perfluorooctane sulfonami



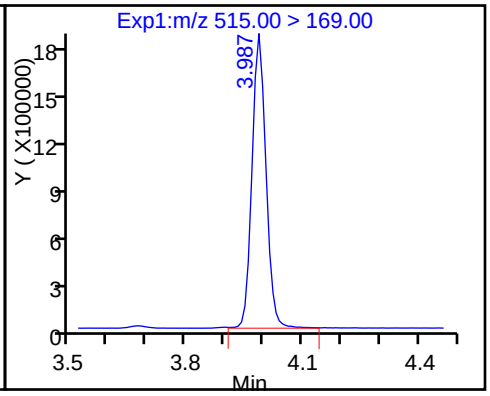
D 46 d5-NEtFOSAA



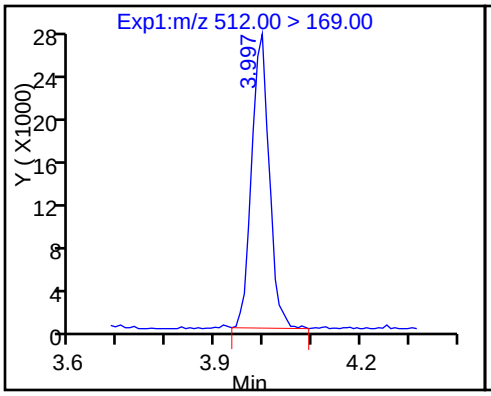
49 N-ethyl perfluorooctane sulfonamid



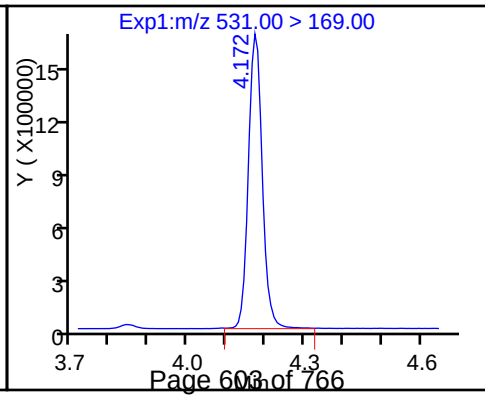
D 52 d-N-MeFOSA-M



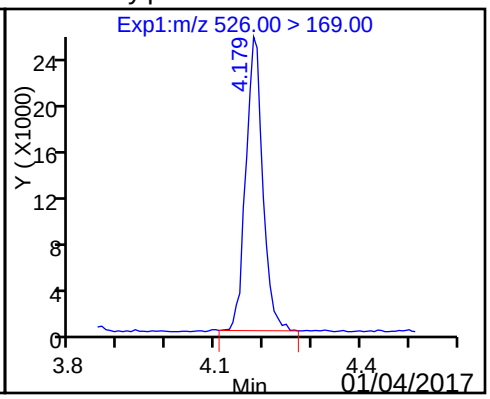
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_015.d
Lims ID: IC L3 Add-on
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 15-Dec-2016 13:56:03 ALS Bottle#: 48 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:48 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:38:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.768	2.767	0.001		5570739	47.6		100		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.768	2.768	0.0	1.000	405060	3.87		81.7		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.511	3.511	0.0	1.000	398457	4.22		88.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.511	3.513	-0.002		5342826	49.7		104		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.673	3.676	-0.003		4014623	53.3		107		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.683	3.681	0.002	1.003	285665	4.02		80.4		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.838	3.842	-0.004		4235352	54.1		108		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.847	3.854	-0.007	1.002	267721	3.99		79.7		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.987	3.992	-0.005		5121953	53.9		108		
54 MeFOSA										
512.00 > 169.00	3.997	3.999	-0.002	1.000	343493	4.00		80.1		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.179	4.180	-0.001		4561882	53.2		106		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.186	4.187	-0.001	1.000	326877	4.15		82.9		

Reagents:

LCPFC2-L3_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:48 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_015.d

Injection Date: 15-Dec-2016 13:56:03 Instrument ID: A8_N

Lims ID: IC L3 Add-on

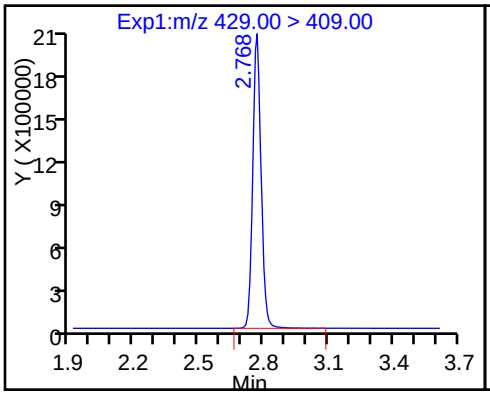
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 48 Worklist Smp#: 15

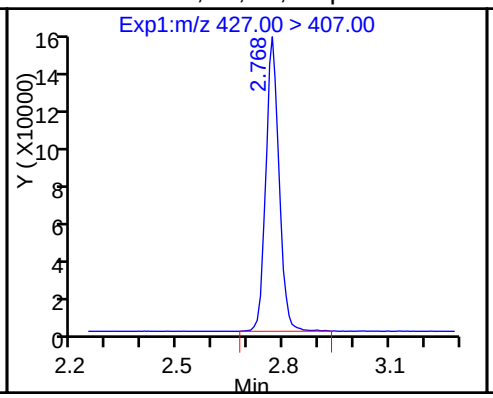
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

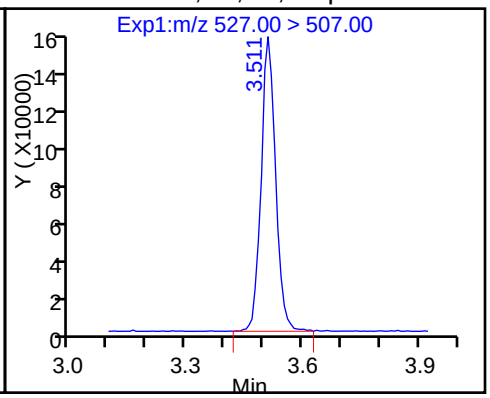
D 47 M2-6:2FTS



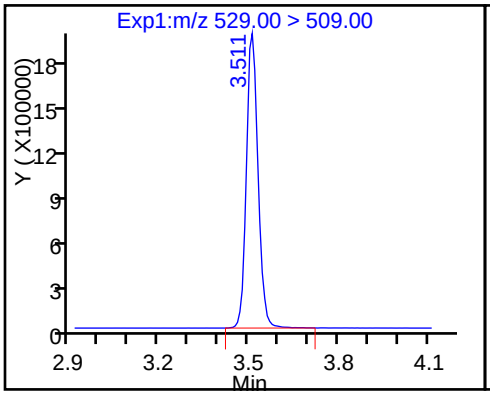
48 Sodium 1H,1H,2H,2H-perfluorooctane



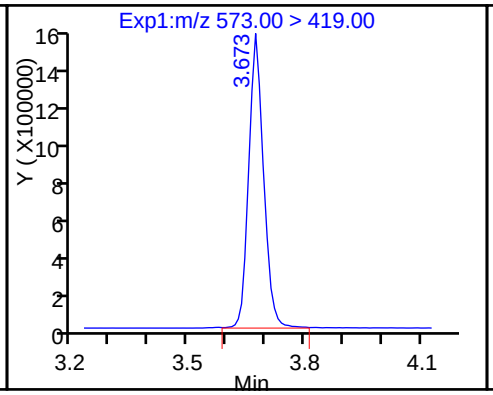
43 Sodium 1H,1H,2H,2H-perfluorooctane



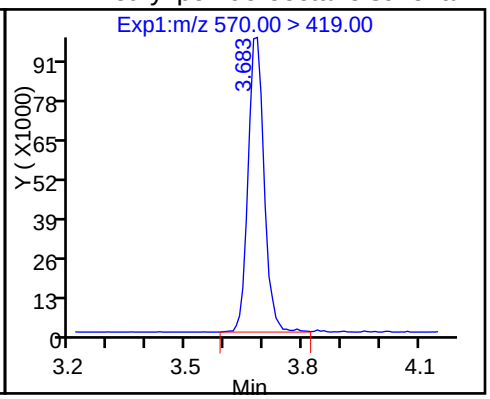
D 42 M2-8:2FTS



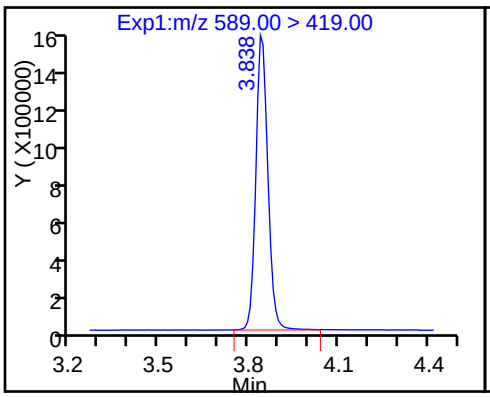
D 45 d3-NMeFOSAA



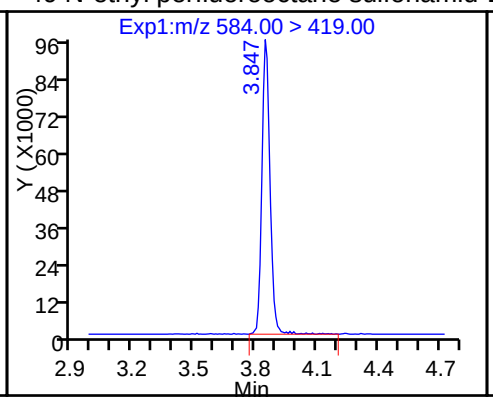
44 N-methyl perfluorooctane sulfonami



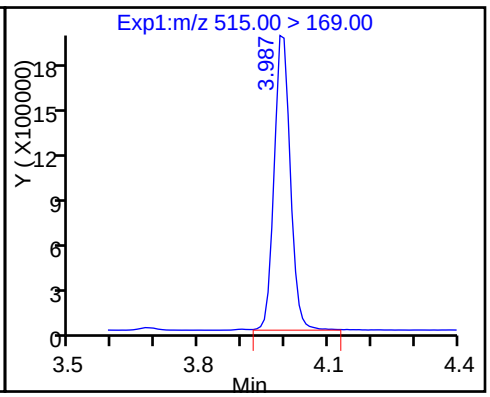
D 46 d5-NEtFOSAA



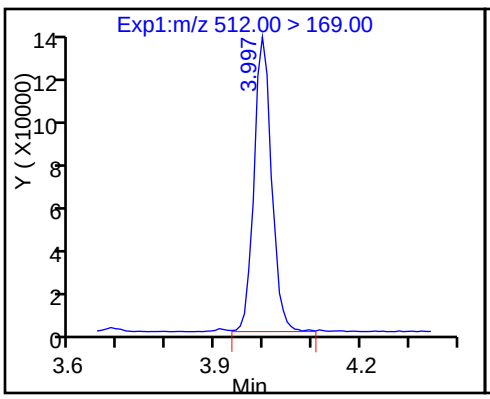
49 N-ethyl perfluorooctane sulfonamid



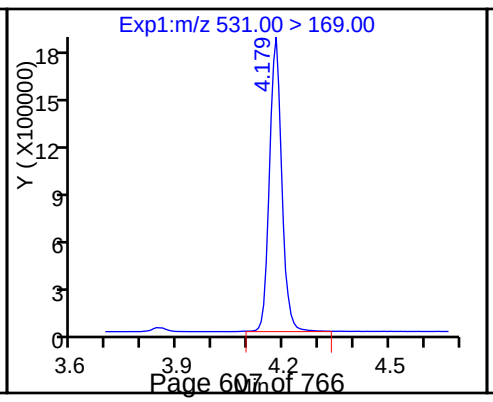
D 52 d-N-MeFOSA-M



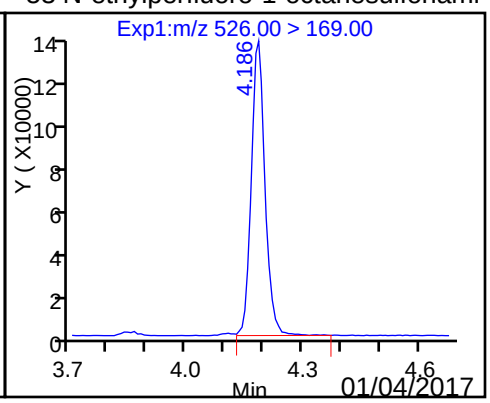
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_016.d
Lims ID: IC L4 Add-on
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 15-Dec-2016 14:03:33 ALS Bottle#: 49 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:49 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:37:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.767	2.767	0.0		6471813	55.3		116		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.767	2.768	-0.001	1.000	2416384	19.9		105		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.511	3.511	0.0	1.000	2224381	21.0		110		
D 42 M2-8:2FTS										
529.00 > 509.00	3.511	3.513	-0.002		5984276	55.7		116		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.673	3.676	-0.003		4379131	58.1		116		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.683	3.681	0.002	1.003	1708231	22.0		110		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.838	3.842	-0.004		4410456	56.3		113		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.847	3.854	-0.007	1.002	1518918	21.7		109		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.997	3.992	0.005		5263980	55.4		111		
54 MeFOSA										
512.00 > 169.00	3.997	3.999	-0.002	1.000	1946985	22.1		110		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.179	4.180	-0.001		4672820	54.5		109		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.186	4.187	-0.001	1.000	1813178	22.5		112		

Reagents:

LCPFC2-L4_00003 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:50 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_016.d

Injection Date: 15-Dec-2016 14:03:33 Instrument ID: A8_N

Lims ID: IC L4 Add-on

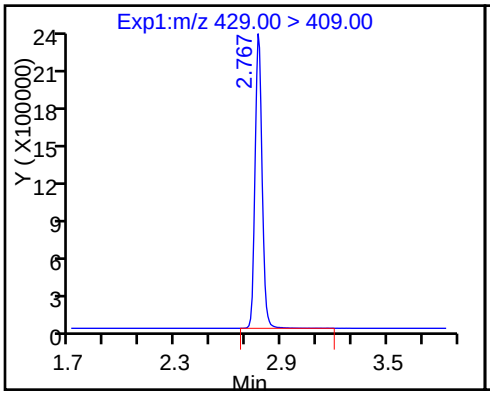
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 49 Worklist Smp#: 16

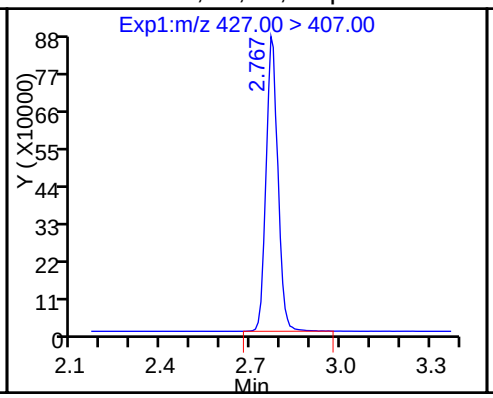
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

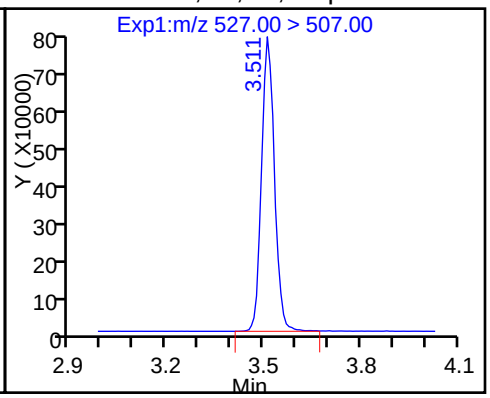
D 47 M2-6:2FTS



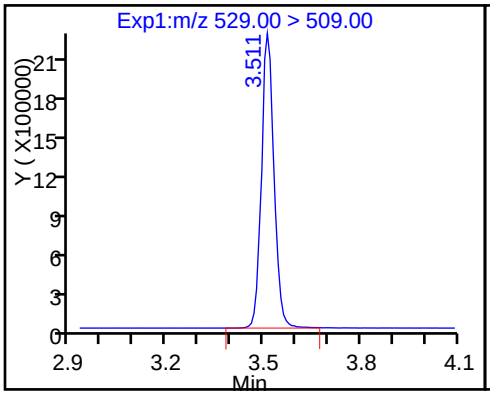
48 Sodium 1H,1H,2H,2H-perfluorooctane



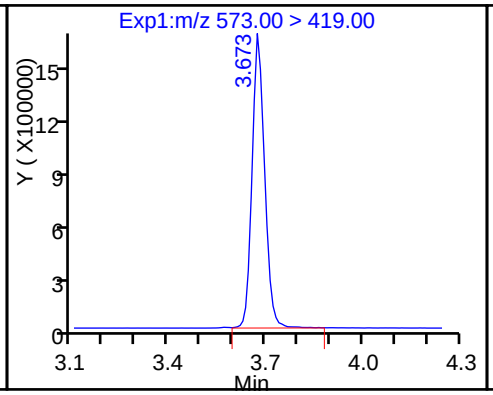
43 Sodium 1H,1H,2H,2H-perfluorooctane



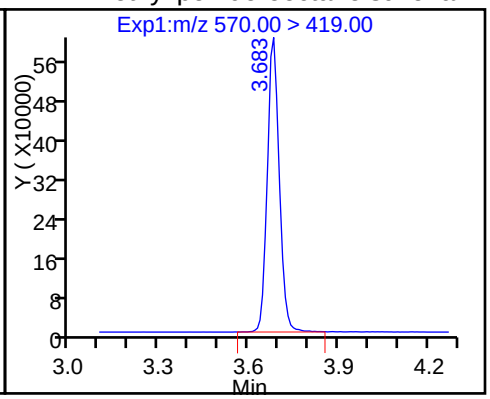
D 42 M2-8:2FTS



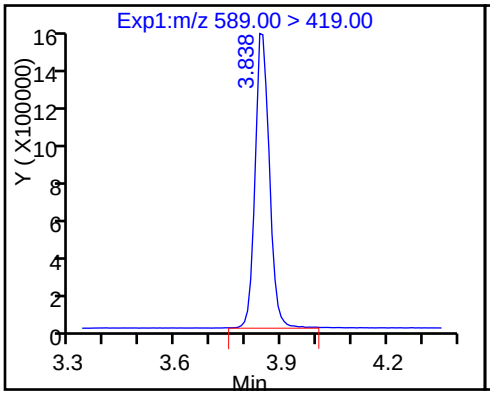
D 45 d3-NMeFOSAA



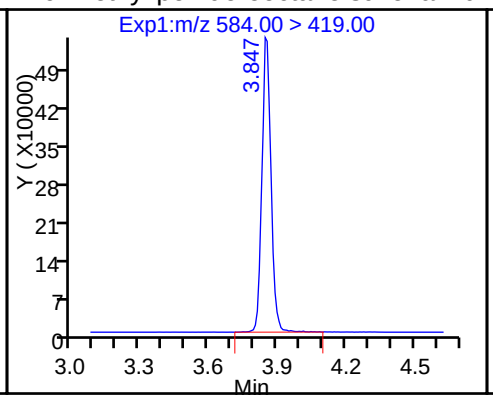
44 N-methyl perfluorooctane sulfonami



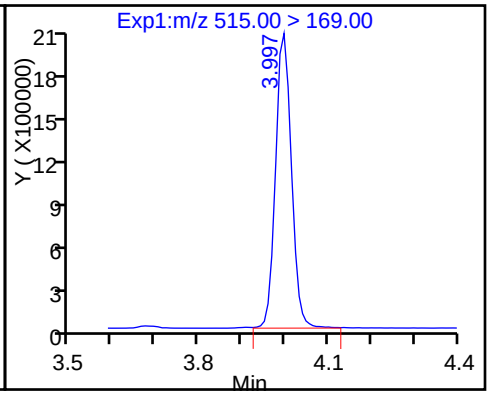
D 46 d5-NEtFOSAA



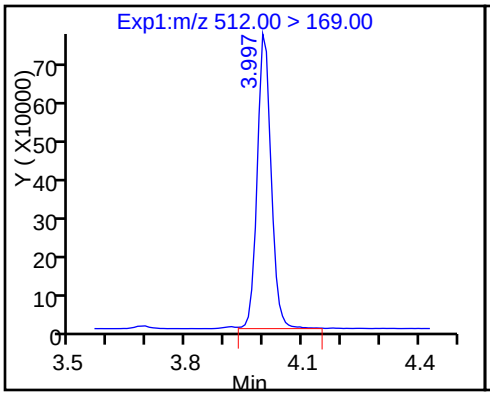
49 N-ethyl perfluorooctane sulfonamid



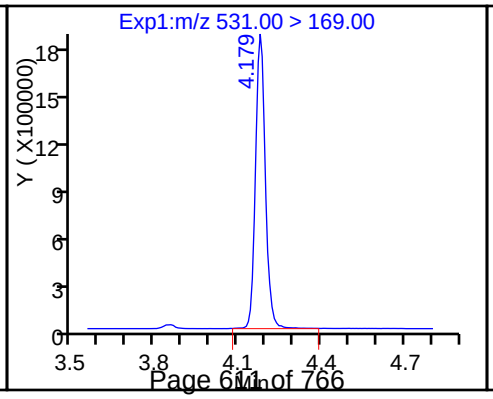
D 52 d-N-MeFOSA-M



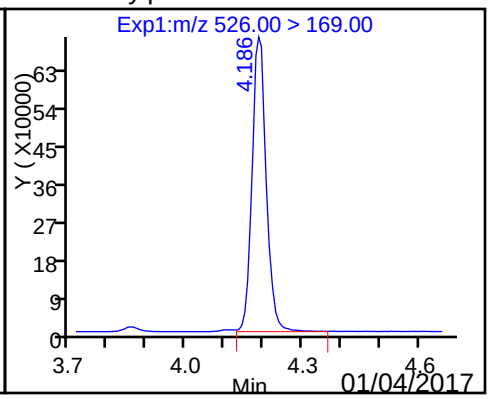
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_017.d
Lims ID: IC L5 Add-on
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 15-Dec-2016 14:11:03 ALS Bottle#: 50 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:51 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:38:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.767	2.767	0.0		5259120	45.0		94.6		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.767	2.768	-0.001	1.000	5166665	52.3		110		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.512	3.511	0.001	0.998	4815680	56.9		119		
D 42 M2-8:2FTS										
529.00 > 509.00	3.520	3.513	0.007		4786038	44.5		93.0		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.675	3.676	-0.001		3422485	45.4		90.9		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.684	3.681	0.003	1.003	3741936	61.8		124		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.848	3.842	0.006		3486329	44.5		89.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.857	3.854	0.003	1.002	3414301	61.8		124		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.999	3.992	0.007		4512300	47.5		94.9		
54 MeFOSA										
512.00 > 169.00	3.999	3.999	0.0	1.000	4407328	58.3		117		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.182	4.180	0.002		4149228	48.4		96.7		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.189	4.187	0.002	1.000	4264314	59.5		119		

Reagents:

LCPFC2-L5_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:51 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_017.d

Injection Date: 15-Dec-2016 14:11:03 Instrument ID: A8_N

Lims ID: IC L5 Add-on

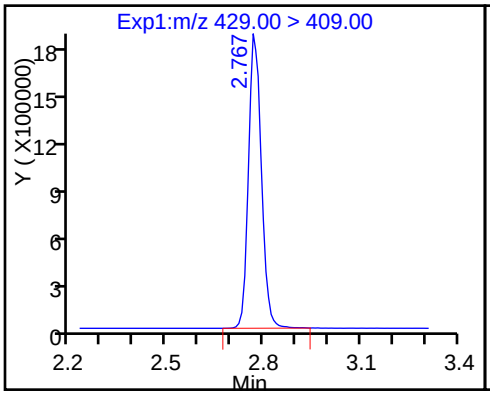
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 50 Worklist Smp#: 17

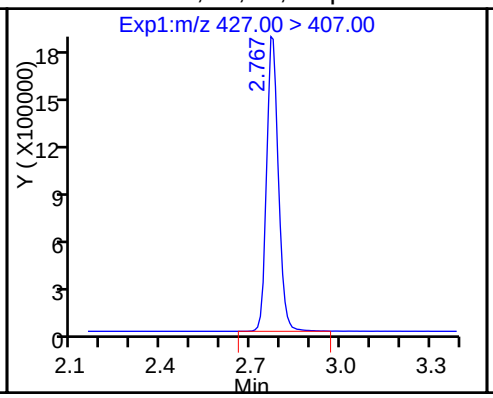
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

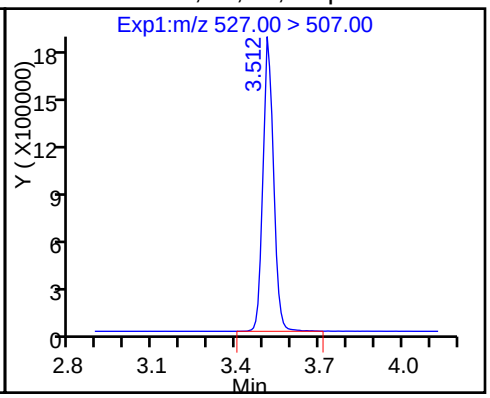
D 47 M2-6:2FTS



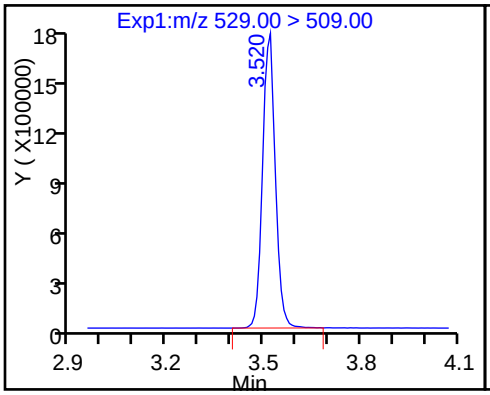
48 Sodium 1H,1H,2H,2H-perfluorooctane



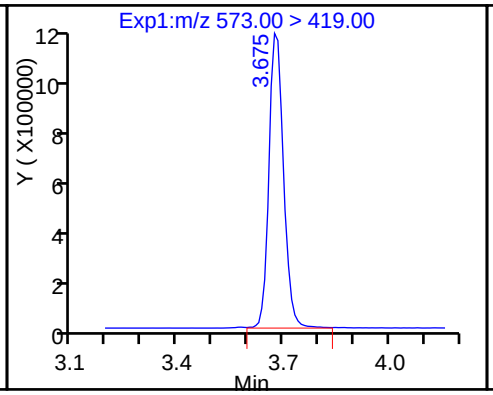
43 Sodium 1H,1H,2H,2H-perfluorooctane



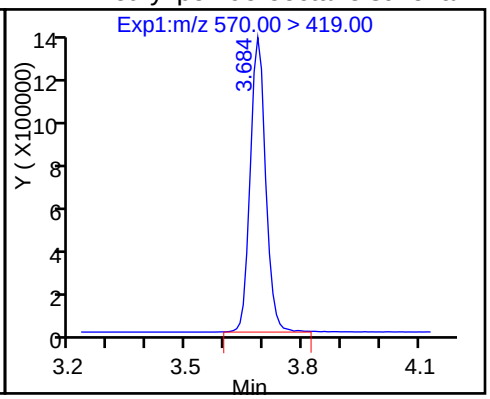
D 42 M2-8:2FTS



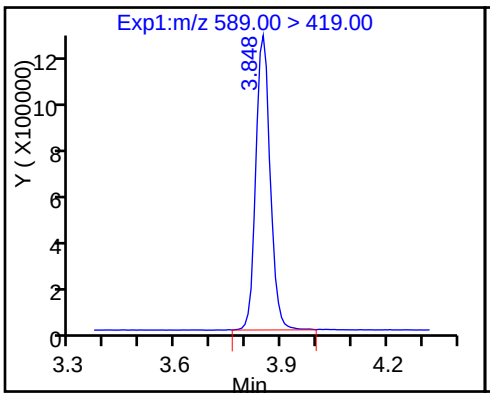
D 45 d3-NMeFOSAA



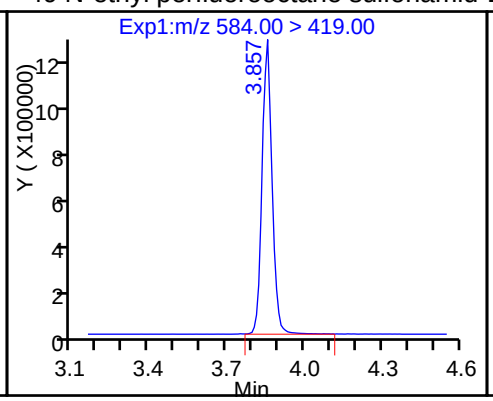
44 N-methyl perfluorooctane sulfonami



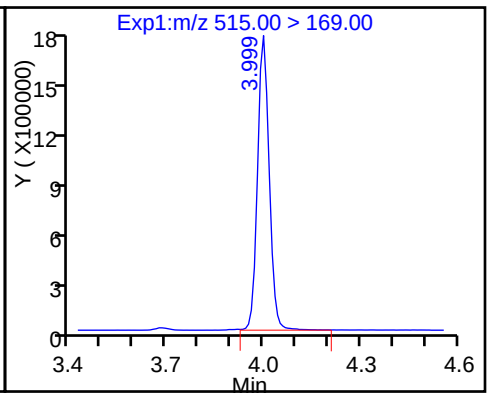
D 46 d5-NEtFOSAA



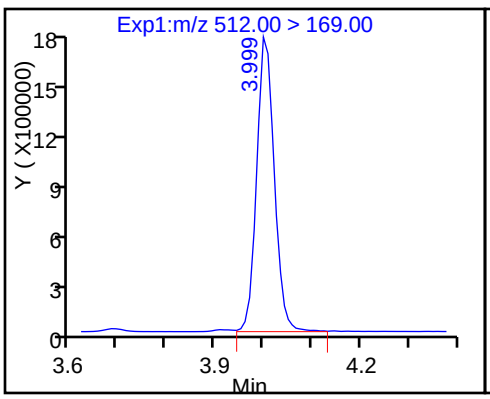
49 N-ethyl perfluorooctane sulfonamid



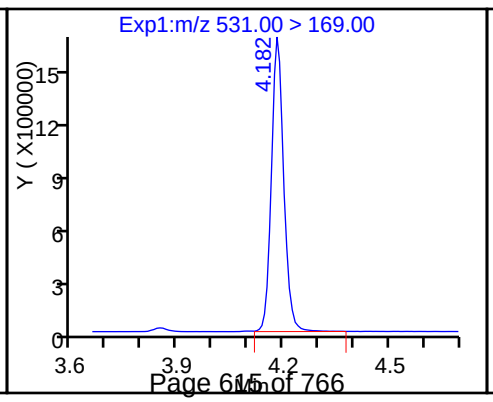
D 52 d-N-MeFOSA-M



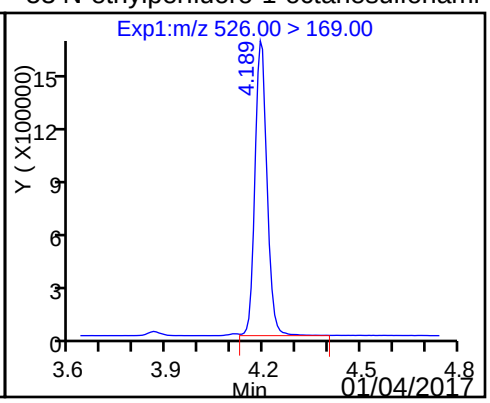
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
Lims ID: IC L6 Add-on
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 15-Dec-2016 14:18:33 ALS Bottle#: 51 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:52 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:38:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.776	2.767	0.009		5576967	47.7		100		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.769	2.768	0.001	1.000	16907459	161.5		85.2		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.516	3.511	0.005	1.000	16111959	170.3		88.9		
D 42 M2-8:2FTS										
529.00 > 509.00	3.516	3.513	0.003		5348797	49.8		104		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.680	3.676	0.004		3587176	47.6		95.2		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.680	3.681	-0.001	1.000	12924122	203.6		102		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.845	3.842	0.003		3725902	47.6		95.1		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.853	3.854	-0.001	1.002	11938061	202.0		101		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.995	3.992	0.003		4658153	49.0		98.0		
54 MeFOSA										
512.00 > 169.00	4.004	3.999	0.005	1.000	16114020	206.5		103		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.186	4.180	0.006		4448546	51.9		104		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.193	4.187	0.006	1.000	15780196	205.3		103		

Reagents:

LCPFC2-L6_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:53 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Injection Date: 15-Dec-2016 14:18:33 Instrument ID: A8_N

Lims ID: IC L6 Add-on

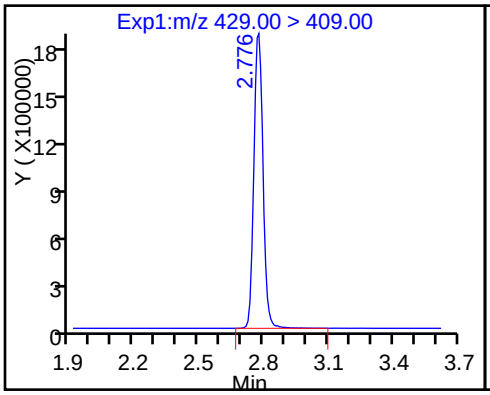
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 51 Worklist Smp#: 18

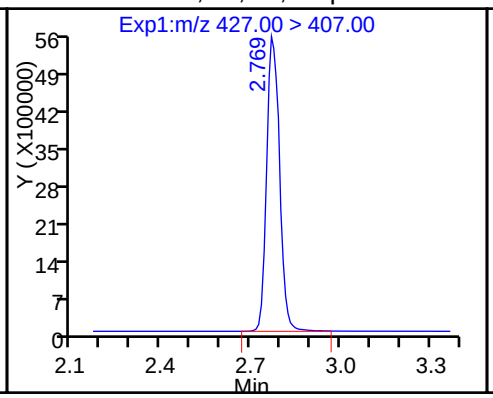
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

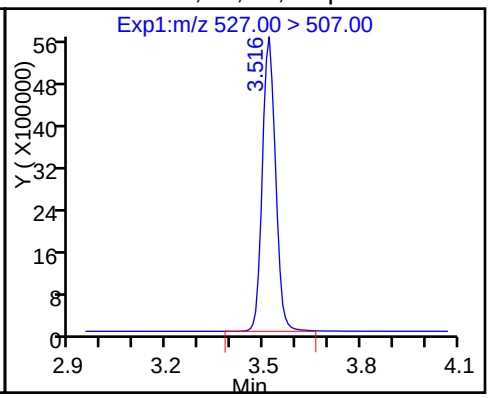
D 47 M2-6:2FTS



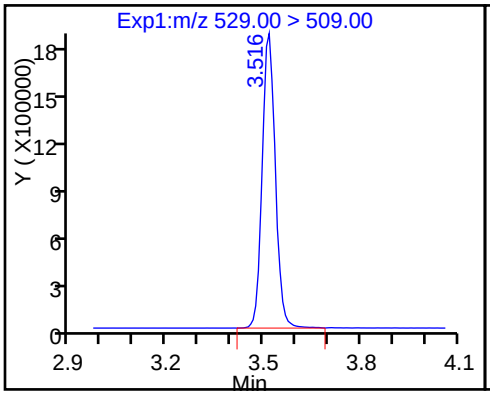
48 Sodium 1H,1H,2H,2H-perfluorooctane



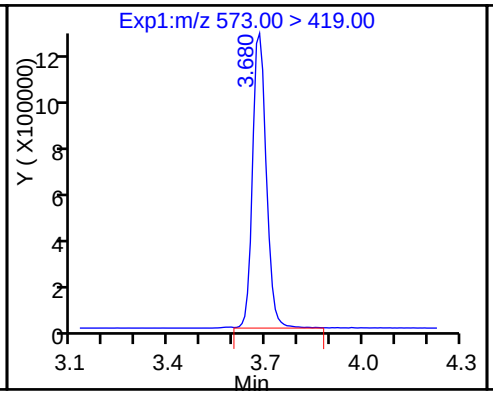
43 Sodium 1H,1H,2H,2H-perfluorooctane



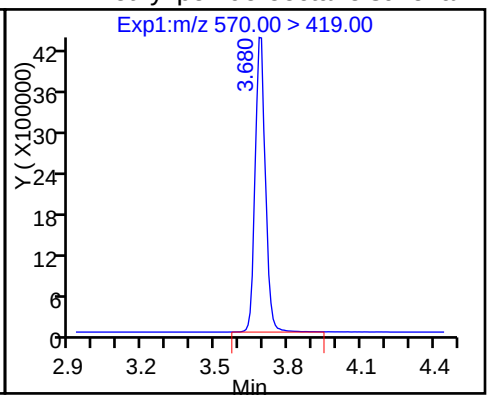
D 42 M2-8:2FTS



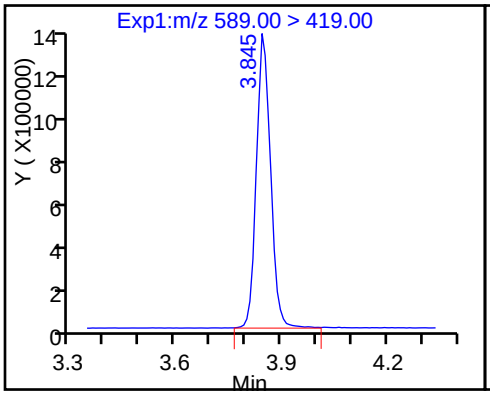
D 45 d3-NMeFOSAA



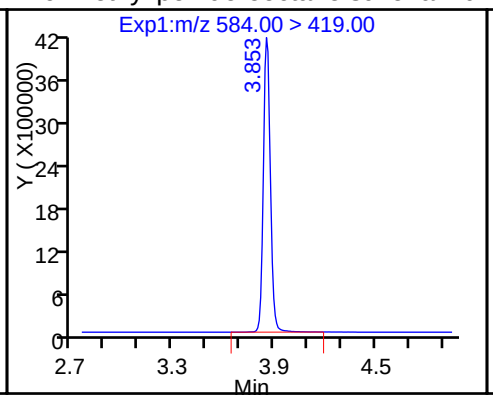
44 N-methyl perfluorooctane sulfonami



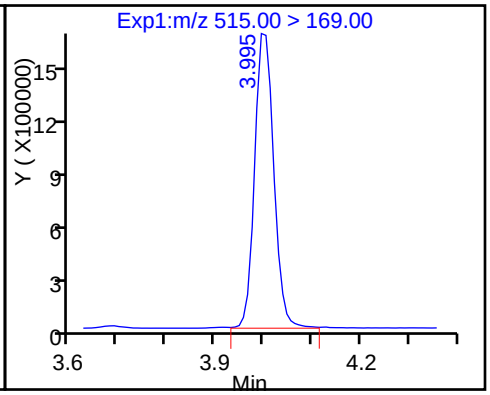
D 46 d5-NEtFOSAA



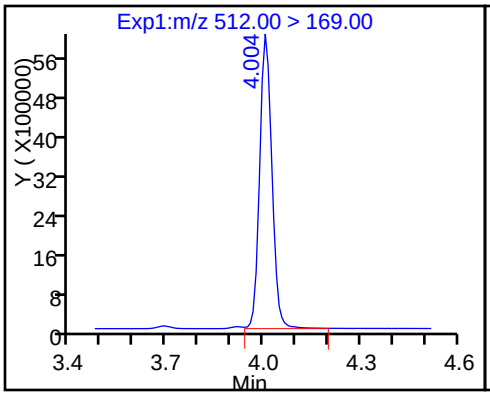
49 N-ethyl perfluorooctane sulfonamid



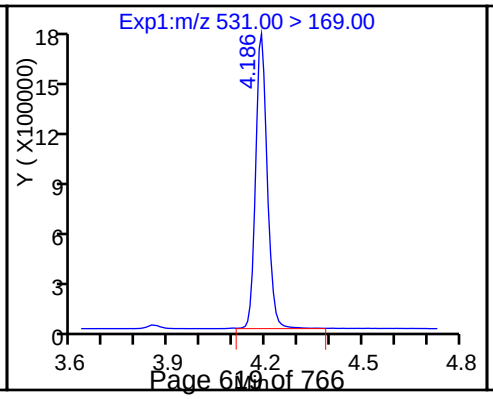
D 52 d-N-MeFOSA-M



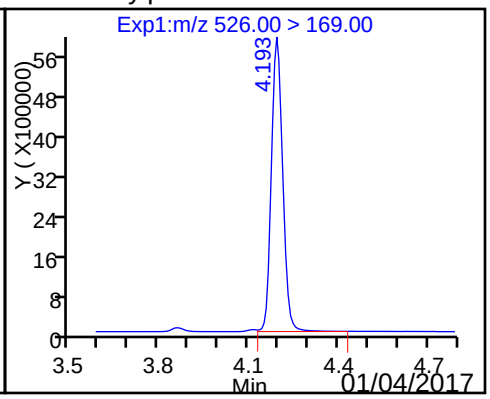
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: ICV 320-142379/11 Calibration Date: 12/15/2016 13:21

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 15DEC2016B_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.8479		49.7	50.0	-0.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.9654		48.9	50.0	-2.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.478		46.2	44.3	4.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9123		49.1	50.0	-1.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9679		49.4	50.0	-1.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	0.9556		43.8	47.3	-7.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.000		49.9	50.0	-0.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.160		50.1	47.6	5.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9360		49.2	50.0	-1.7	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	0.9040		43.4	47.8	-9.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9182		49.2	50.0	-1.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9109		48.3	50.0	-3.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5921		48.9	48.3	1.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9285		48.5	50.0	-2.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8958		48.8	50.0	-2.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9189		50.7	50.0	1.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.555		49.1	50.0	-1.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9309		48.2	50.0	-3.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8547		41.5	50.0	-17.0	25.0
13C4 PFBA	Ave	347743	335296		48.2	50.0	-3.6	50.0
13C5-PFPeA	Ave	266072	251719		47.3	50.0	-5.4	50.0
13C2 PFHxA	Ave	245110	240514		49.1	50.0	-1.9	50.0
13C4-PFHpA	Ave	226344	215455		47.6	50.0	-4.8	50.0
18O2 PFHxS	Ave	326976	320282		46.3	47.3	-2.0	50.0
13C4 PFOA	Ave	230362	219488		47.6	50.0	-4.7	50.0
13C4 PFOS	Ave	248847	244549		47.0	47.8	-1.7	50.0
13C5 PFNA	Ave	177687	171464		48.2	50.0	-3.5	50.0
13C8 FOSA	Ave	384141	381142		49.6	50.0	-0.8	50.0
13C2 PFDA	Ave	157302	151370		48.1	50.0	-3.8	50.0
13C2 PFUnA	Ave	117250	116265		49.6	50.0	-0.8	50.0
13C2 PFDoA	Ave	110957	105818		47.7	50.0	-4.6	50.0
13C2-PFTeDA	Ave	227387	214066		47.1	50.0	-5.9	50.0
13C2-PFHxDA	Ave	124568	118207		47.4	50.0	-5.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_011.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 15-Dec-2016 13:21:44 ALS Bottle#: 44 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:41:15 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:56:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.533	1.534	-0.001		16764776	48.2		96.4	1068457	
1 Perfluorobutyric acid										
212.90 > 169.00	1.541	1.535	0.006	1.000	14214515	49.7			107570	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		12585925	47.3		94.6	1186150	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	12149802	48.9			115067	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.848	0.0	1.000	20951066	46.2				
298.90 > 99.00	1.848	1.848	0.0	1.000	9653760		2.17(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.100	2.096	0.004	1.000	10971106	49.1			243419	
D 6 13C2 PFHxA										
315.00 > 270.00	2.100	2.097	0.003		12025693	49.1		98.1	480449	
D 11 13C4-PFHpA										
367.00 > 322.00	2.425	2.426	-0.001		10772772	47.6		95.2	728689	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.433	2.428	0.005	1.000	10426957	49.4			97176	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.449	2.431	0.018	1.000	14462013	43.8				
D 10 18O2 PFHxS										
403.00 > 84.00	2.449	2.446	0.003		15149334	46.3		98.0	878432	
D 14 13C4 PFOA										
417.00 > 372.00	2.785	2.783	0.002		10974392	47.6		95.3	756643	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.785	2.783	0.002	1.000	10976634	49.9			90975	
413.00 > 169.00	2.793	2.783	0.010	1.003	6473539		1.70(0.90-1.10)		241007	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.793	2.790	0.003	1.000	13497259	50.1				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.162	3.118	0.044	1.000	10556247	43.4			368282	
499.00 > 99.00	3.154	3.118	0.036	0.997	2582918		4.09(0.90-1.10)		118191	
D 17 13C4 PFOS										
503.00 > 80.00	3.162	3.151	0.011		11689450	47.0		98.3	325285	
D 19 13C5 PFNA										
468.00 > 423.00	3.162	3.153	0.009		8573219	48.2		96.5	485749	
20 Perfluorononanoic acid										
463.00 > 419.00	3.162	3.155	0.007	1.000	8024621	49.2			123355	
D 21 13C8 FOSA										
506.00 > 78.00	3.495	3.488	0.007		19057117	49.6		99.2	610709	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.495	3.491	0.004	1.000	17498900	49.2			383568	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.520	3.510	0.010	1.000	6894043	48.3			189508	
D 23 13C2 PFDA										
515.00 > 470.00	3.520	3.513	0.007		7568491	48.1		96.2	377092	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.830	3.822	0.008	1.000	6986242	48.9				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.848	3.839	0.009	1.000	5397748	48.5			115044	
D 27 13C2 PFUnA										
565.00 > 520.00	3.848	3.842	0.006		5813248	49.6		99.2	413801	
D 30 13C2 PFDoA										
615.00 > 570.00	4.139	4.132	0.007		5290885	47.7		95.4	272661	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.139	4.136	0.003	1.000	4739775	48.8			99907	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.411	4.400	0.011	1.000	4861713	50.7			113110	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.642	4.641	0.001		10703301	47.1		94.1	614243	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.642	0.010	1.000	8229099	49.1			142471	
713.00 > 169.00	4.642	4.642	0.0	0.998	1339943		6.14(0.00-0.00)		99778	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.057	0.001		5910325	47.4		94.9	128290	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.059	-0.001	1.000	4925242	48.2			4012	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.421	5.414	0.007	1.000	4522136	41.5			4448	

Reagents:

LCPFCIC_00020 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:41:15 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_011.d

Injection Date: 15-Dec-2016 13:21:44 Instrument ID: A8_N

Lims ID: ICV

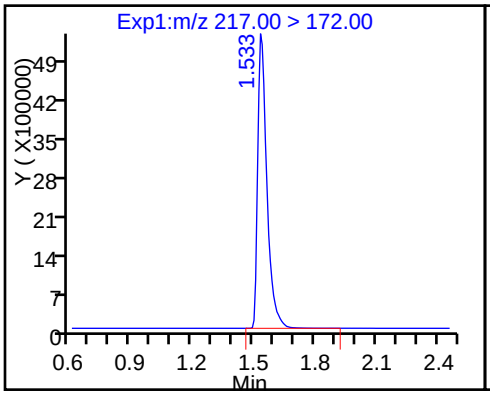
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 44 Worklist Smp#: 11

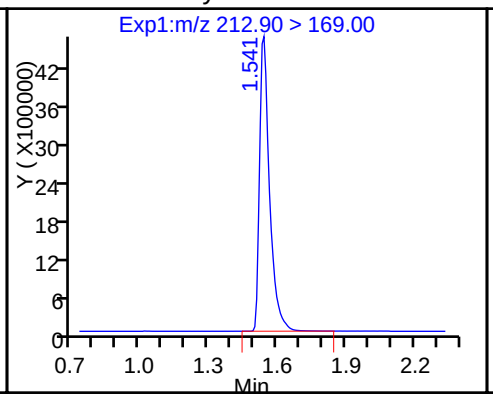
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

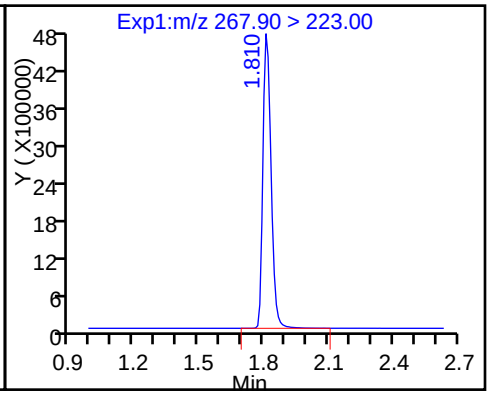
D 2 13C4 PFBA



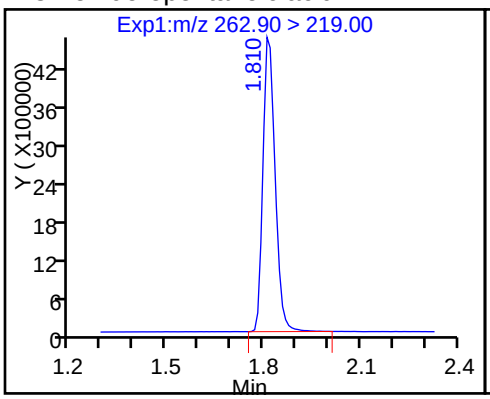
1 Perfluorobutyric acid



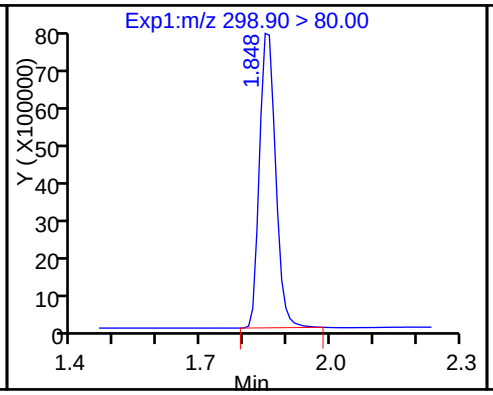
D 4 13C5-PFPeA



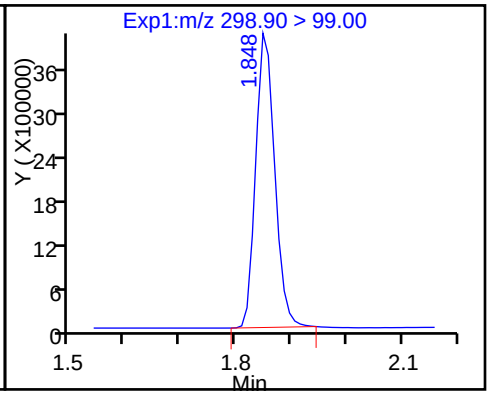
3 Perfluoropentanoic acid



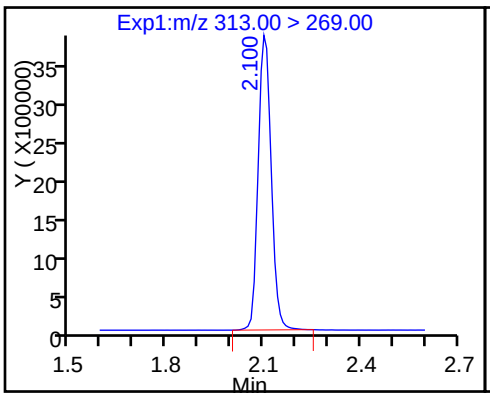
5 Perfluorobutanesulfonic acid



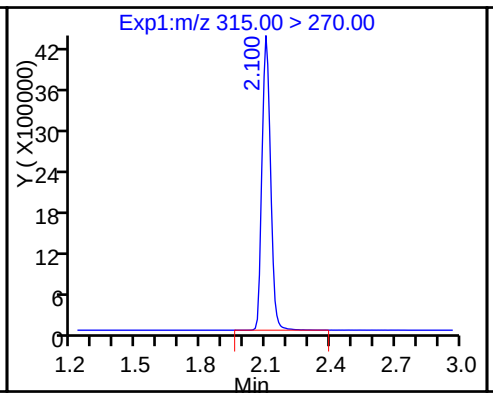
5 Perfluorobutanesulfonic acid



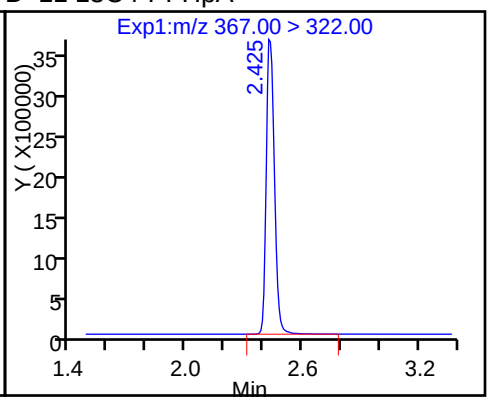
7 Perfluorohexanoic acid



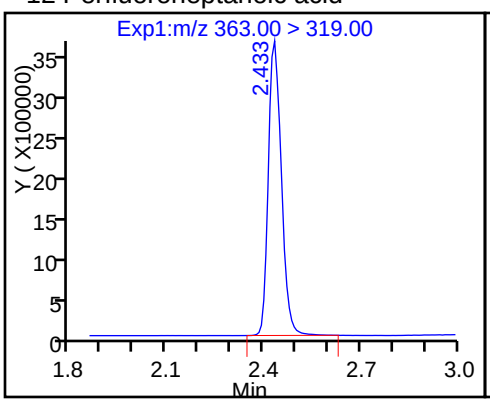
D 6 13C2 PFHxA



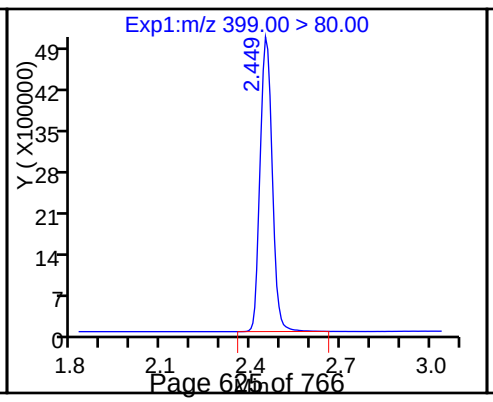
D 11 13C4-PFHpA



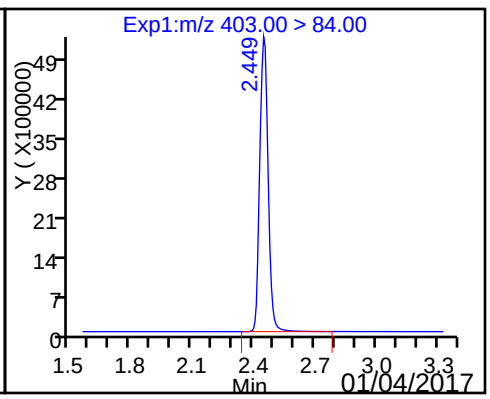
12 Perfluoroheptanoic acid



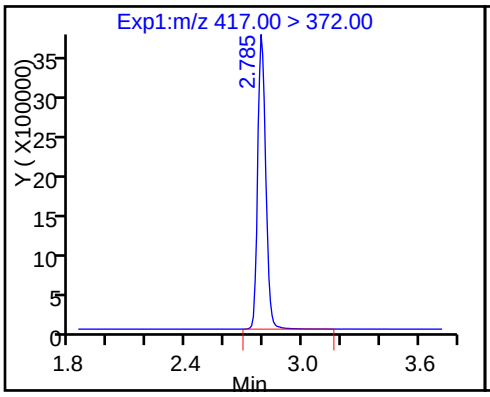
9 Perfluorohexanesulfonic acid



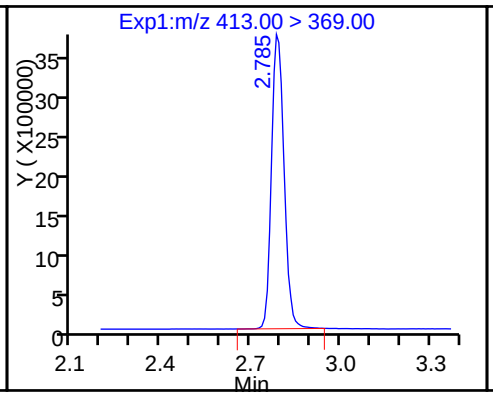
D 10 18O2 PFHxS



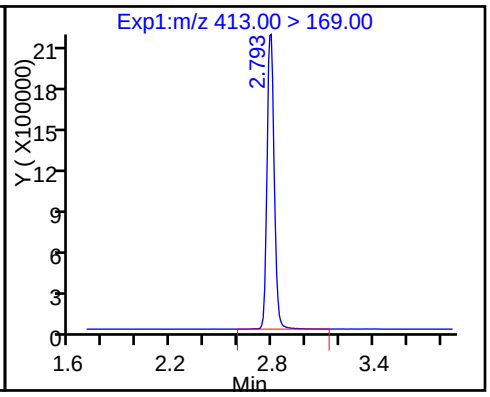
D 14 13C4 PFOA



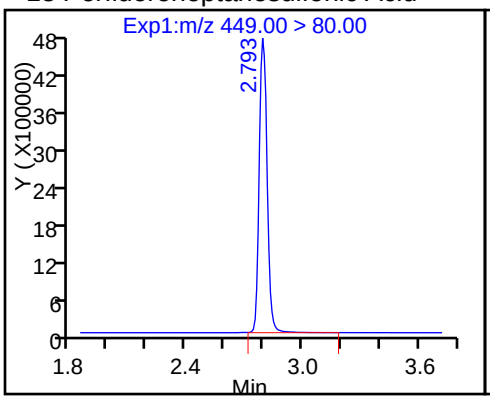
15 Perfluorooctanoic acid



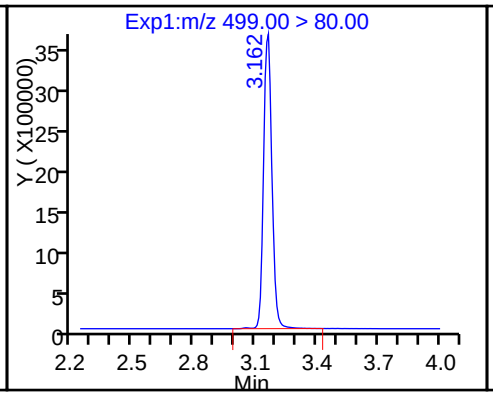
15 Perfluorooctanoic acid



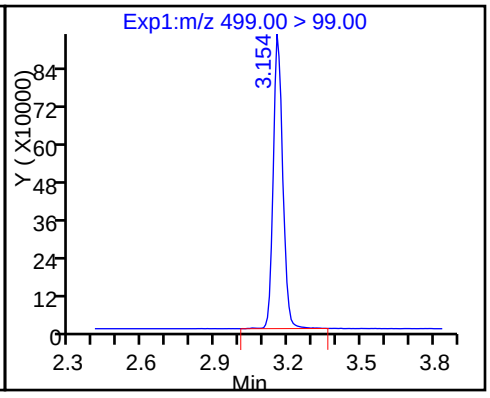
13 Perfluoroheptanesulfonic Acid



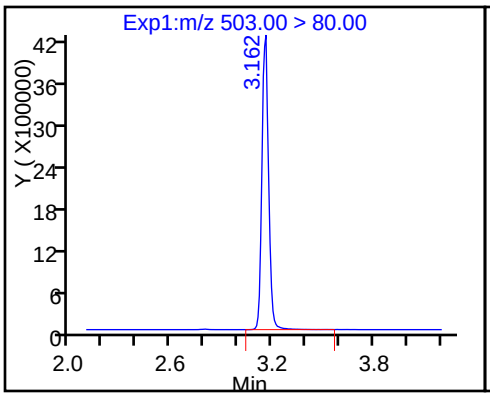
18 Perfluorooctane sulfonic acid



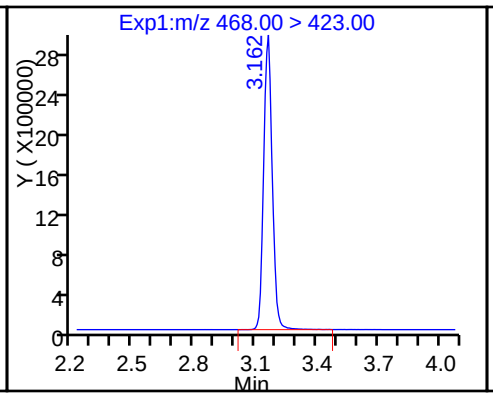
18 Perfluorooctane sulfonic acid



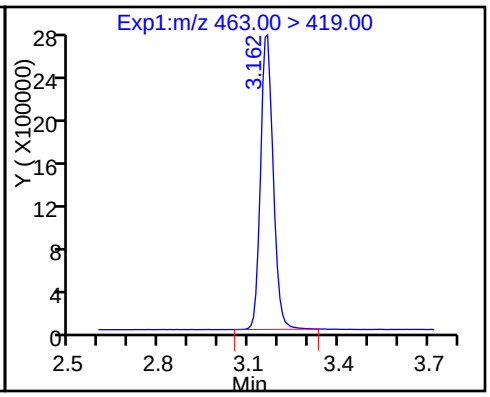
D 17 13C4 PFOS



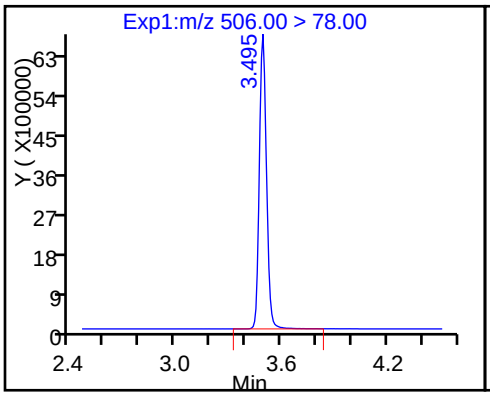
D 19 13C5 PFNA



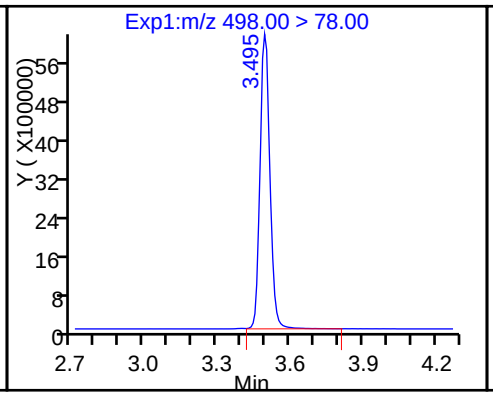
20 Perfluorononanoic acid



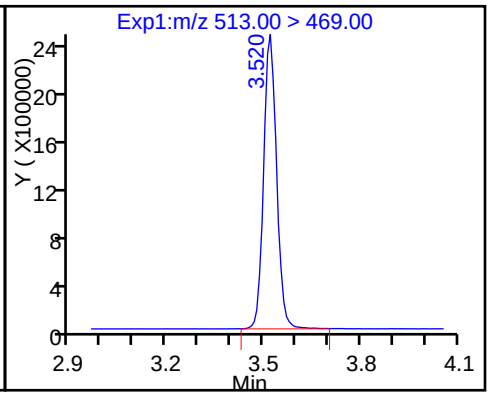
D 21 13C8 FOSA



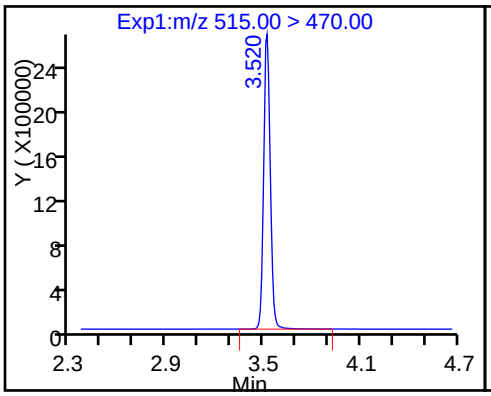
22 Perfluorooctane Sulfonamide



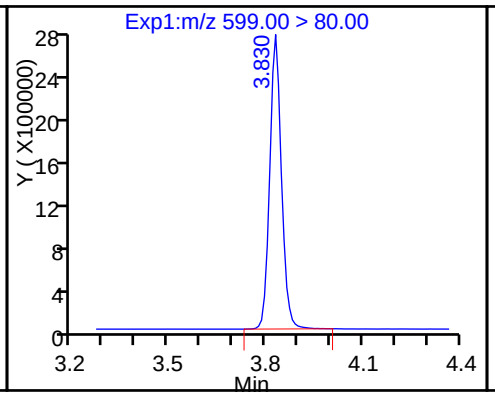
24 Perfluorodecanoic acid



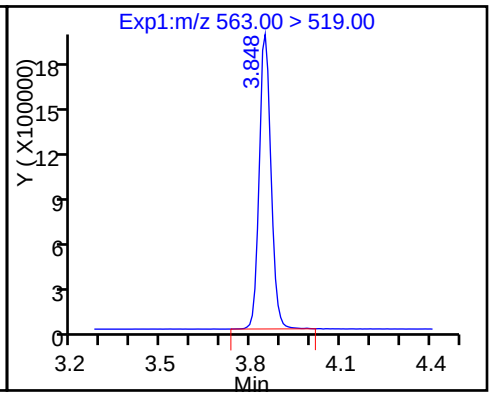
D 23 13C2 PFDA



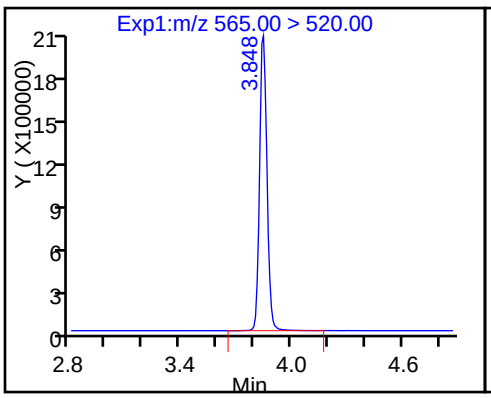
26 Perfluorodecane Sulfonic acid



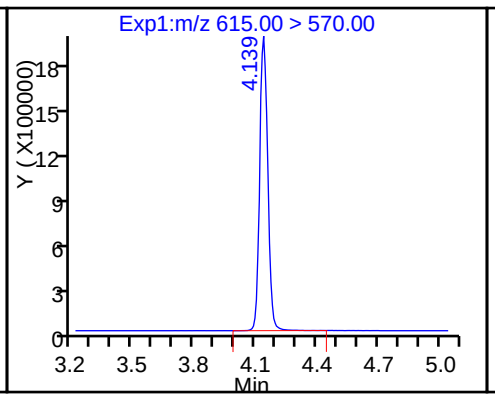
28 Perfluoroundecanoic acid



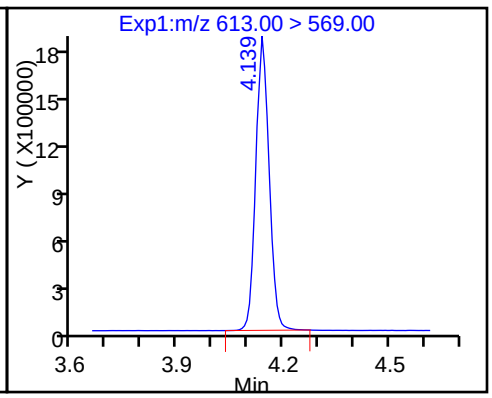
D 27 13C2 PFUnA



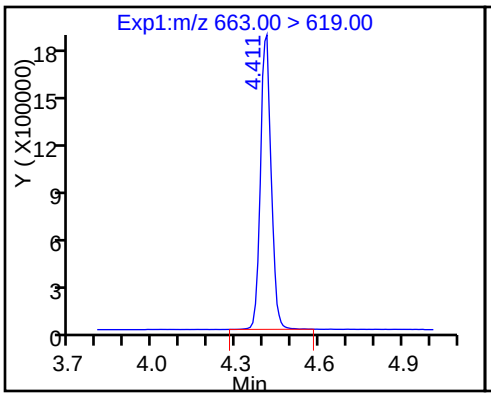
D 30 13C2 PFDoA



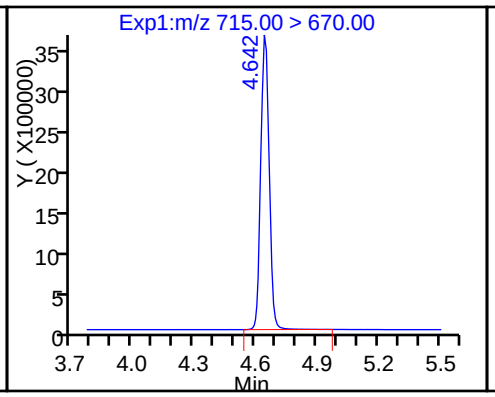
29 Perfluorododecanoic acid



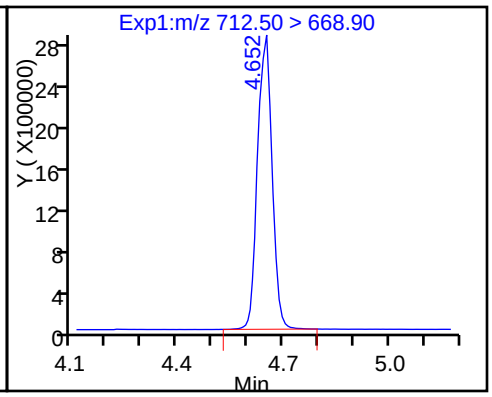
31 Perfluorotridecanoic acid



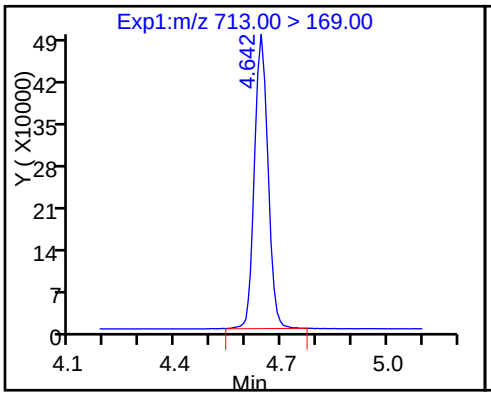
D 32 13C2-PFTeDA



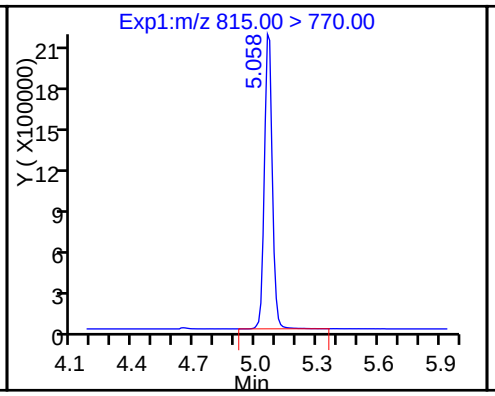
33 Perfluorotetradecanoic acid



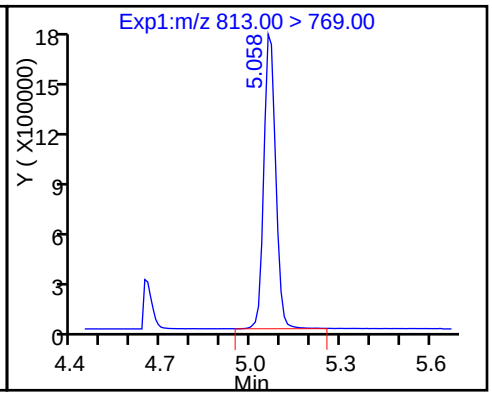
33 Perfluorotetradecanoic acid



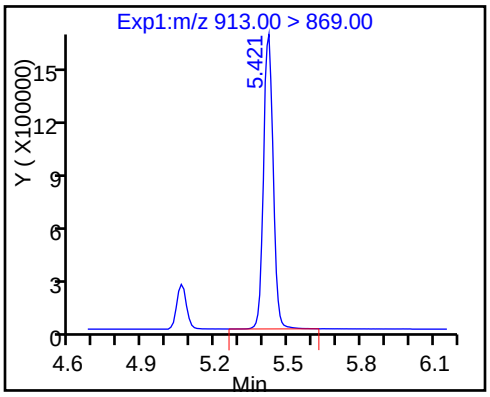
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: CCV 320-144104/3 Calibration Date: 12/27/2016 17:05

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 27DEC2016A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.8662		1.01	1.00	1.5	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.013		1.03	1.00	2.7	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.527		0.952	0.884	7.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9301		1.00	1.00	0.1	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.035		1.06	1.00	5.7	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.152		1.02	0.910	11.8	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.106		0.956	0.952	0.4	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.105		1.10	1.00	10.2	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	1.007		1.06	1.00	5.8	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	0.9541		0.890	0.928	-4.1	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9816		1.05	1.00	5.3	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9159		0.970	1.00	-3.0	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6044		0.998	0.964	3.5	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	1.012		1.06	1.00	5.8	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8626		0.940	1.00	-6.0	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8868		0.978	1.00	-2.2	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.835		1.16	1.00	15.8	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.476		0.947	1.00	-5.3	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8885		0.862	1.00	-13.8	50.0
13C4 PFBA	Ave	347743	360654		51.9	50.0	3.7	50.0
13C5-PFPeA	Ave	266072	286624		53.9	50.0	7.7	50.0
13C2 PFHxA	Ave	245110	256219		52.3	50.0	4.5	50.0
13C4-PFHpA	Ave	226344	228870		50.6	50.0	1.1	50.0
18O2 PFHxS	Ave	326976	340323		49.2	47.3	4.1	50.0
13C4 PFOA	Ave	230362	239642		52.0	50.0	4.0	50.0
13C4 PFOS	Ave	248847	260877		50.1	47.8	4.8	50.0
13C5 PFNA	Ave	177687	174657		49.1	50.0	-1.7	50.0
13C8 FOSA	Ave	384141	391997		51.0	50.0	2.0	50.0
13C2 PFDA	Ave	157302	158125		50.3	50.0	0.5	50.0
13C2 PFUnA	Ave	117250	123484		52.7	50.0	5.3	50.0
13C2 PFDoA	Ave	110957	112585		50.7	50.0	1.5	50.0
13C2-PFTeDA	Ave	227387	232749		51.2	50.0	2.4	50.0
13C2-PFHxDA	Ave	124568	115832		46.5	50.0	-7.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_003.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 27-Dec-2016 17:05:11 ALS Bottle#: 38 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 28-Dec-2016 11:25:37 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: westendorfc Date: 28-Dec-2016 11:14:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.558	-0.008		18032681	51.9		104	859868	
1 Perfluorobutyric acid										
212.90 > 169.00	1.558	1.558	0.0	1.000	312403	1.01		101	3028	
D 4 13C5-PFPeA										
267.90 > 223.00	1.840	1.849	-0.009		14331189	53.9		108	1367244	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.849	1.849	0.0	1.000	290486	1.03		103	3425	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.888	1.887	0.001	1.000	459256	0.9524		108		
298.90 > 99.00	1.878	1.887	-0.009	0.995	186398		2.46(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.150	2.156	-0.006		12810932	52.3		105	953840	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.150	2.165	-0.015	1.000	238317	1.00		100	7500	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.515	2.450	0.065	1.000	356702	1.02		112		
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.500	2.513	-0.013	1.000	236829	1.06		106	2291	
D 11 13C4-PFHpA										
367.00 > 322.00	2.500	2.513	-0.013		11443513	50.6		101	1490766	
D 10 18O2 PFHxS										
403.00 > 84.00	2.515	2.528	-0.013		16097284	49.2		104	1231430	
D 14 13C4 PFOA										
417.00 > 372.00	2.879	2.893	-0.014		11982075	52.0		104	610141	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.879	2.893	-0.014	1.000	264919	1.10		110	2733	
413.00 > 169.00	2.871	2.893	-0.022	0.997	156630		1.69(0.90-1.10)		7378	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.879	2.893	-0.014	1.000	274799	0.9559		100		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.261	3.156	0.105	1.000	230982	0.8903		95.9	12505	M
499.00 > 99.00	3.261	3.156	0.105	1.000	51945		4.45(0.90-1.10)		2691	M
D 17 13C4 PFOS										
503.00 > 80.00	3.253	3.274	-0.021		12469915	50.1		105	638138	
20 Perfluorononanoic acid										
463.00 > 419.00	3.261	3.274	-0.013	1.000	175956	1.06		106	3386	
D 19 13C5 PFNA										
468.00 > 423.00	3.253	3.274	-0.021		8732841	49.1		98.3	3119627	
D 21 13C8 FOSA										
506.00 > 78.00	3.524	3.520	0.004		19599858	51.0		102	615936	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.524	3.529	-0.005	1.000	384802	1.05		105	24194	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.625	3.646	-0.021	1.000	144830	0.9705		97.0	4989	
D 23 13C2 PFDA										
515.00 > 470.00	3.625	3.646	-0.021		7906271	50.3		101	252072	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.945	3.957	-0.012	1.000	151998	1.00		104		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.954	3.985	-0.031	1.000	124929	1.06		106	3678	
D 27 13C2 PFUnA										
565.00 > 520.00	3.962	3.985	-0.023		6174195	52.7		105	338596	
D 30 13C2 PFDoA										
615.00 > 570.00	4.265	4.286	-0.021		5629243	50.7		101	130120	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.265	4.286	-0.021	1.000	97118	0.9397		94.0	1875	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.537	4.562	-0.025	1.000	99841	0.9779		97.8	137	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.789	4.811	-0.022	1.000	206564	1.16		116	86.3	
713.00 > 169.00	4.789	4.811	-0.022	1.000	36435		5.67(0.00-0.00)		3700	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.789	4.811	-0.022		11637450	51.2		102	830776	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.240	5.261	-0.021	1.000	166203	0.9466		94.7	174	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.231	5.250	-0.020		5791604	46.5		93.0	106287	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.632	5.664	-0.032	1.000	100027	0.8623		86.2	139	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023 Amount Added: 1.00 Units: mL

Report Date: 28-Dec-2016 11:25:37 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_003.d

Injection Date: 27-Dec-2016 17:05:11 Instrument ID: A8_N

Lims ID: CCV L2

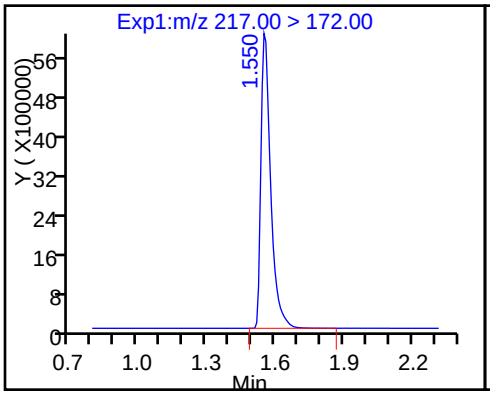
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 3

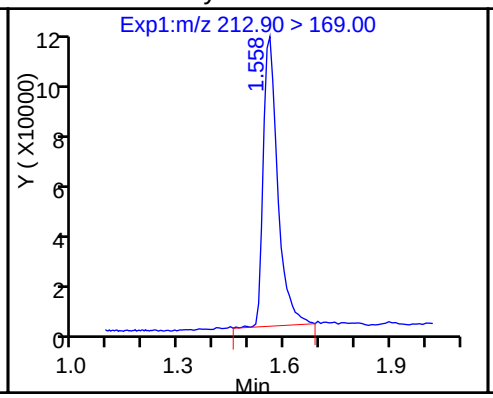
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

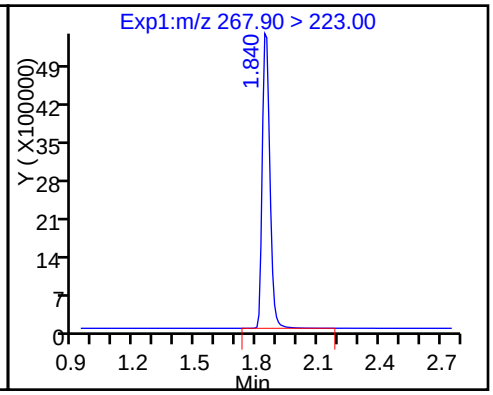
D 2 13C4 PFBA



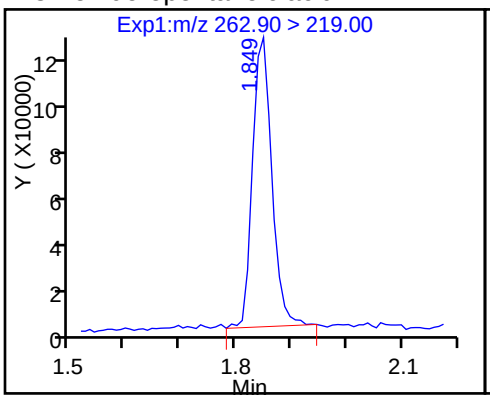
1 Perfluorobutyric acid



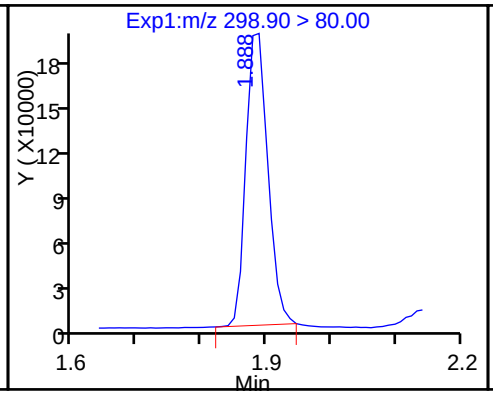
D 4 13C5-PFPeA



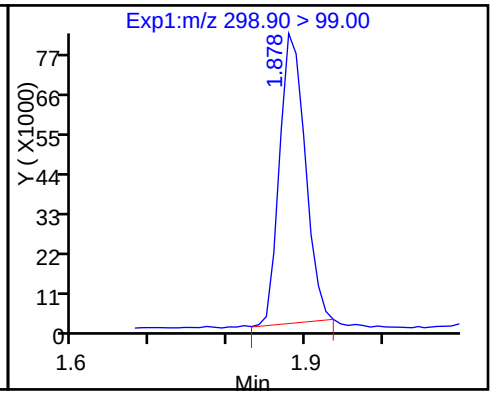
3 Perfluoropentanoic acid



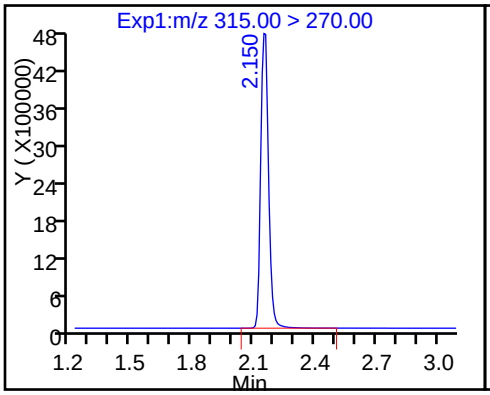
5 Perfluorobutanesulfonic acid



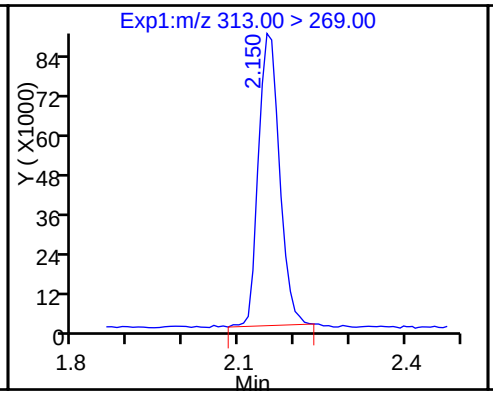
5 Perfluorobutanesulfonic acid



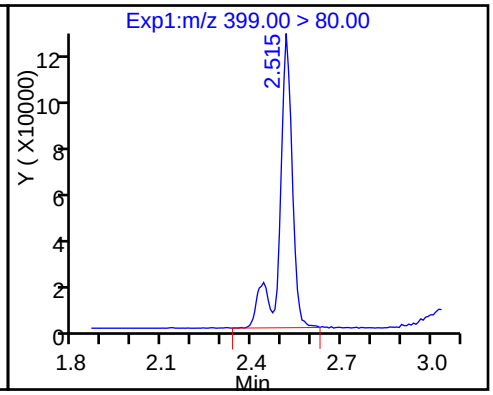
D 6 13C2 PFHxA



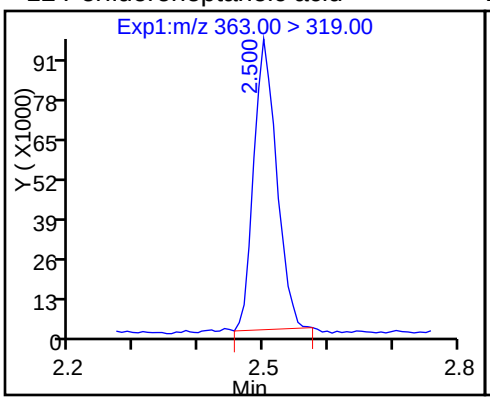
7 Perfluorohexanoic acid



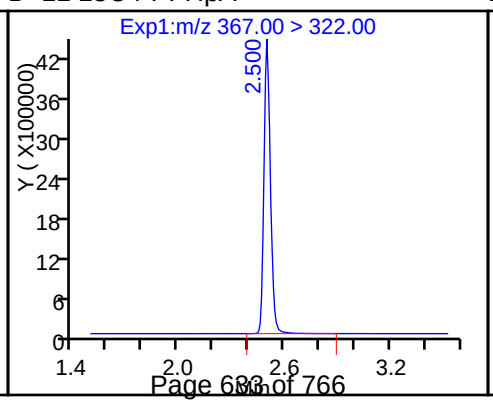
9 Perfluorohexanesulfonic acid



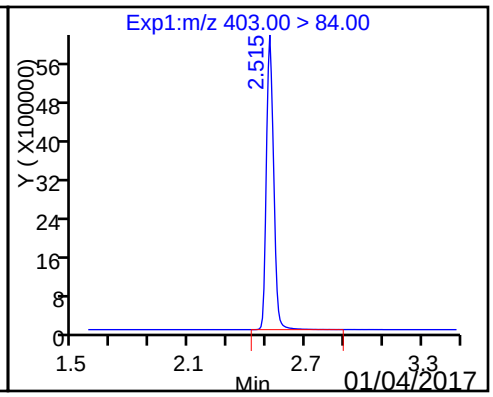
12 Perfluoroheptanoic acid



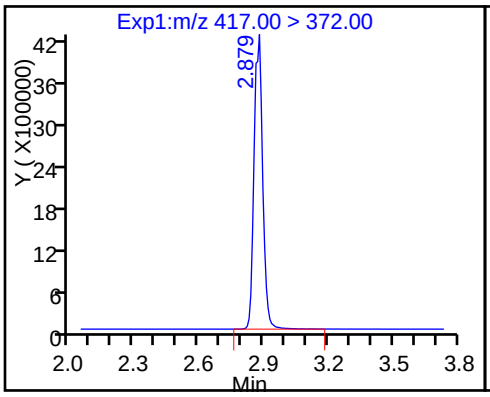
D 11 13C4-PFHpA



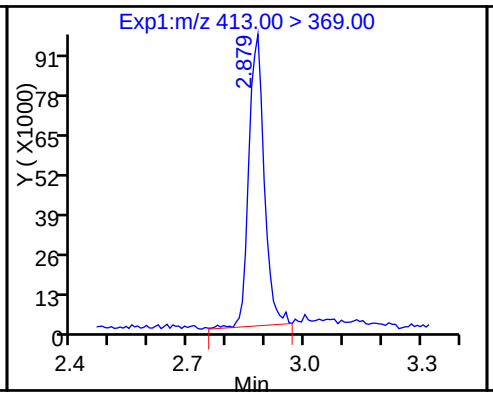
D 10 18O2 PFHxS



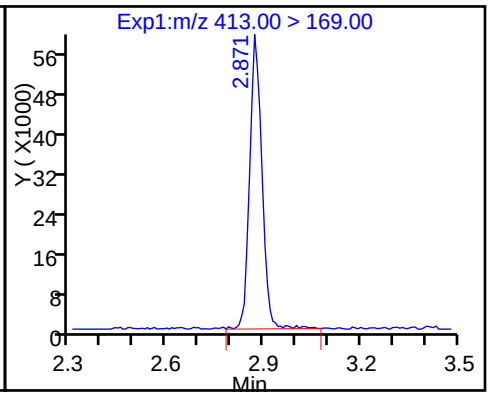
D 14 13C4 PFOA



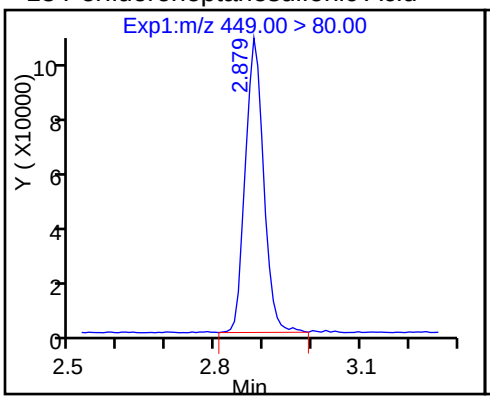
15 Perfluorooctanoic acid



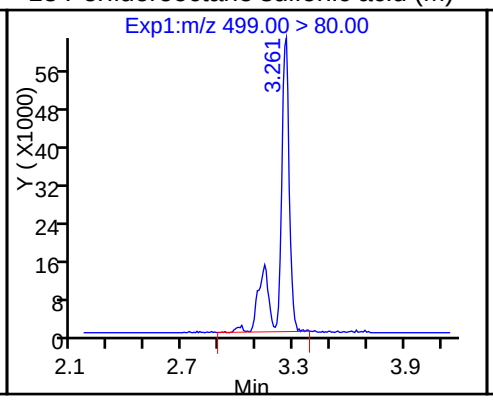
15 Perfluorooctanoic acid



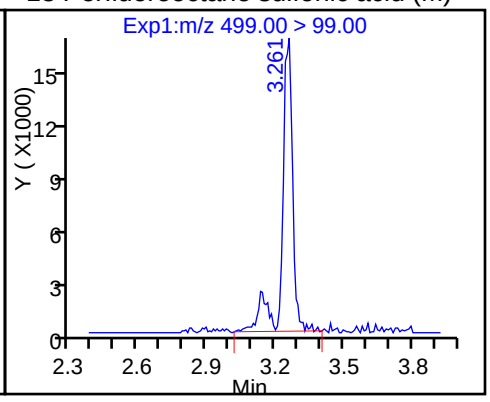
13 Perfluoroheptanesulfonic Acid



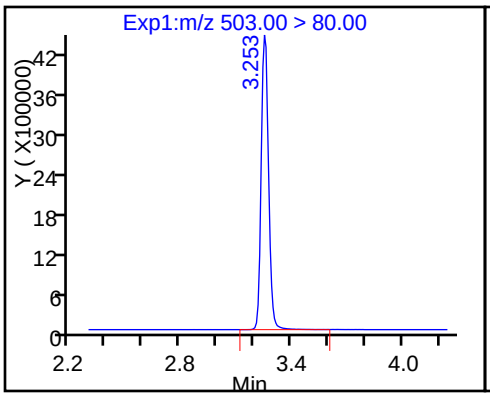
18 Perfluorooctane sulfonic acid (M)



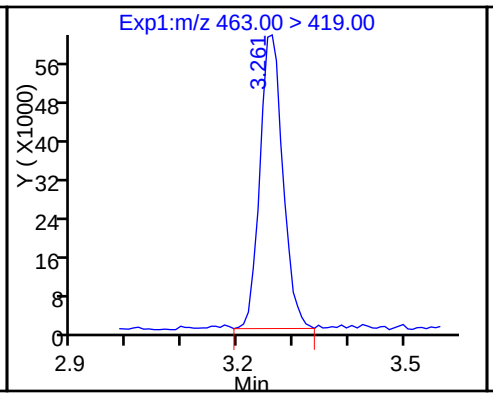
18 Perfluorooctane sulfonic acid (M)



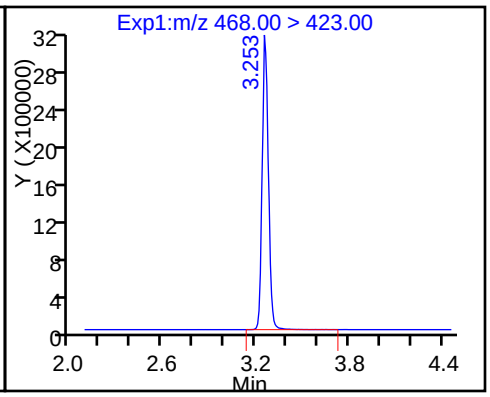
D 17 13C4 PFOS



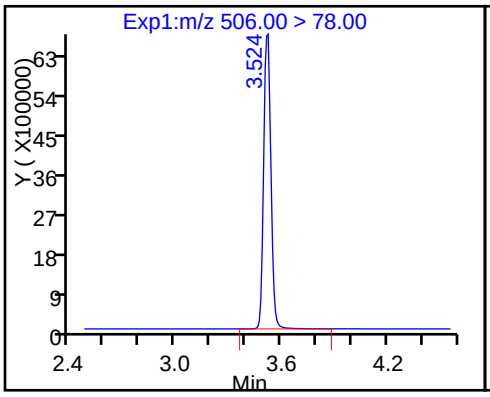
20 Perfluorononanoic acid



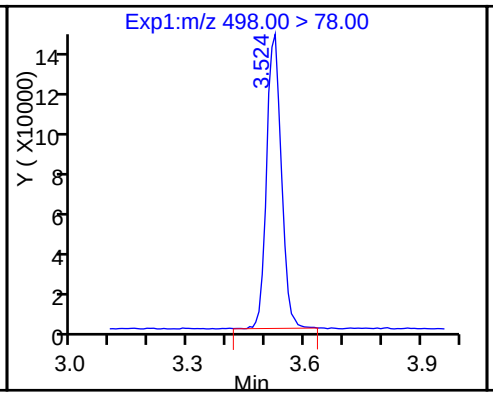
D 19 13C5 PFNA



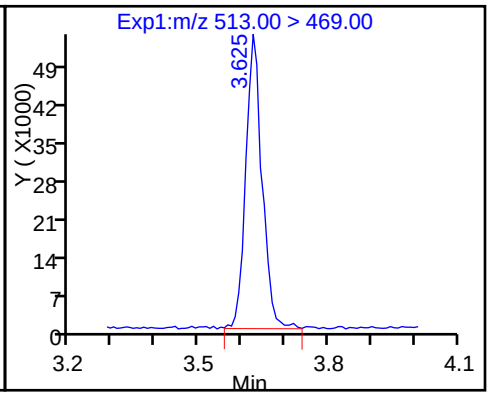
D 21 13C8 FOSA



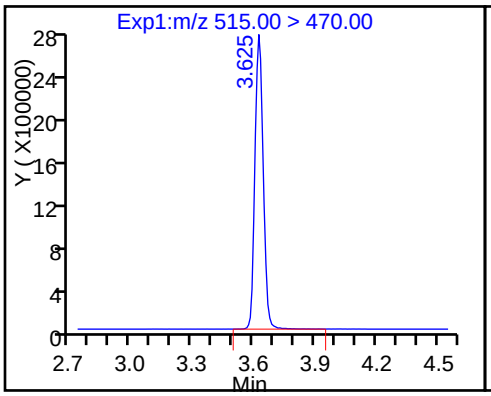
22 Perfluorooctane Sulfonamide



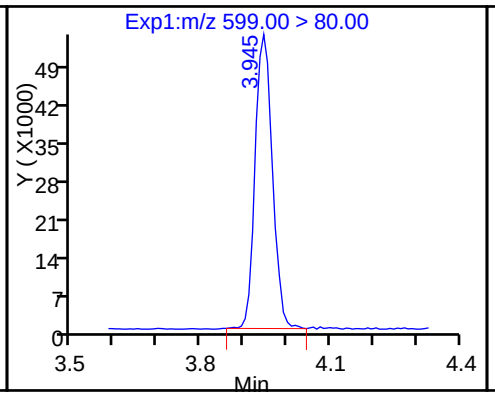
24 Perfluorodecanoic acid



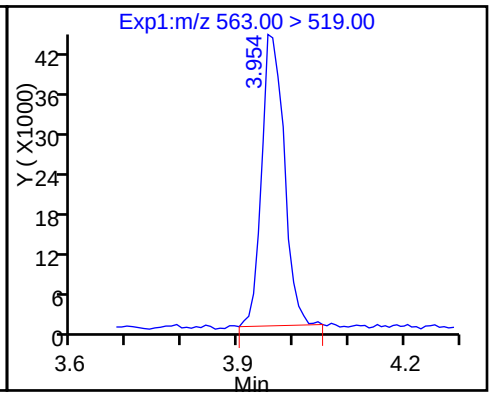
D 23 13C2 PFDA



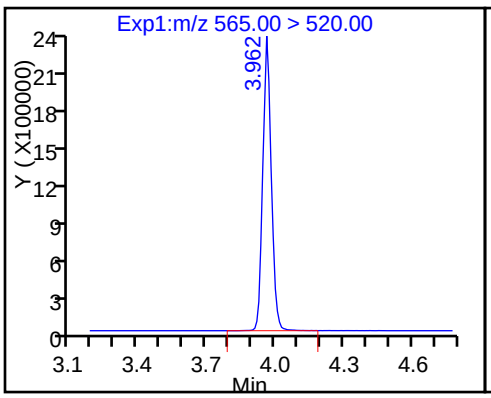
26 Perfluorodecane Sulfonic acid



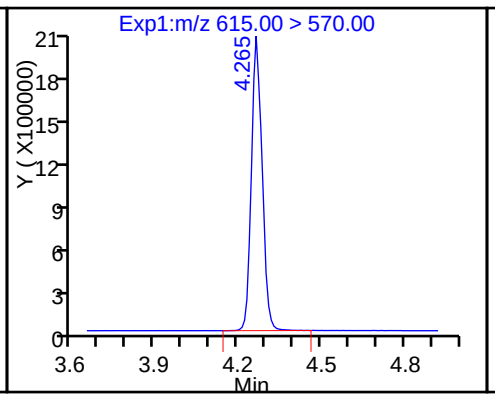
28 Perfluoroundecanoic acid



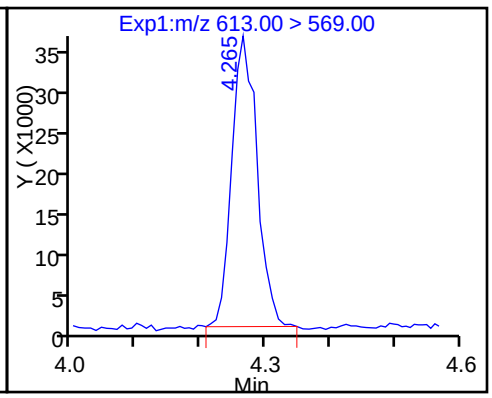
D 27 13C2 PFUnA



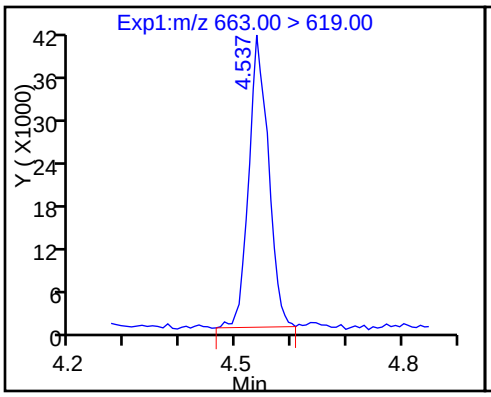
D 30 13C2 PFDoA



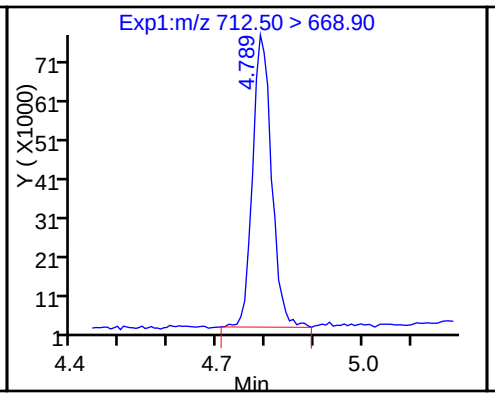
29 Perfluorododecanoic acid



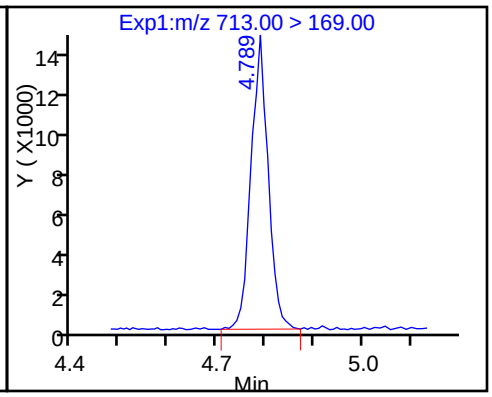
31 Perfluorotridecanoic acid



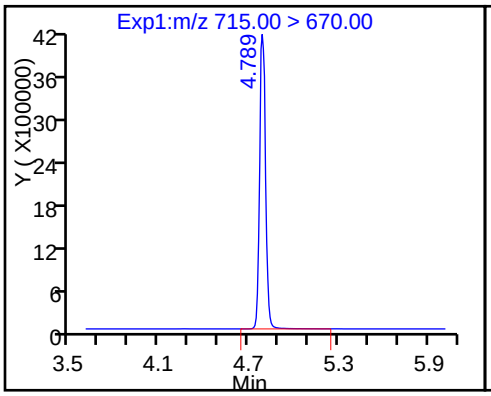
33 Perfluorotetradecanoic acid



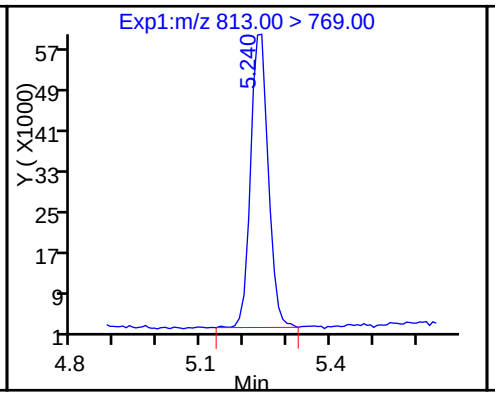
33 Perfluorotetradecanoic acid



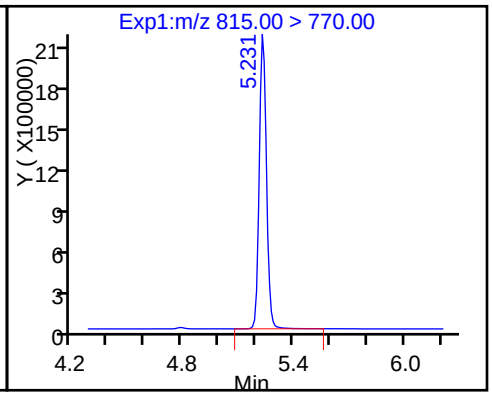
D 32 13C2-PFTeDA



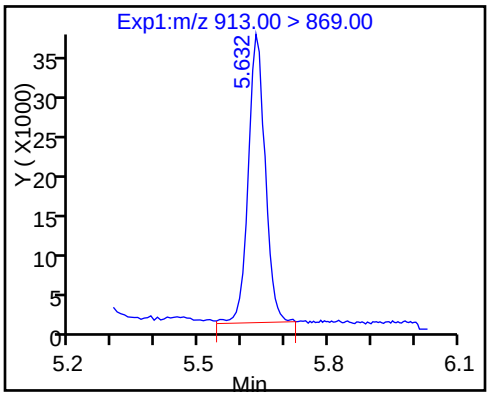
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

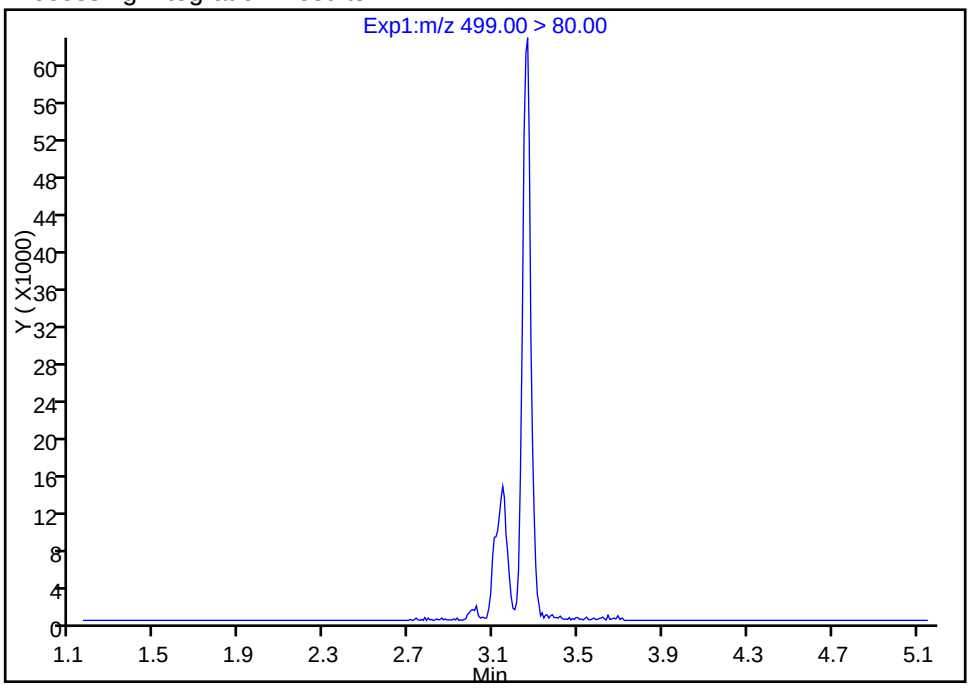
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_003.d
Injection Date: 27-Dec-2016 17:05:11 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

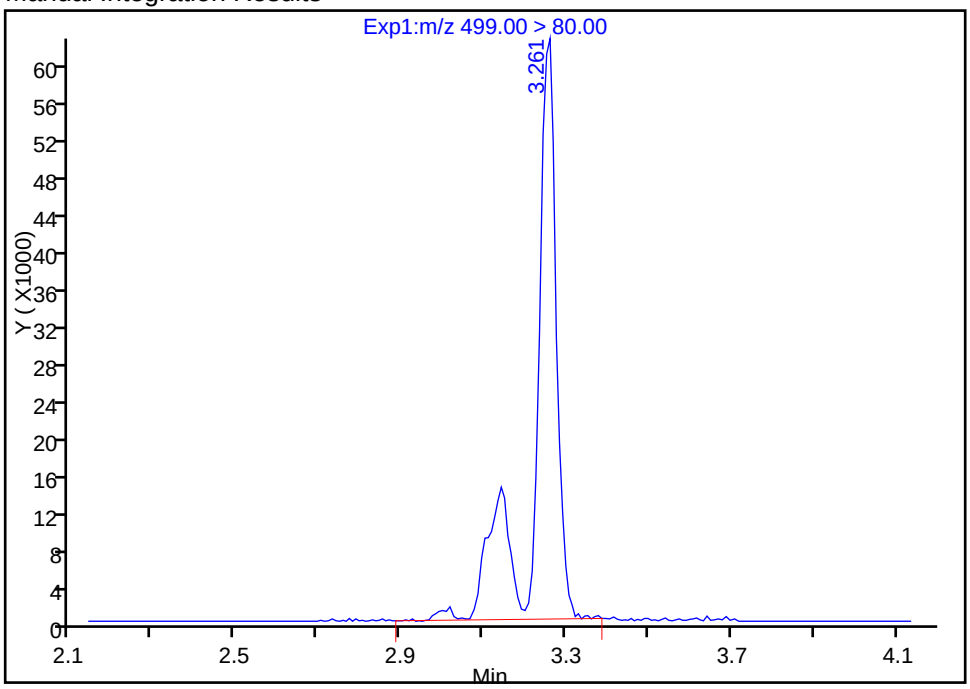
Not Detected
Expected RT: 3.16

Processing Integration Results



Manual Integration Results

RT: 3.26
Area: 230982
Amount: 0.890345
Amount Units: ng/ml



Reviewer: westendorfc, 28-Dec-2016 11:14:40
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

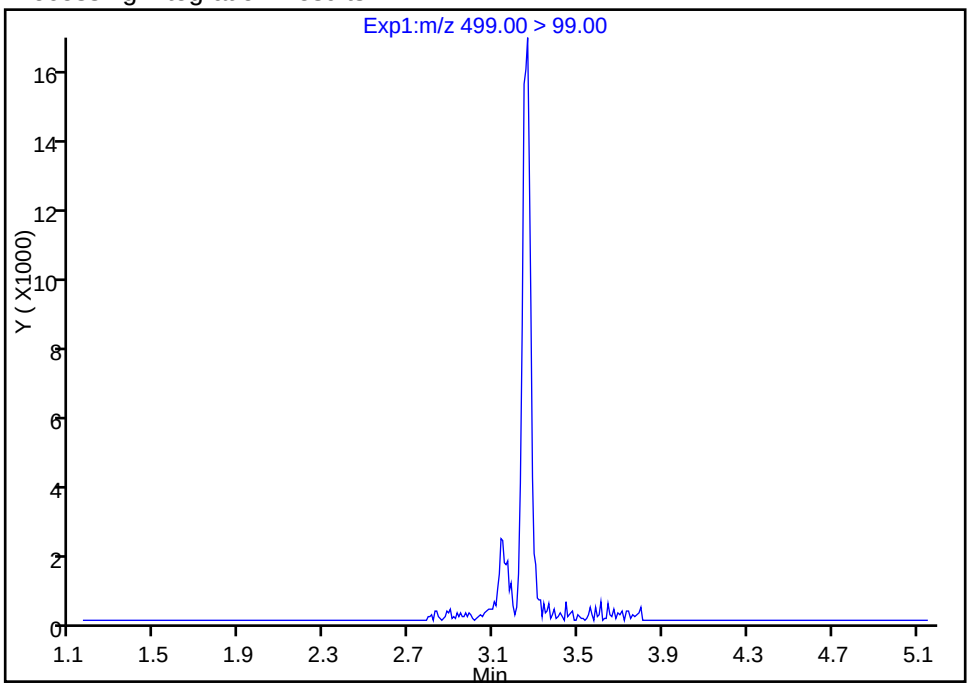
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_003.d
Injection Date: 27-Dec-2016 17:05:11 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

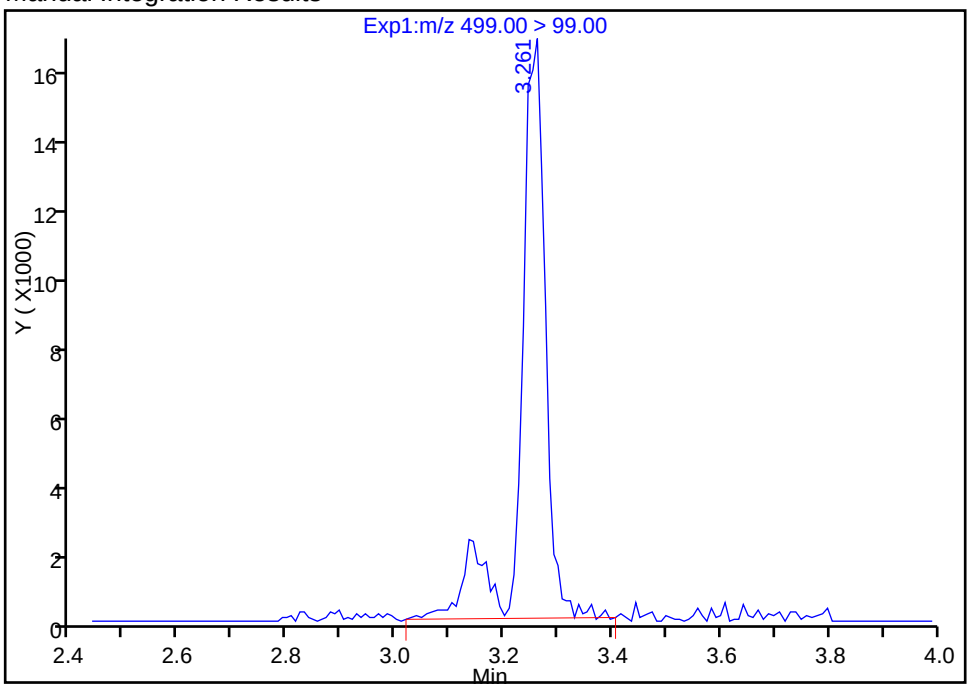
Processing Integration Results

Not Detected
Expected RT: 3.16



Manual Integration Results

RT: 3.26
Area: 51945
Amount: 0.890345
Amount Units: ng/ml



Reviewer: westendorfc, 28-Dec-2016 11:14:40
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: CCV 320-144104/29 Calibration Date: 12/27/2016 20:20

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 27DEC2016A_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9001		52.7	50.0	5.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.9941		50.4	50.0	0.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.605		50.1	44.2	13.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9352		50.3	50.0	0.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.029		45.5	45.5	-0.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9749		49.8	50.0	-0.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.036		51.6	50.0	3.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.140		49.2	47.6	3.4	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.015		47.4	46.4	2.1	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9516		50.0	50.0	-0.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9413		50.5	50.0	0.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9623		51.0	50.0	2.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6056		50.0	48.2	3.7	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9475		49.5	50.0	-0.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9408		51.2	50.0	2.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8872		48.9	50.0	-2.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.646		51.9	50.0	3.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.8792		45.4	50.0	-9.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8130		39.4	50.0	-21.1	25.0
13C4 PFBA	Ave	347743	369466		53.1	50.0	6.2	50.0
13C5-PFPeA	Ave	266072	286168		53.8	50.0	7.6	50.0
13C2 PFHxA	Ave	245110	254695		52.0	50.0	3.9	50.0
13C4-PFHpA	Ave	226344	223998		49.5	50.0	-1.0	50.0
18O2 PFHxS	Ave	326976	335823		48.6	47.3	2.7	50.0
13C4 PFOA	Ave	230362	221471		48.1	50.0	-3.9	50.0
13C4 PFOS	Ave	248847	262834		50.5	47.8	5.6	50.0
13C5 PFNA	Ave	177687	170206		47.9	50.0	-4.2	50.0
13C8 FOSA	Ave	384141	397881		51.8	50.0	3.6	50.0
13C2 PFDA	Ave	157302	161624		51.4	50.0	2.7	50.0
13C2 PFUnA	Ave	117250	116824		49.8	50.0	-0.4	50.0
13C2 PFDoA	Ave	110957	110329		49.7	50.0	-0.6	50.0
13C2-PFTeDA	Ave	227387	220264		48.4	50.0	-3.1	50.0
13C2-PFHxDA	Ave	124568	111462		44.7	50.0	-10.5	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_029.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 27-Dec-2016 20:20:14 ALS Bottle#: 41 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:36:48 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:36:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		18473307	53.1		106	975491	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.542	0.0	1.000	16628345	52.7		105	137046	
D 4 13C5-PFPeA										
267.90 > 223.00	1.820	1.820	0.0		14308384	53.8		108	1090527	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.820	1.820	0.0	1.000	14224563	50.4		101	156421	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.858	0.0	1.000	23830816	50.1		113		
298.90 > 99.00	1.858	1.858	0.0	1.000	11224637		2.12(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.110	2.110	0.0		12734772	52.0		104	899860	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.110	2.110	0.0	1.000	11909809	50.3		101	344356	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.432	2.432	0.0	1.000	15727232	45.5		99.9		
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.439	2.439	0.0	1.000	10918462	49.8		99.6	83689	
D 11 13C4-PFHpA										
367.00 > 322.00	2.439	2.439	0.0		11199900	49.5		99.0	660754	
D 10 18O2 PFHxS										
403.00 > 84.00	2.462	2.462	0.0		15884414	48.6		103	1148076	
D 14 13C4 PFOA										
417.00 > 372.00	2.799	2.799	0.0		11073562	48.1		96.1	463854	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.799	2.799	0.0	1.000	11469556	51.6		103	125473	
413.00 > 169.00	2.799	2.799	0.0	1.000	7206172		1.59(0.90-1.10)		418989	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.807	2.807	0.0	1.000	14259959	49.2		103		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.067	3.067	0.0	1.000	12377953	47.4		102	62060	
499.00 > 99.00	3.067	3.067	0.0	1.000	2813966		4.40(0.90-1.10)		16630	
D 17 13C4 PFOS										
503.00 > 80.00	3.175	3.175	0.0		12563449	50.5		106	277045	
20 Perfluorononanoic acid										
463.00 > 419.00	3.175	3.175	0.0	1.000	8098613	50.0		100.0	136113	
D 19 13C5 PFNA										
468.00 > 423.00	3.175	3.175	0.0		8510293	47.9		95.8	459830	
D 21 13C8 FOSA										
506.00 > 78.00	3.482	3.482	0.0		19894069	51.8		104	618879	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.491	3.491	0.0	1.000	18725928	50.5		101	463075	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.533	3.533	0.0	1.000	7776394	51.0		102	203652	
D 23 13C2 PFDA										
515.00 > 470.00	3.533	3.533	0.0		8081203	51.4		103	257922	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.853	3.853	0.0	1.000	7671882	50.0		104		
D 27 13C2 PFUnA										
565.00 > 520.00	3.862	3.862	0.0		5841215	49.8		99.6	251388	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.870	3.870	0.0	1.000	5534785	49.5		99.1	98702	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.164	4.164	0.0	1.000	5189931	51.2		102	91832	
D 30 13C2 PFDoA										
615.00 > 570.00	4.164	4.164	0.0		5516470	49.7		99.4	196626	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.429	4.429	0.0	1.000	4894193	48.9		97.8	88460	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.673	4.673	0.0	1.000	9077411	51.9		104	98148	
713.00 > 169.00	4.673	4.673	0.0	1.000	1449202		6.26(0.00-0.00)		134556	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.673	4.673	0.0		11013178	48.4		96.9	583751	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.092	5.092	0.0		5573101	44.7		89.5	162966	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.103	5.103	0.0	1.000	4850048	45.4		90.9	7384	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.467	5.467	0.0	1.000	4484602	39.4		78.9	9888	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 29-Dec-2016 09:36:49 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_029.d

Injection Date: 27-Dec-2016 20:20:14 Instrument ID: A8_N

Lims ID: CCV L5

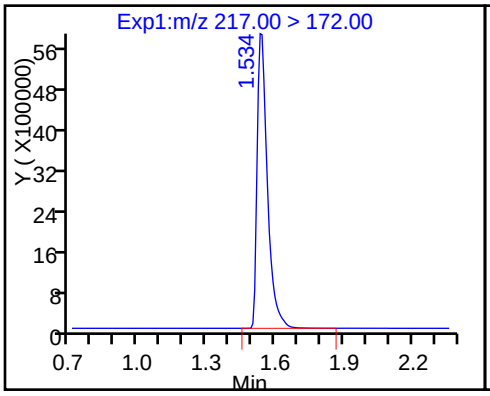
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 29

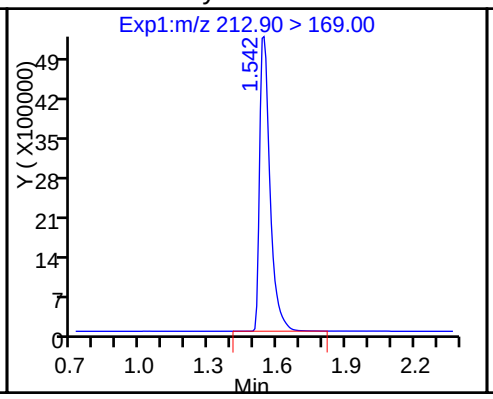
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

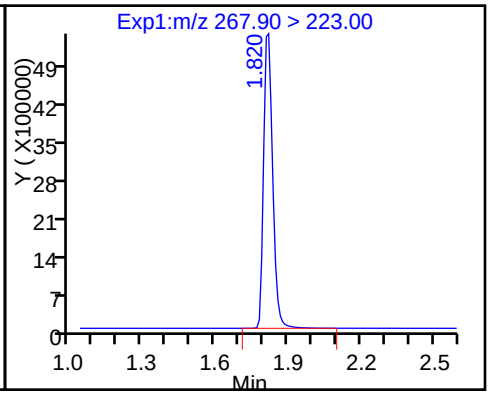
D 2 13C4 PFBA



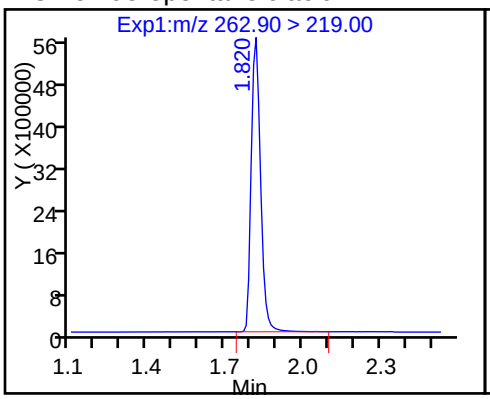
1 Perfluorobutyric acid



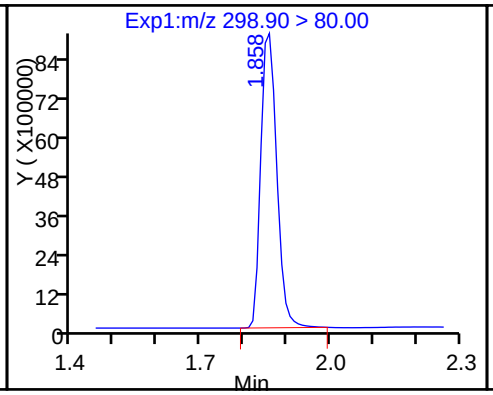
D 4 13C5-PFPeA



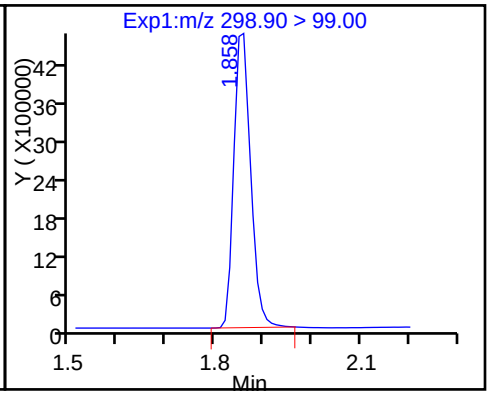
3 Perfluoropentanoic acid



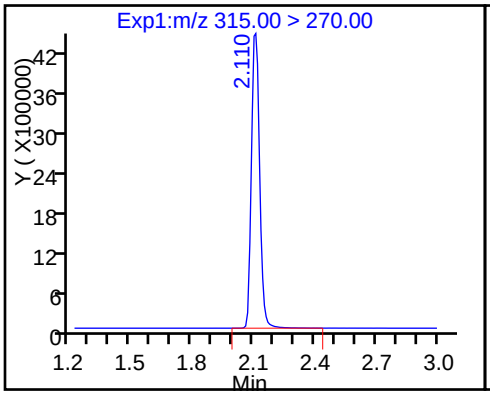
5 Perfluorobutanesulfonic acid



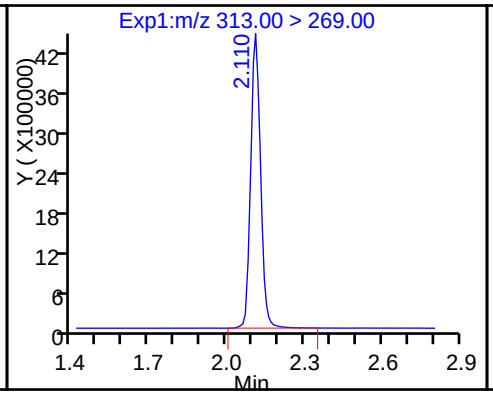
5 Perfluorobutanesulfonic acid



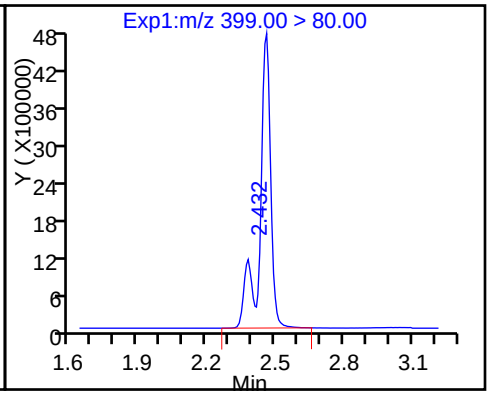
D 6 13C2 PFHxA



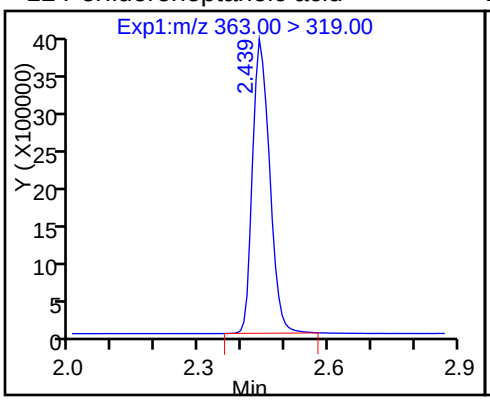
7 Perfluorohexanoic acid



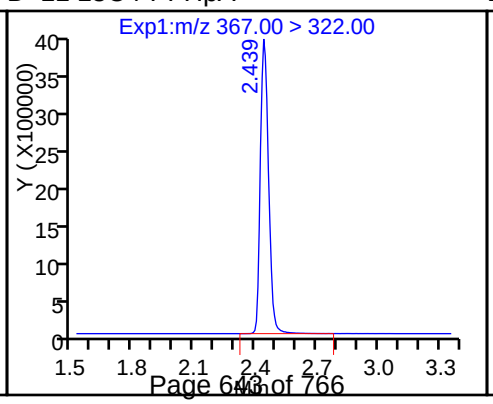
9 Perfluorohexanesulfonic acid



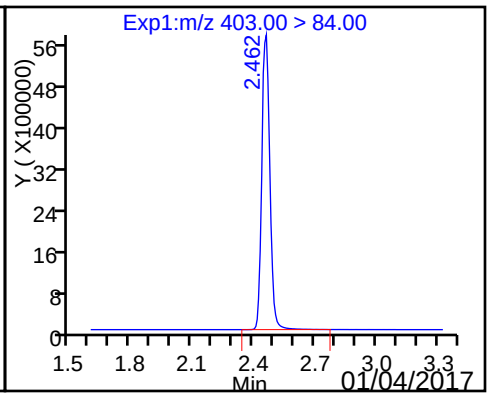
12 Perfluoroheptanoic acid



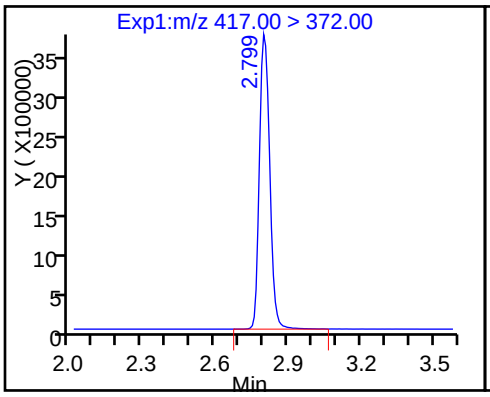
D 11 13C4-PFHpA



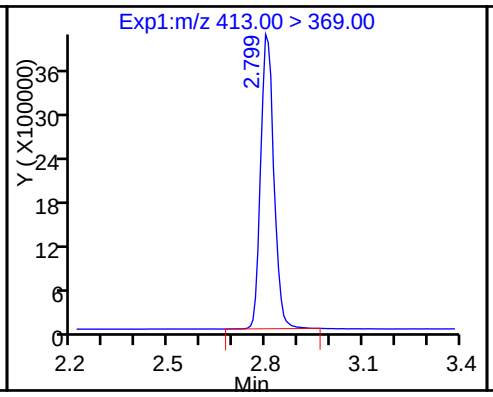
D 10 18O2 PFHxS



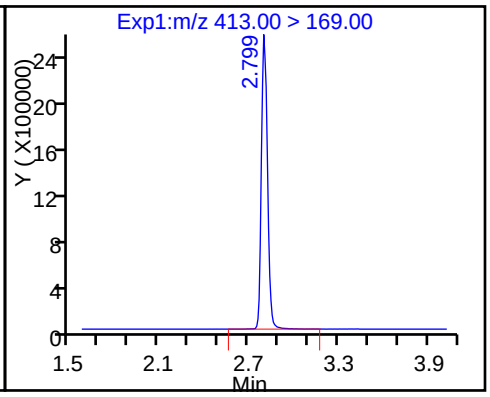
D 14 13C4 PFOA



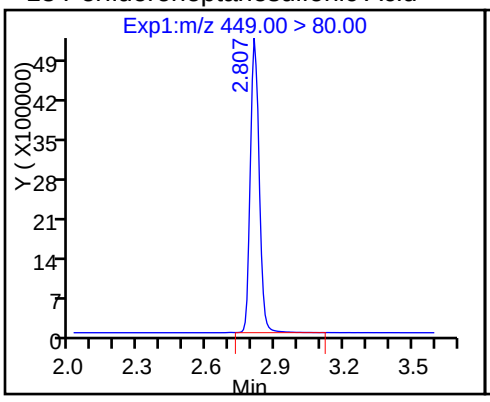
15 Perfluorooctanoic acid



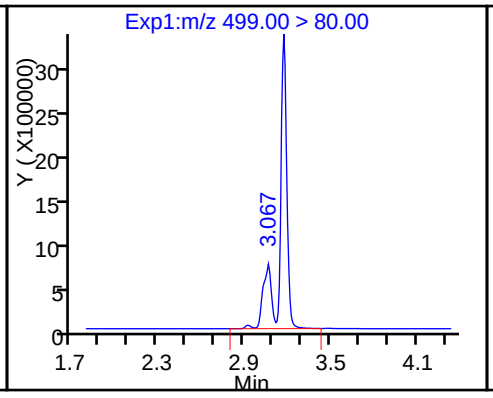
15 Perfluorooctanoic acid



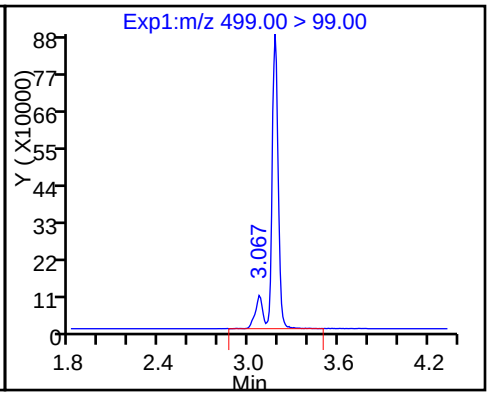
13 Perfluoroheptanesulfonic Acid



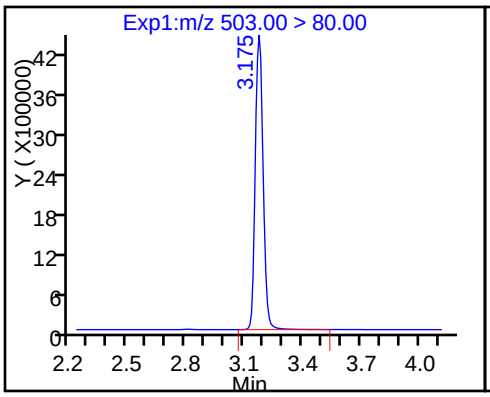
18 Perfluorooctane sulfonic acid



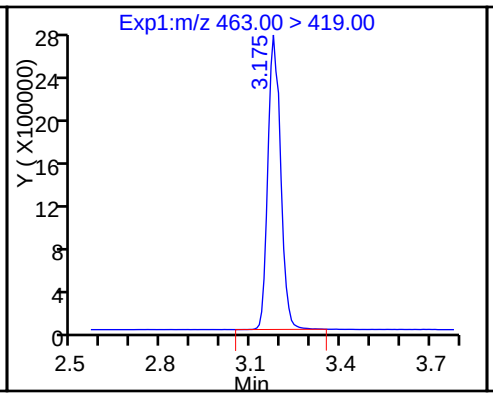
18 Perfluorooctane sulfonic acid



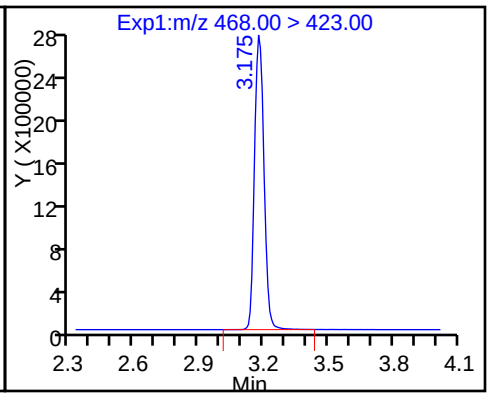
D 17 13C4 PFOS



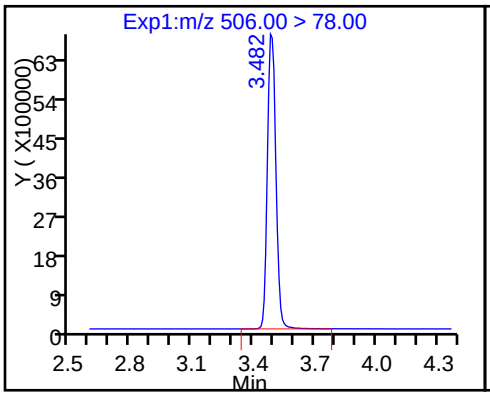
20 Perfluorononanoic acid



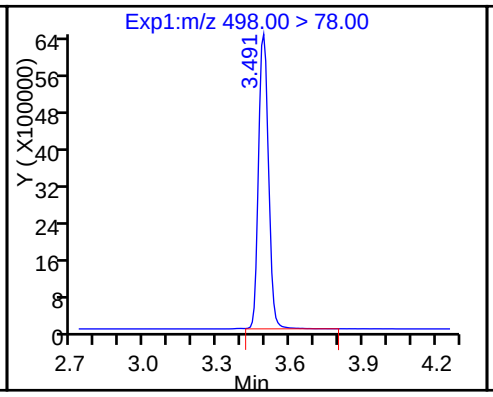
D 19 13C5 PFNA



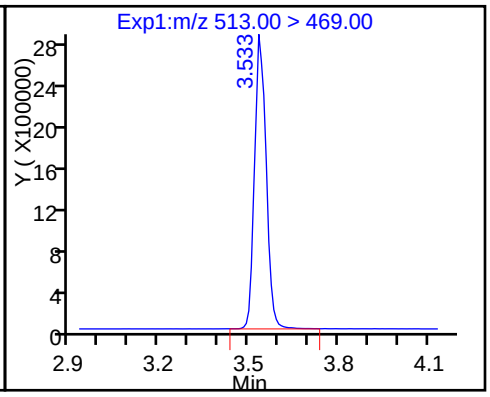
D 21 13C8 FOSA



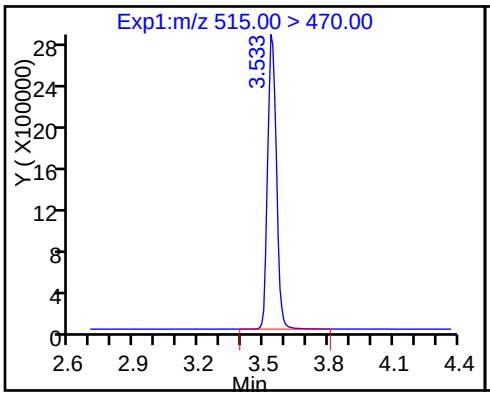
22 Perfluorooctane Sulfonamide



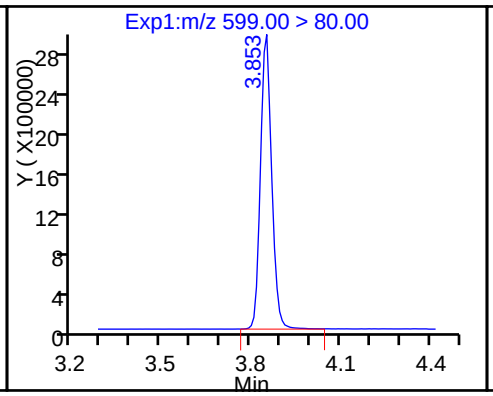
24 Perfluorodecanoic acid



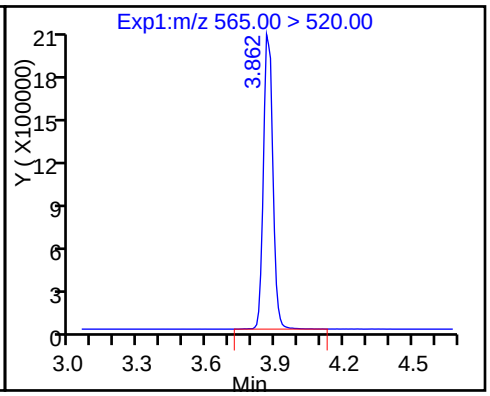
D 23 13C2 PFDA



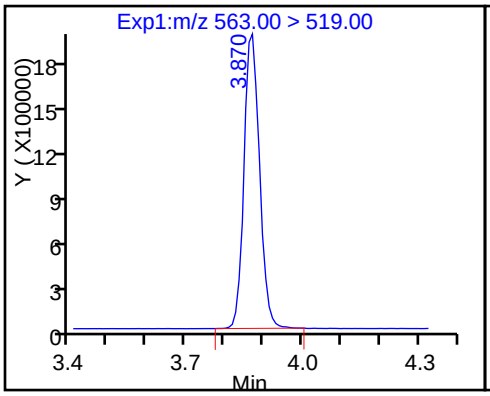
26 Perfluorodecane Sulfonic acid



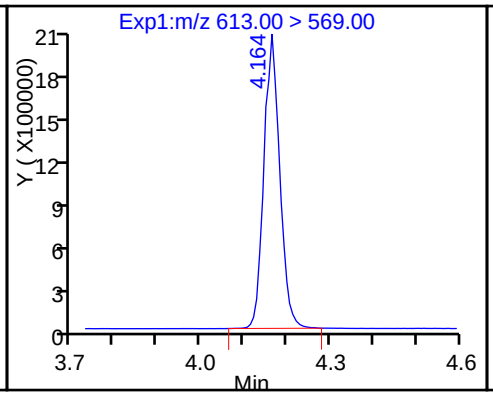
D 27 13C2 PFUnA



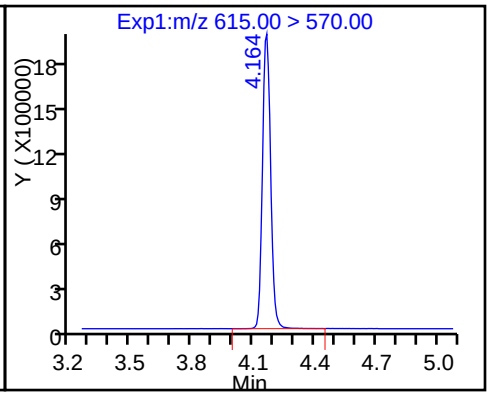
28 Perfluoroundecanoic acid



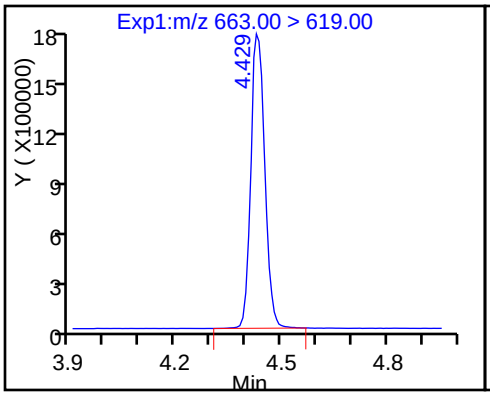
29 Perfluorododecanoic acid



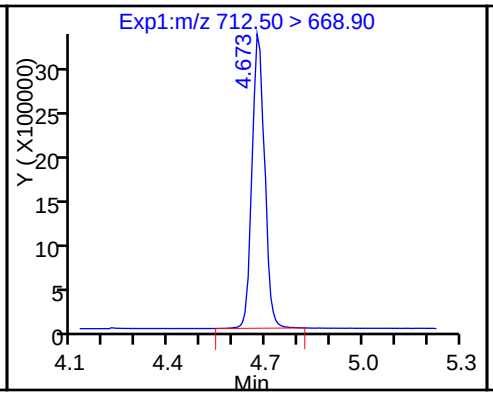
D 30 13C2 PFDoA



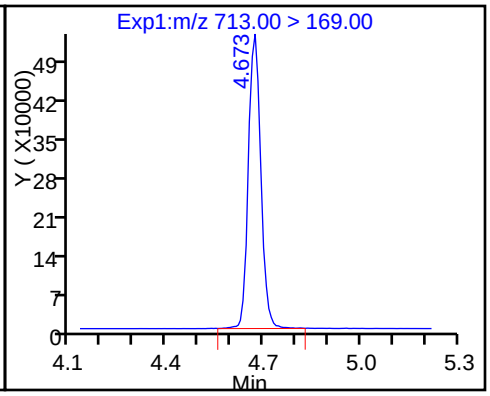
31 Perfluorotridecanoic acid



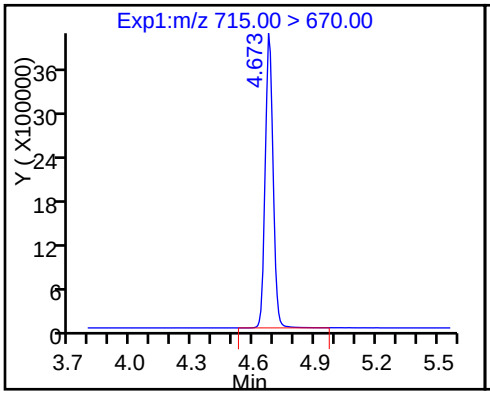
33 Perfluorotetradecanoic acid



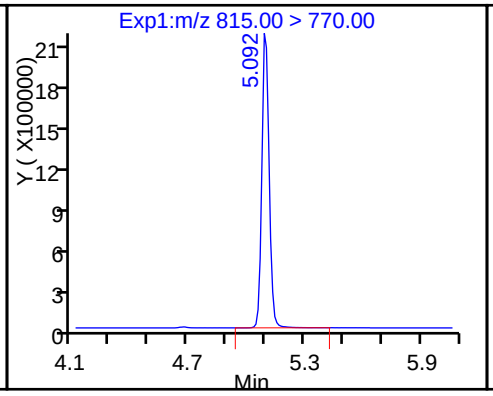
33 Perfluorotetradecanoic acid



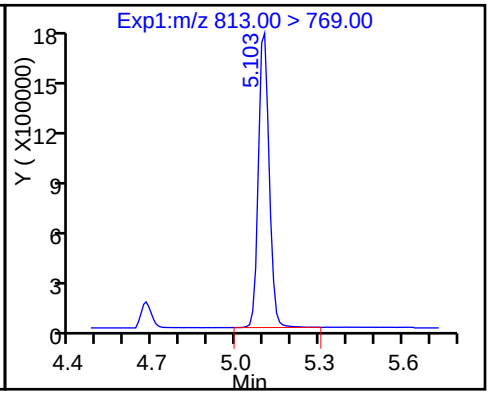
D 32 13C2-PFTeDA



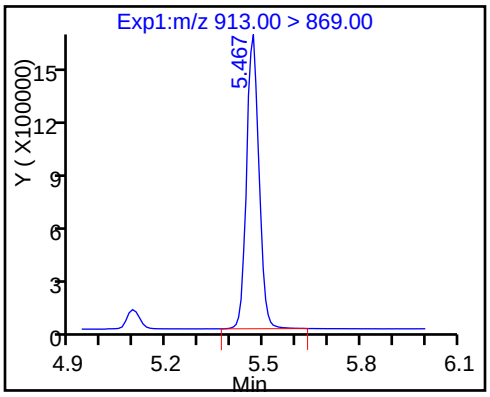
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: CCV 320-144104/42 Calibration Date: 12/27/2016 21:57

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 27DEC2016A_042.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9633		22.6	20.0	12.8	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.097		22.2	20.0	11.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.740		21.7	17.7	22.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9695		20.9	20.0	4.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.086		19.2	18.2	5.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.026		21.0	20.0	4.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.092		21.8	20.0	8.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.272		22.0	19.0	15.5	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.056		19.7	18.6	6.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.996		20.9	20.0	4.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.011		21.7	20.0	8.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9368		19.9	20.0	-0.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6353		21.0	19.3	8.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9505		19.9	20.0	-0.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9669		21.1	20.0	5.3	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9289		20.5	20.0	2.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.849		23.3	20.0	16.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.0009		0.200	20.0	-102.9*	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8217		16.0	20.0	-20.2	25.0
13C4 PFBA	Ave	347743	372206		53.5	50.0	7.0	50.0
13C5-PFPeA	Ave	266072	285939		53.7	50.0	7.5	50.0
13C2 PFHxA	Ave	245110	266707		54.4	50.0	8.8	50.0
13C4-PFHpA	Ave	226344	242682		53.6	50.0	7.2	50.0
18O2 PFHxS	Ave	326976	349156		50.5	47.3	6.8	50.0
13C4 PFOA	Ave	230362	242041		52.5	50.0	5.1	50.0
13C4 PFOS	Ave	248847	253165		48.6	47.8	1.7	50.0
13C5 PFNA	Ave	177687	173899		48.9	50.0	-2.1	50.0
13C8 FOSA	Ave	384141	399776		52.0	50.0	4.1	50.0
13C2 PFDA	Ave	157302	165433		52.6	50.0	5.2	50.0
13C2 PFUnA	Ave	117250	119325		50.9	50.0	1.8	50.0
13C2 PFDoA	Ave	110957	104390		47.0	50.0	-5.9	50.0
13C2-PFTeDA	Ave	227387	221401		48.7	50.0	-2.6	50.0
13C2-PFHxDA	Ave	124568	108426		43.5	50.0	-13.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_042.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 27-Dec-2016 21:57:43 ALS Bottle#: 40 Worklist Smp#: 42
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:43:47 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:43:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.529	1.529	0.0		18610287	53.5		107	1556792	
1 Perfluorobutyric acid										
212.90 > 169.00	1.529	1.529	0.0	1.000	7170709	22.6		113	57227	
D 4 13C5-PFPeA										
267.90 > 223.00	1.804	1.804	0.0		14296970	53.7		107	1105447	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.804	1.804	0.0	1.000	6274569	22.2		111	67742	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.842	0.0	1.000	10742808	21.7		123		
298.90 > 99.00	1.842	1.842	0.0	1.000	4595656		2.34(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.094	2.094	0.0		13335349	54.4		109	852808	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.102	2.102	0.0	1.000	5171626	20.9		104	164936	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.371	2.371	0.0	1.000	6901339	19.2		105		
D 11 13C4-PFHpA										
367.00 > 322.00	2.426	2.426	0.0		12134092	53.6		107	900055	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.433	2.433	0.0	1.000	4981218	21.0		105	43737	
D 10 18O2 PFHxS										
403.00 > 84.00	2.441	2.441	0.0		16515071	50.5		107	985331	
D 14 13C4 PFOA										
417.00 > 372.00	2.785	2.785	0.0		12102061	52.5		105	734324	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.785	2.785	0.0	1.000	5288480	21.8		109	53044	
413.00 > 169.00	2.785	2.785	0.0	1.000	3184370		1.66(0.90-1.10)		127797	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.793	2.793	0.0	1.000	6133309	22.0		115		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.051	3.051	0.0	1.000	4963532	19.7		106	47602	
499.00 > 99.00	3.162	3.051	0.111	1.036	1107511		4.48(0.90-1.10)		58656	
D 17 13C4 PFOS										
503.00 > 80.00	3.154	3.154	0.0		12101283	48.6		102	552725	
20 Perfluorononanoic acid										
463.00 > 419.00	3.162	3.162	0.0	1.000	3464801	20.9		105	50386	
D 19 13C5 PFNA										
468.00 > 423.00	3.162	3.162	0.0		8694942	48.9		97.9	717732	
D 21 13C8 FOSA										
506.00 > 78.00	3.478	3.478	0.0		19988797	52.0		104	881136	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.478	3.478	0.0	1.000	8082683	21.7		108	513051	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.520	3.520	0.0	1.000	3099689	19.9		99.3	90923	
D 23 13C2 PFDA										
515.00 > 470.00	3.520	3.520	0.0		8271670	52.6		105	396852	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.830	3.830	0.0	1.000	3100882	21.0		109		
D 27 13C2 PFUnA										
565.00 > 520.00	3.847	3.847	0.0		5966249	50.9		102	311998	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.847	3.847	0.0	1.000	2268402	19.9		99.4	55754	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.144	4.144	0.0	1.000	2018590	21.1		105	46129	
D 30 13C2 PFDoA										
615.00 > 570.00	4.144	4.144	0.0		5219502	47.0		94.1	174260	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.408	4.408	0.0	1.000	1939360	20.5		102	43324	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.658	4.658	0.0	1.000	3860786	23.3		117	51554	
713.00 > 169.00	4.648	4.658	-0.010	0.998	582427		6.63(0.00-0.00)		74100	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.658	4.658	0.0		11070034	48.7		97.4	433175	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.072	5.072	0.0		5421317	43.5		87.0	88473	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.331	5.331	0.0	1.000	1878	-0.5809		-2.9	0.6	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.438	5.438	0.0	1.000	1715614	16.0		79.8	2264	

Reagents:

LCPFC-L4_00024 Amount Added: 1.00 Units: mL

Report Date: 29-Dec-2016 09:43:48 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_042.d

Injection Date: 27-Dec-2016 21:57:43 Instrument ID: A8_N

Lims ID: CCV L4

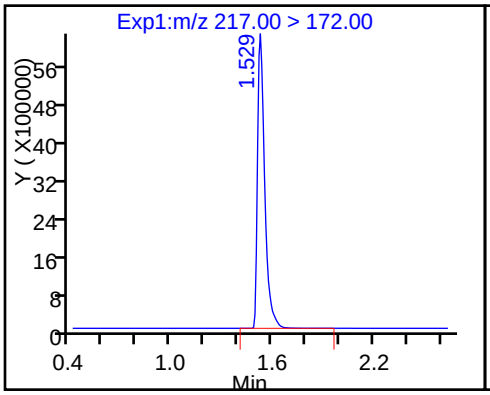
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 42

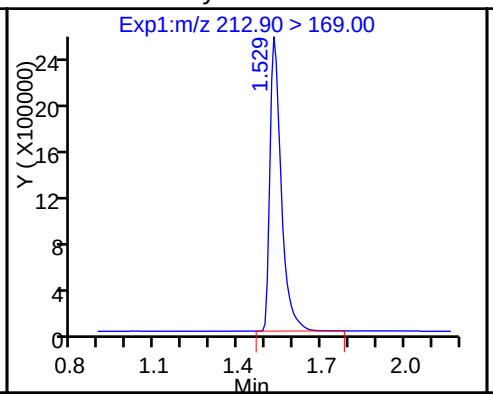
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

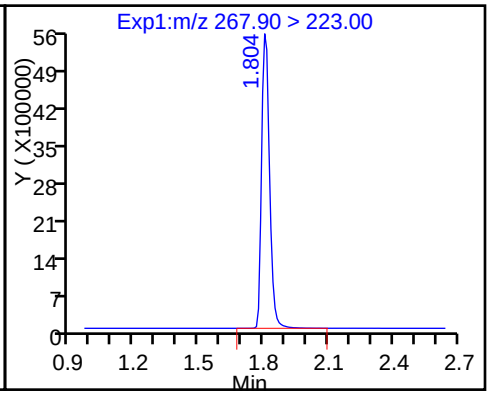
D 2 13C4 PFBA



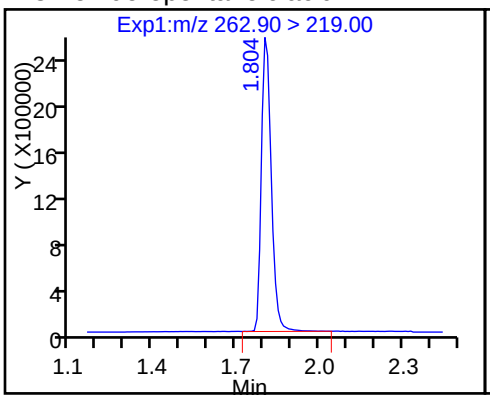
1 Perfluorobutyric acid



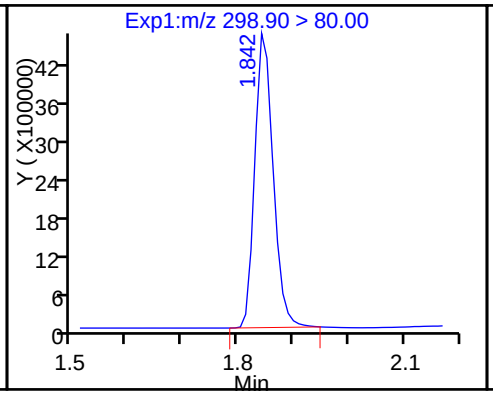
D 4 13C5-PFPeA



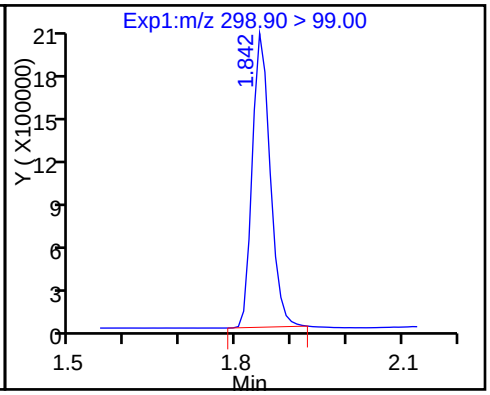
3 Perfluoropentanoic acid



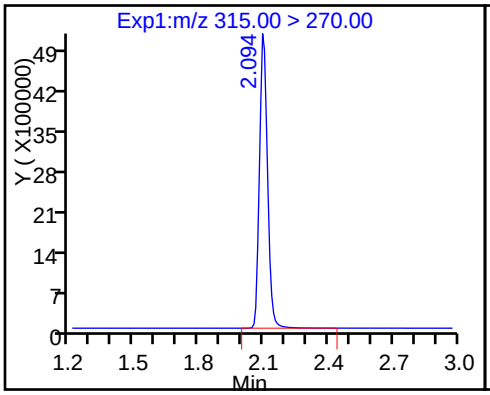
5 Perfluorobutanesulfonic acid



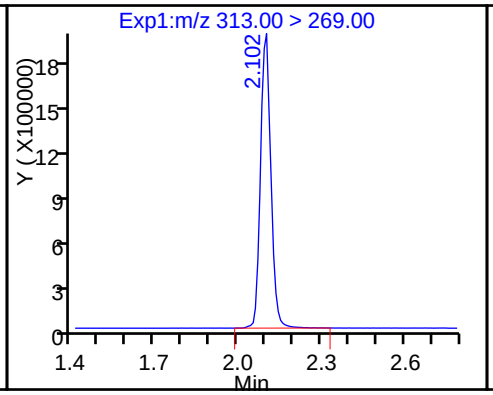
5 Perfluorobutanesulfonic acid



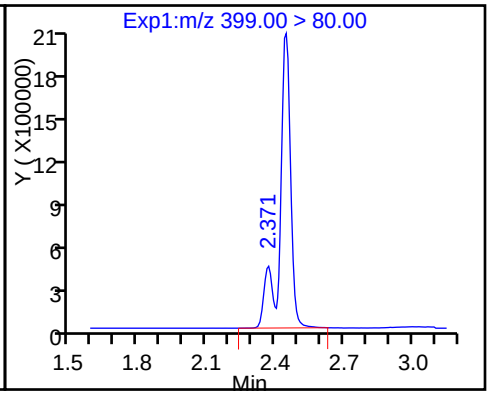
D 6 13C2 PFHxA



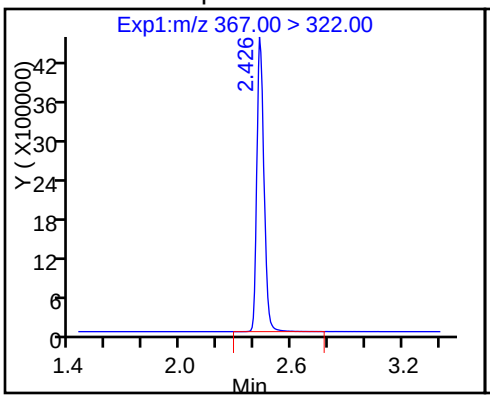
7 Perfluorohexanoic acid



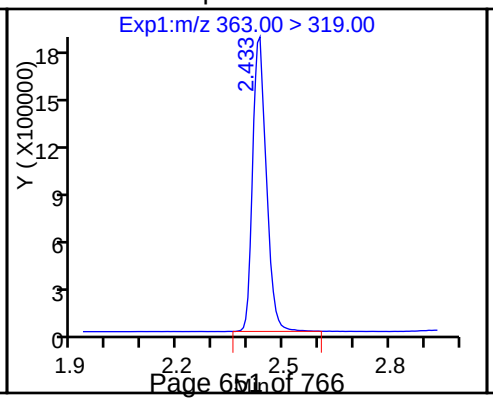
9 Perfluorohexanesulfonic acid



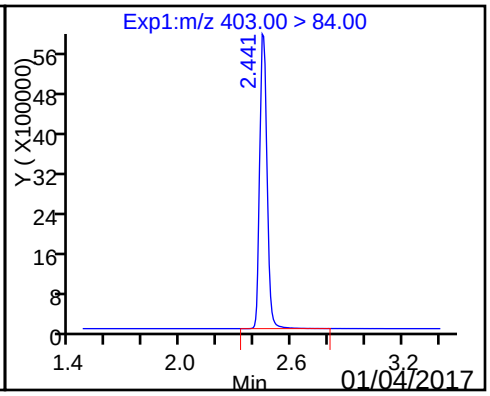
D 11 13C4-PFHpA



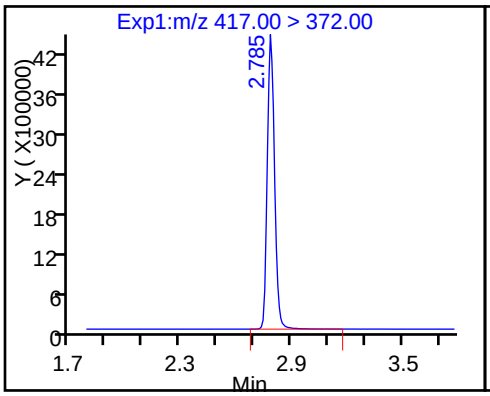
12 Perfluoroheptanoic acid



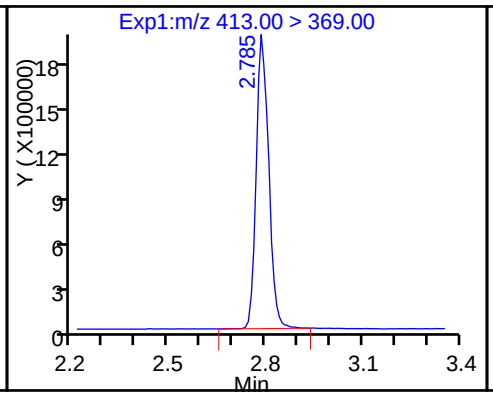
D 10 18O2 PFHxS



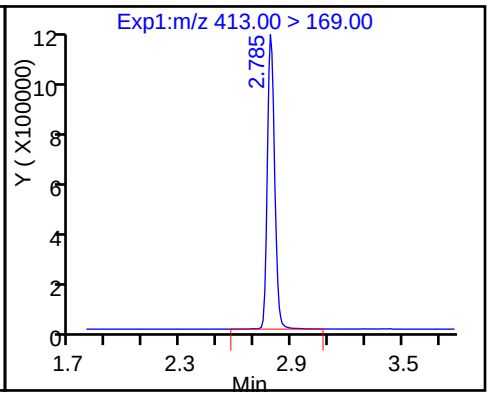
D 14 13C4 PFOA



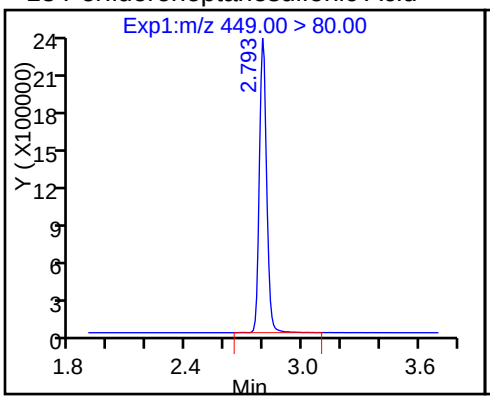
15 Perfluorooctanoic acid



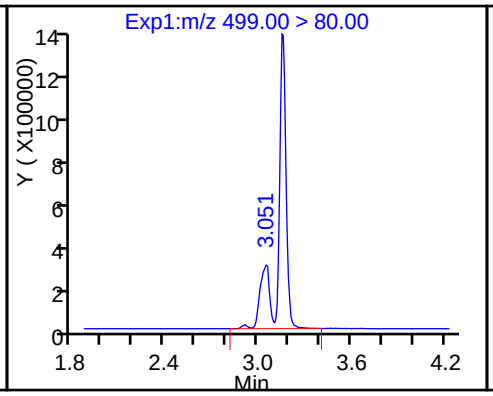
15 Perfluorooctanoic acid



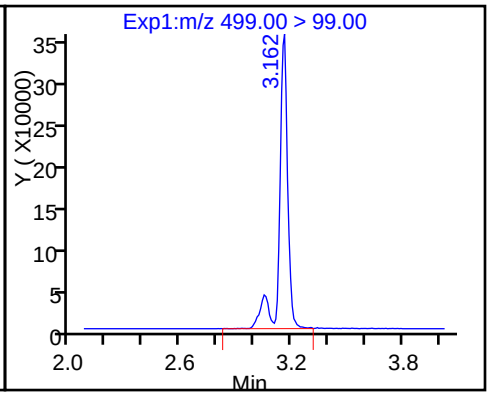
13 Perfluoroheptanesulfonic Acid



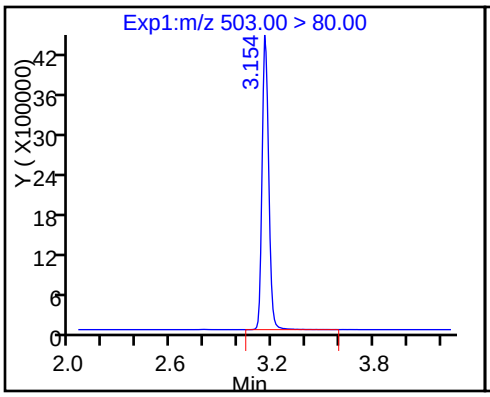
18 Perfluorooctane sulfonic acid



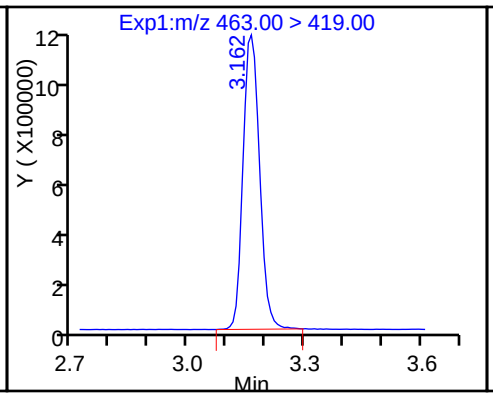
18 Perfluorooctane sulfonic acid



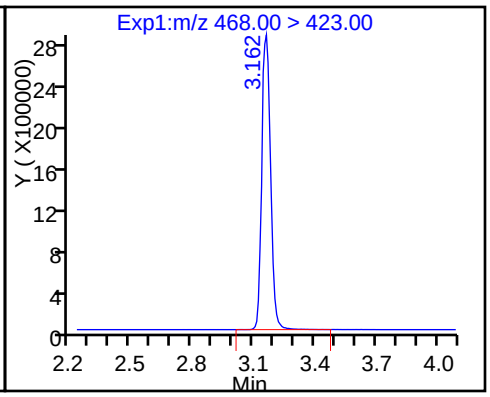
D 17 13C4 PFOS



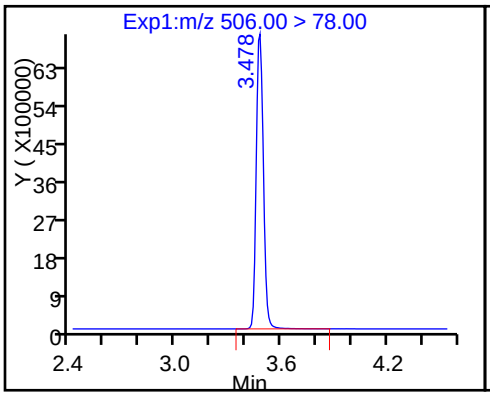
20 Perfluorononanoic acid



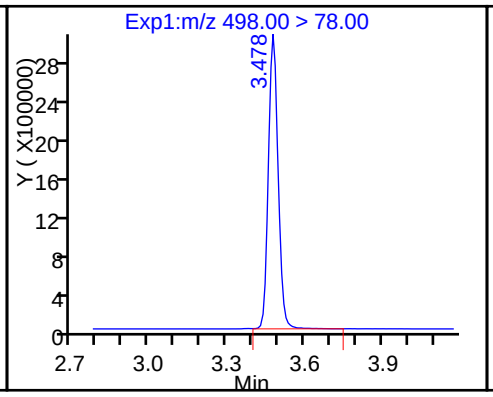
D 19 13C5 PFNA



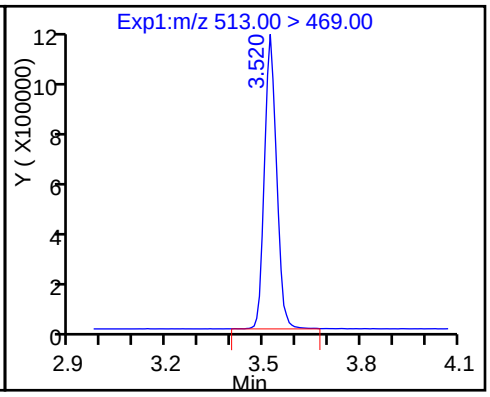
D 21 13C8 FOSA



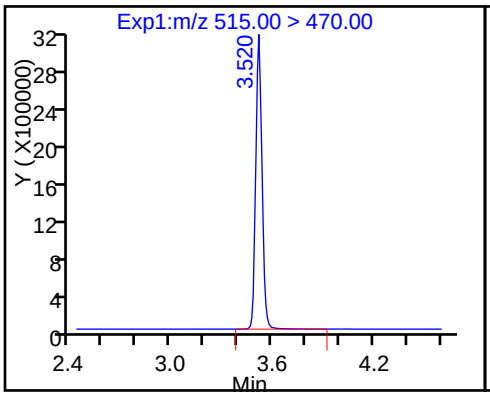
22 Perfluorooctane Sulfonamide



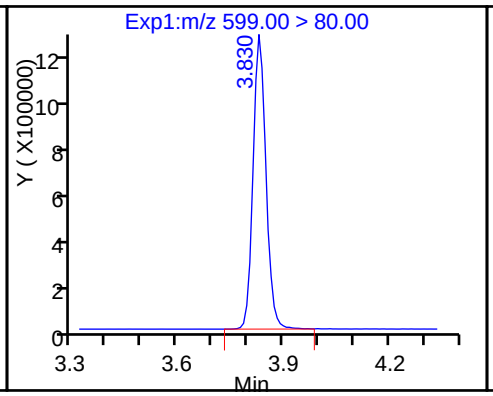
24 Perfluorodecanoic acid



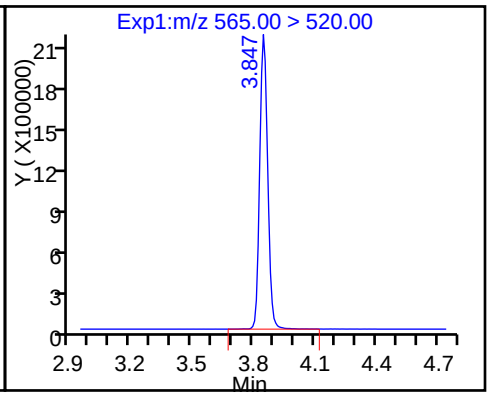
D 23 13C2 PFDA



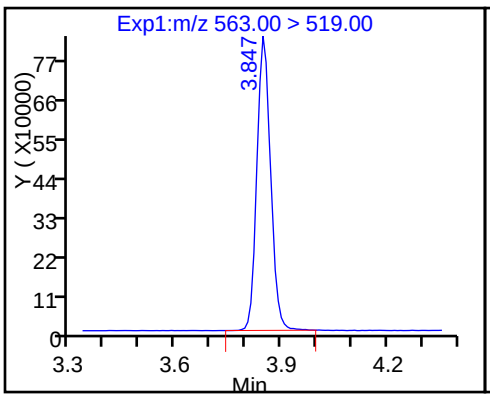
26 Perfluorodecane Sulfonic acid



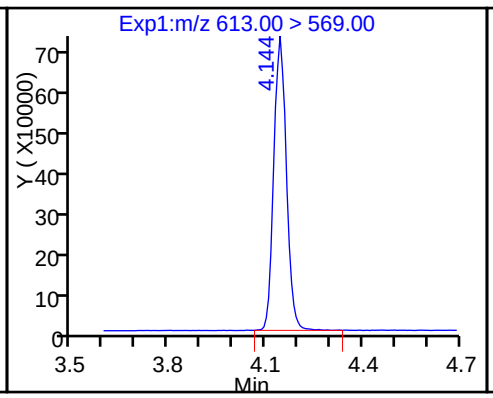
D 27 13C2 PFUnA



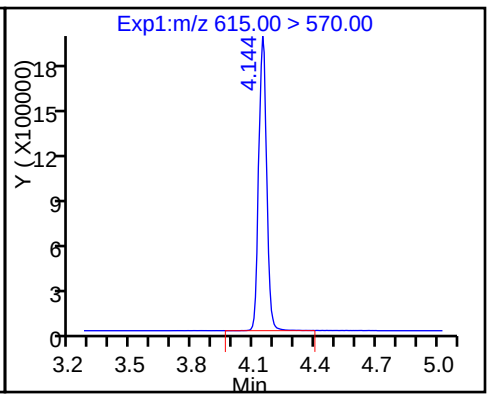
28 Perfluoroundecanoic acid



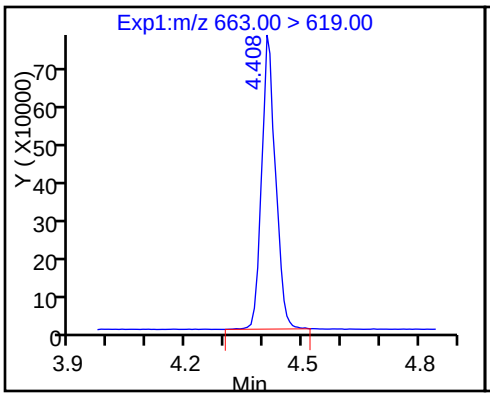
29 Perfluorododecanoic acid



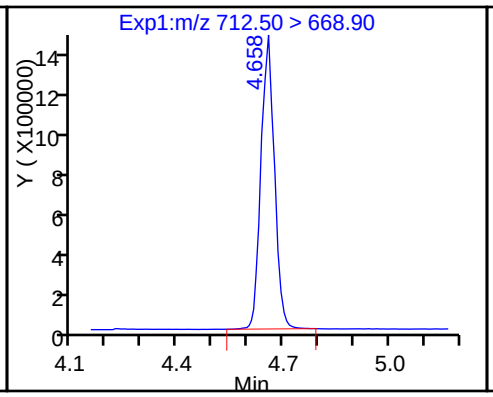
D 30 13C2 PFDoA



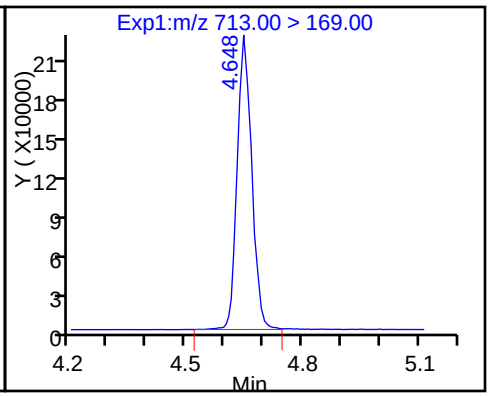
31 Perfluorotridecanoic acid



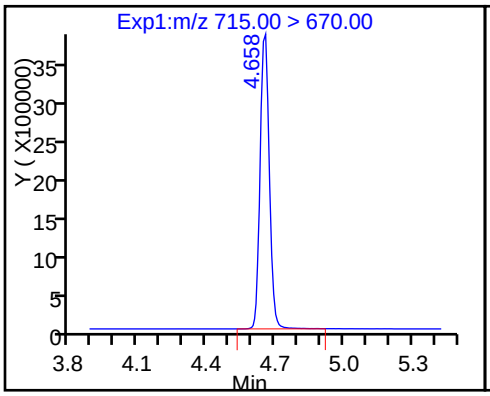
33 Perfluorotetradecanoic acid



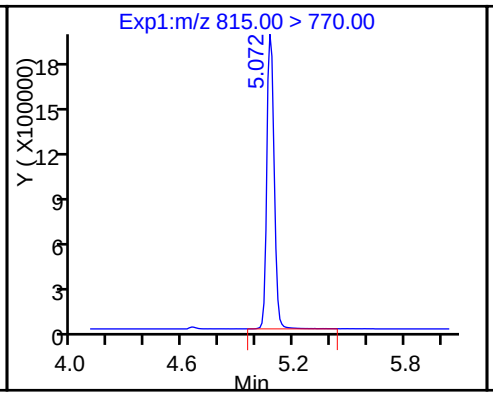
33 Perfluorotetradecanoic acid



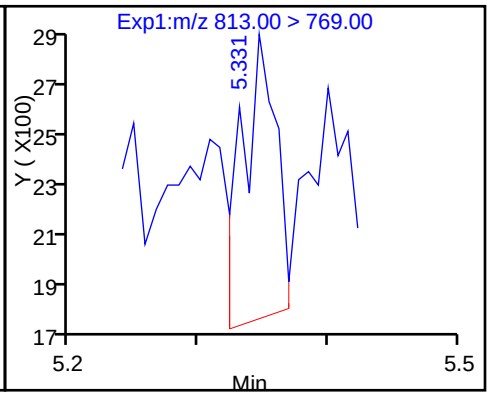
D 32 13C2-PFTeDA



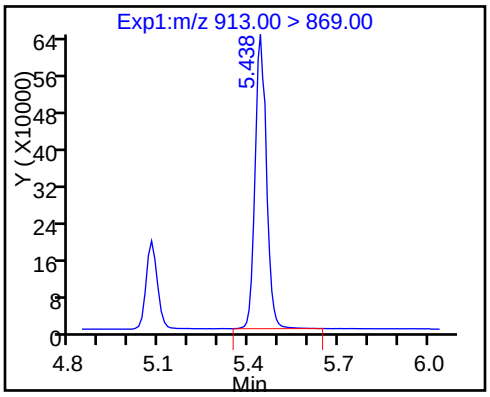
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: CCV 320-144104/55 Calibration Date: 12/27/2016 23:35

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 27DEC2016A_055.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9048		53.0	50.0	6.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.016		51.5	50.0	2.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.550		48.3	44.2	9.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9321		50.2	50.0	0.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.036		45.8	45.5	0.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.002		51.2	50.0	2.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.051		52.4	50.0	4.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.142		49.3	47.6	3.6	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.030		48.1	46.4	3.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9760		51.3	50.0	2.5	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9288		49.8	50.0	-0.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9498		50.3	50.0	0.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6162		50.9	48.2	5.5	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9325		48.8	50.0	-2.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9274		50.5	50.0	1.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8905		49.1	50.0	-1.8	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.718		54.2	50.0	8.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.0021		0.200	50.0	-101.0*	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7959		38.6	50.0	-22.8	25.0
13C4 PFBA	Ave	347743	349914		50.3	50.0	0.6	50.0
13C5-PFPeA	Ave	266072	260520		49.0	50.0	-2.1	50.0
13C2 PFHxA	Ave	245110	245679		50.1	50.0	0.2	50.0
13C4-PFHpA	Ave	226344	213487		47.2	50.0	-5.7	50.0
18O2 PFHxS	Ave	326976	329404		47.7	47.3	0.7	50.0
13C4 PFOA	Ave	230362	211610		45.9	50.0	-8.1	50.0
13C4 PFOS	Ave	248847	250823		48.2	47.8	0.8	50.0
13C5 PFNA	Ave	177687	162753		45.8	50.0	-8.4	50.0
13C8 FOSA	Ave	384141	383906		50.0	50.0	-0.0	50.0
13C2 PFDA	Ave	157302	150166		47.7	50.0	-4.5	50.0
13C2 PFUnA	Ave	117250	108589		46.3	50.0	-7.4	50.0
13C2 PFDoA	Ave	110957	99910		45.0	50.0	-10.0	50.0
13C2-PFTeDA	Ave	227387	211978		46.6	50.0	-6.8	50.0
13C2-PFHxDA	Ave	124568	99813		40.1	50.0	-19.9	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_055.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 27-Dec-2016 23:35:08 ALS Bottle#: 41 Worklist Smp#: 55
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 10:02:34 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 10:02:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.529	1.529	0.0		17495700	50.3		101	967176	
1 Perfluorobutyric acid										
212.90 > 169.00	1.529	1.529	0.0	1.000	15829252	53.0		106	131083	
D 4 13C5-PFPeA										
267.90 > 223.00	1.804	1.804	0.0		13025984	49.0		97.9	1281872	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.804	1.804	0.0	1.000	13231049	51.5		103	146175	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.842	0.0	1.000	22564399	48.3		109		
298.90 > 99.00	1.842	1.842	0.0	1.000	10632012		2.12(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.094	2.094	0.0		12283962	50.1		100	640898	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.094	2.094	0.0	1.000	11449646	50.2		100	272961	
D 11 13C4-PFHpA										
367.00 > 322.00	2.424	2.424	0.0		10674363	47.2		94.3	659533	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.424	2.424	0.0	1.000	10690410	51.2		102	83159	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.418	2.418	0.0	1.000	15523059	45.8		101		
D 10 18O2 PFHxS										
403.00 > 84.00	2.446	2.446	0.0		15580786	47.7		101	1424725	
D 14 13C4 PFOA										
417.00 > 372.00	2.782	2.782	0.0		10580521	45.9		91.9	609714	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.782	2.782	0.0	1.000	11125093	52.4		105	116777	
413.00 > 169.00	2.782	2.782	0.0	1.000	6745477		1.65(0.90-1.10)		342731	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.790	2.790	0.0	1.000	13634082	49.3		104		
D 17 13C4 PFOS										
503.00 > 80.00	3.159	3.159	0.0		11989342	48.2		101	302685	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.048	3.048	0.0	1.000	11991515	48.1		104	79340	
499.00 > 99.00	3.159	3.048	0.111	1.037	2667779		4.49(0.90-1.10)		144360	
20 Perfluorononanoic acid										
463.00 > 419.00	3.159	3.159	0.0	1.000	7941896	51.3		103	141613	
D 19 13C5 PFNA										
468.00 > 423.00	3.159	3.159	0.0		8137627	45.8		91.6	431547	
D 21 13C8 FOSA										
506.00 > 78.00	3.482	3.482	0.0		19195303	50.0		99.9	686551	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.482	3.482	0.0	1.000	17828937	49.8		99.6	461161	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.516	3.516	0.0	1.000	7131046	50.3		101	161091	
D 23 13C2 PFDA										
515.00 > 470.00	3.524	3.524	0.0		7508299	47.7		95.5	309440	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.835	3.835	0.0	1.000	7449268	50.9		106		
D 27 13C2 PFUnA										
565.00 > 520.00	3.843	3.843	0.0		5429449	46.3		92.6	311651	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.852	3.852	0.0	1.000	5062906	48.8		97.5	125558	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.142	4.142	0.0	1.000	4632678	50.5		101	114701	
D 30 13C2 PFDoA										
615.00 > 570.00	4.142	4.142	0.0		4995512	45.0		90.0	128822	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.413	4.413	0.0	1.000	4448231	49.1		98.2	85795	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.654	4.654	0.0	1.000	8582170	54.2		108	101553	
713.00 > 169.00	4.644	4.654	-0.010	0.998	1307230		6.57(0.00-0.00)		117748	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.654	4.654	0.0		10598917	46.6		93.2	525014	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.070	5.070	0.0		4990635	40.1		80.1	78079	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.329	5.329	0.0	1.000	10526	-0.4893		-1.0	1.1	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.428	5.428	0.0	1.000	3975932	38.6		77.2	5185	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 29-Dec-2016 10:02:36 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_055.d

Injection Date: 27-Dec-2016 23:35:08 Instrument ID: A8_N

Lims ID: CCV L5

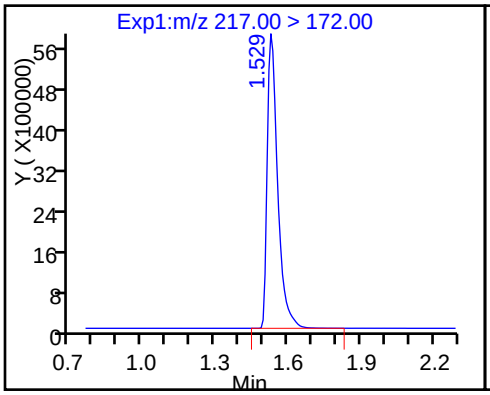
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 55

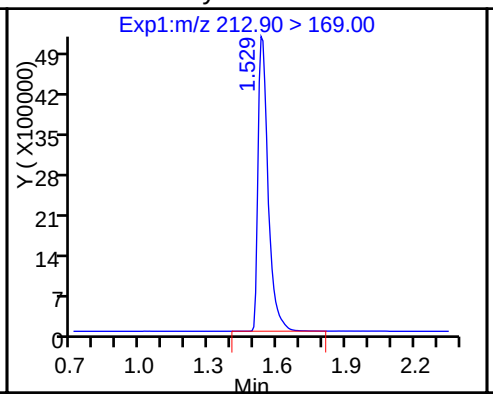
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

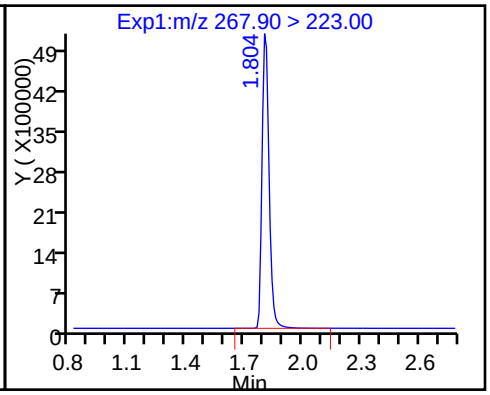
D 2 13C4 PFBA



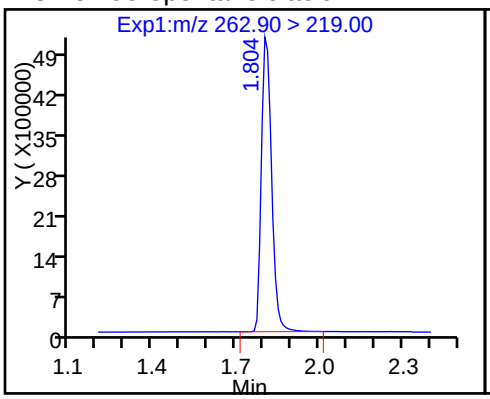
1 Perfluorobutyric acid



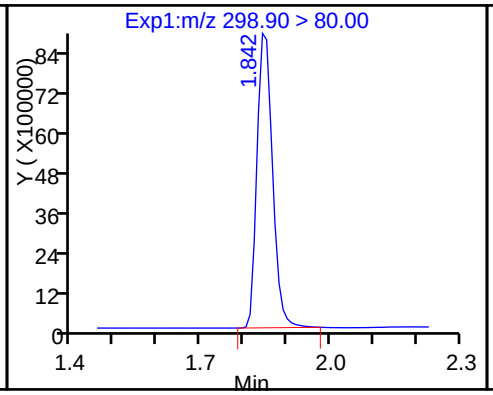
D 4 13C5-PFPeA



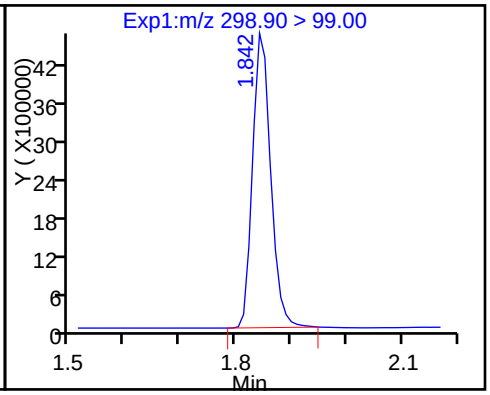
3 Perfluoropentanoic acid



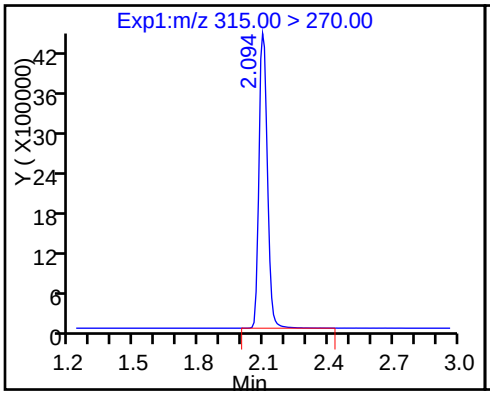
5 Perfluorobutanesulfonic acid



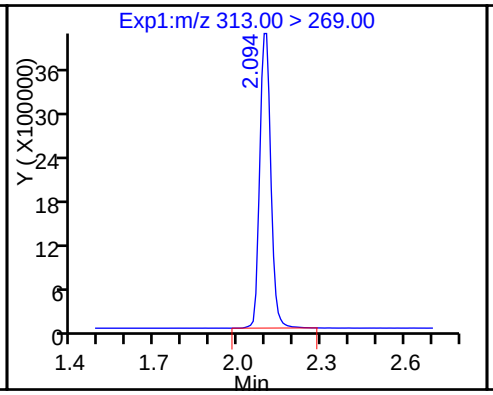
5 Perfluorobutanesulfonic acid



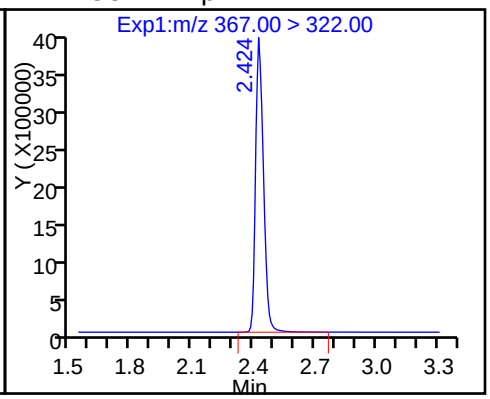
D 6 13C2 PFHxA



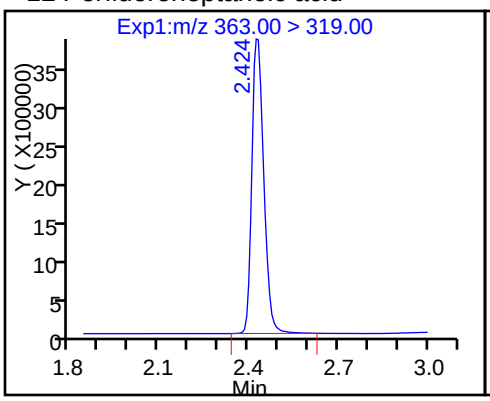
7 Perfluorohexanoic acid



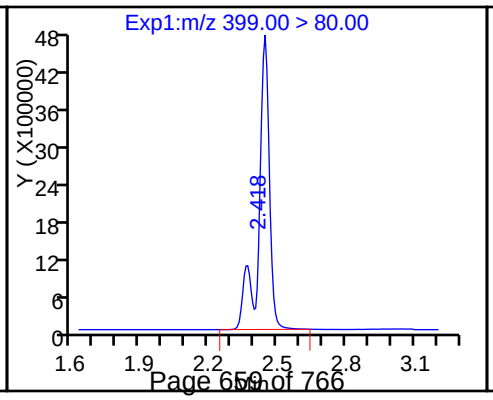
D 11 13C4-PFHpA



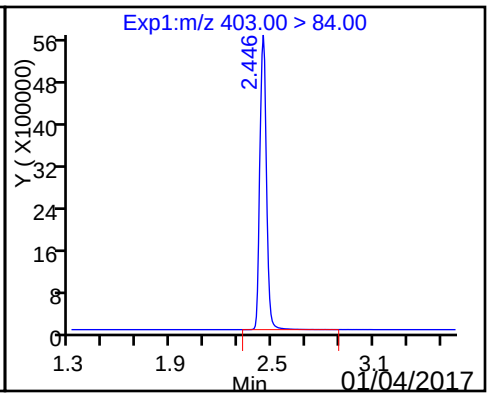
12 Perfluoroheptanoic acid



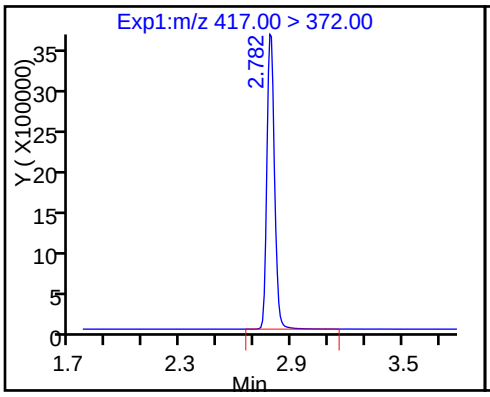
9 Perfluorohexanesulfonic acid



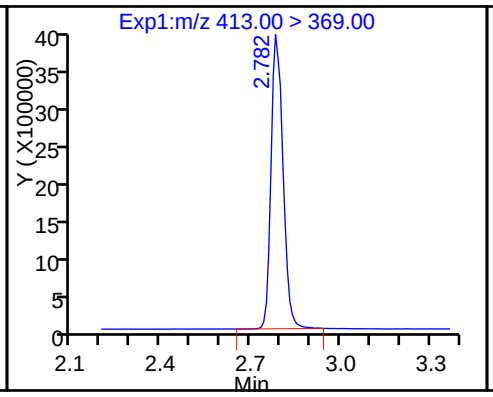
D 10 18O2 PFHxS



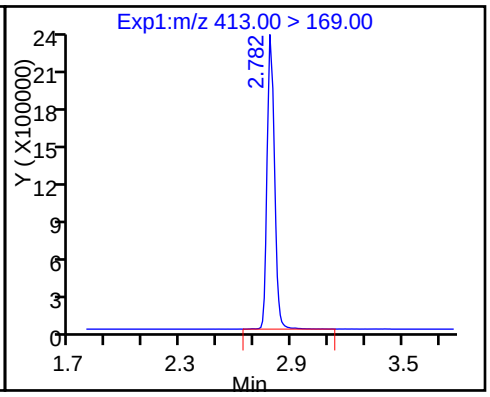
D 14 13C4 PFOA



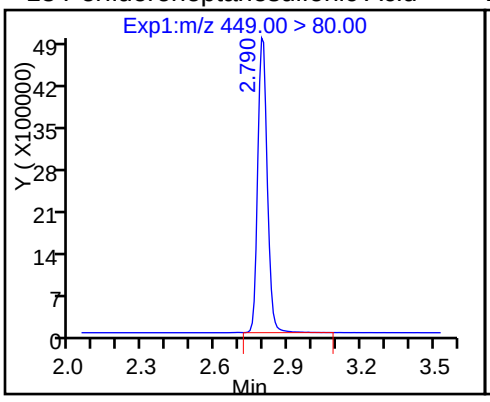
15 Perfluorooctanoic acid



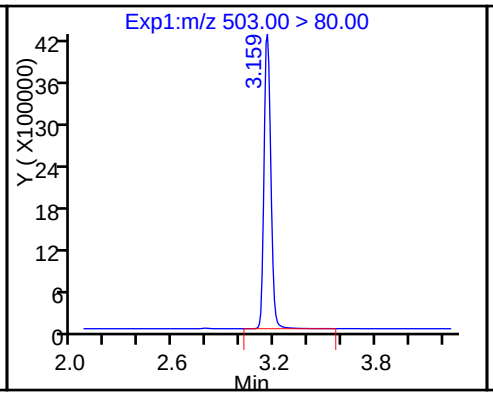
15 Perfluorooctanoic acid



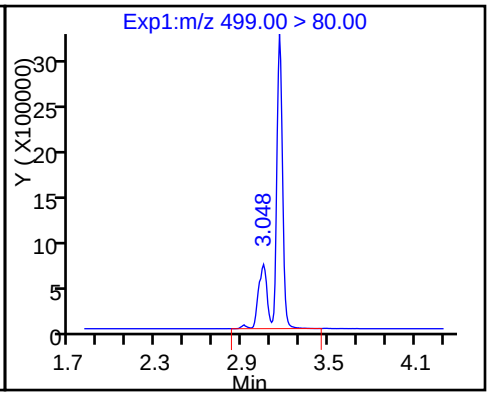
13 Perfluoroheptanesulfonic Acid



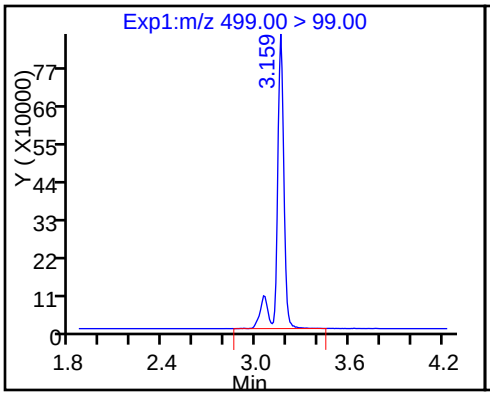
D 17 13C4 PFOS



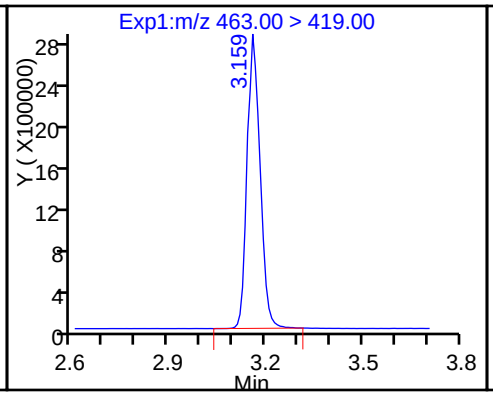
18 Perfluorooctane sulfonic acid



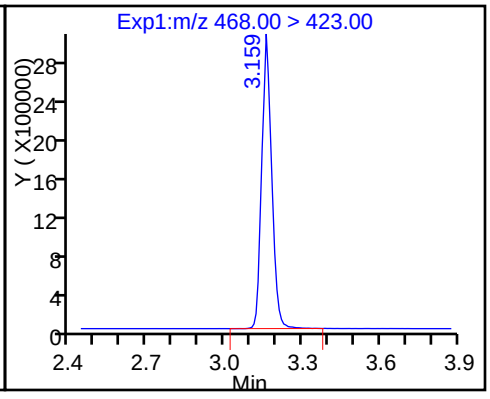
18 Perfluorooctane sulfonic acid



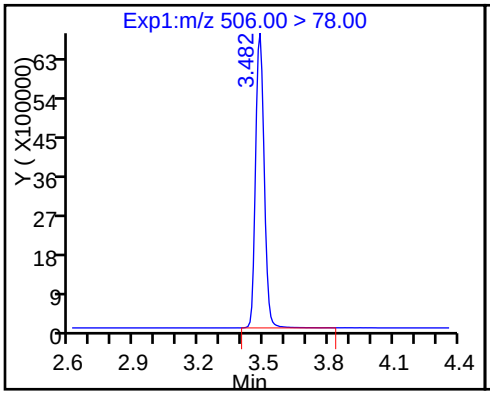
20 Perfluorononanoic acid



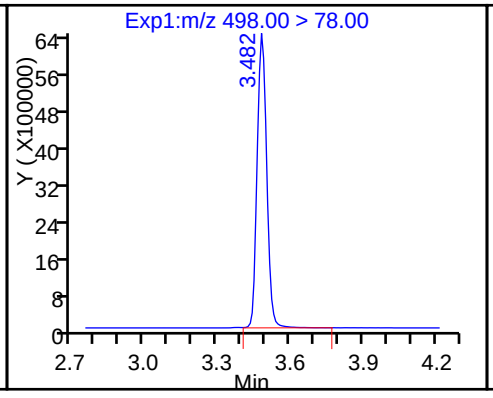
D 19 13C5 PFNA



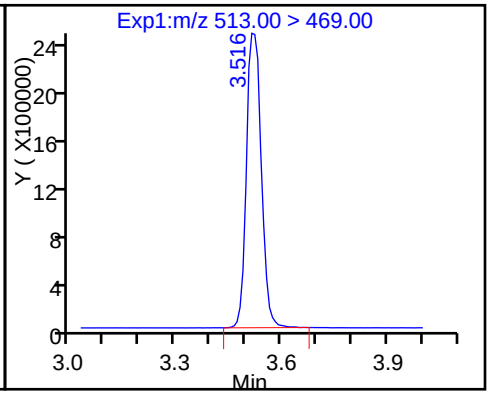
D 21 13C8 FOSA



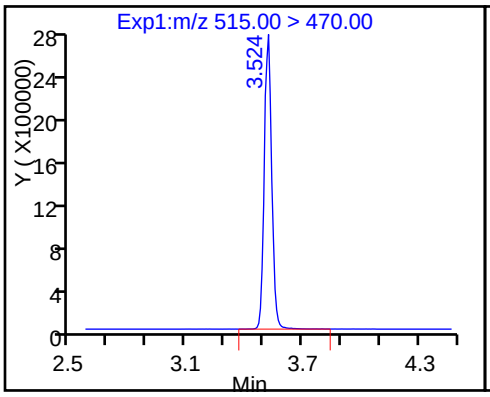
22 Perfluorooctane Sulfonamide



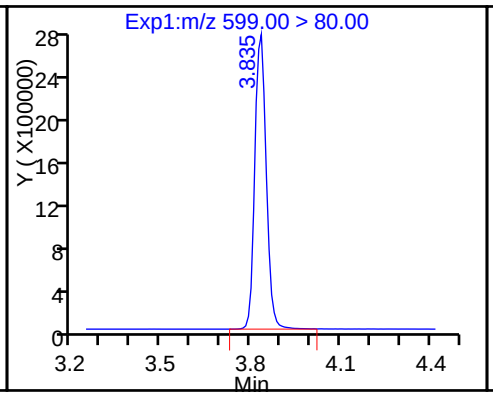
24 Perfluorodecanoic acid



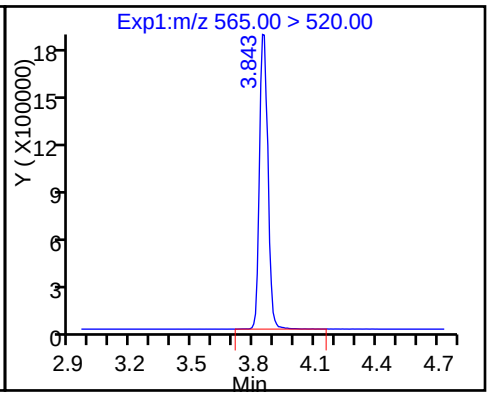
D 23 13C2 PFDA



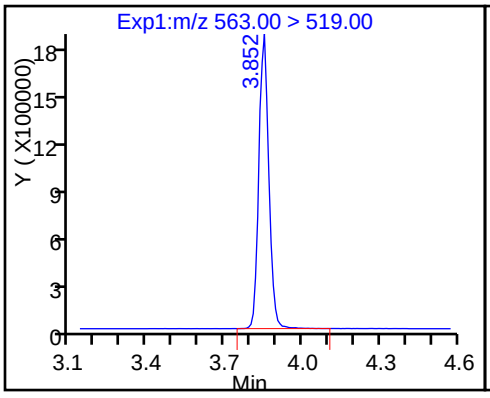
26 Perfluorodecane Sulfonic acid



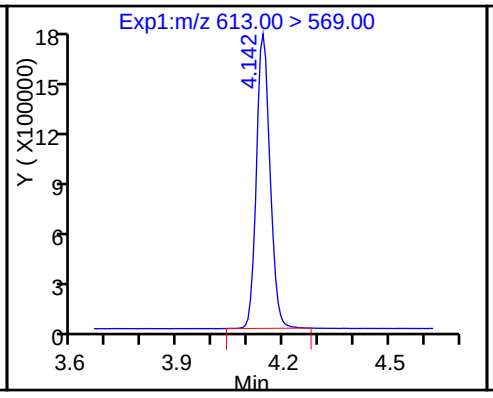
D 27 13C2 PFUnA



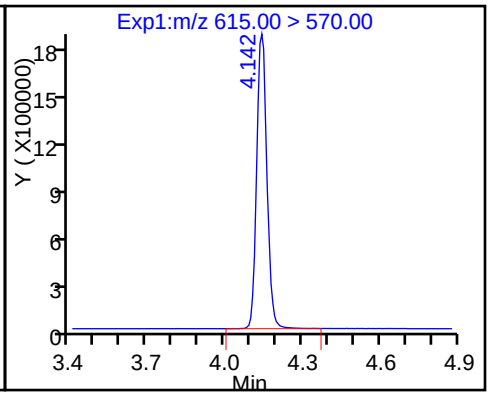
28 Perfluoroundecanoic acid



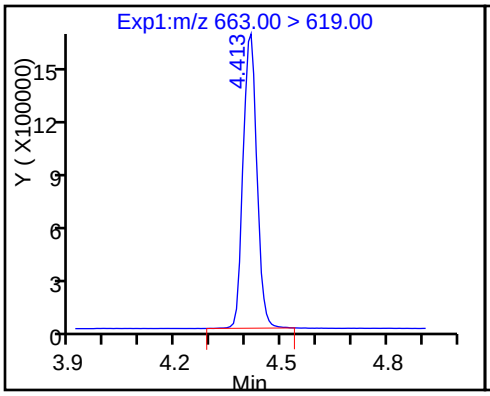
29 Perfluorododecanoic acid



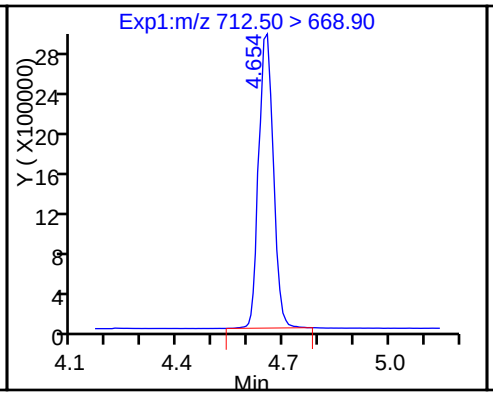
D 30 13C2 PFDoA



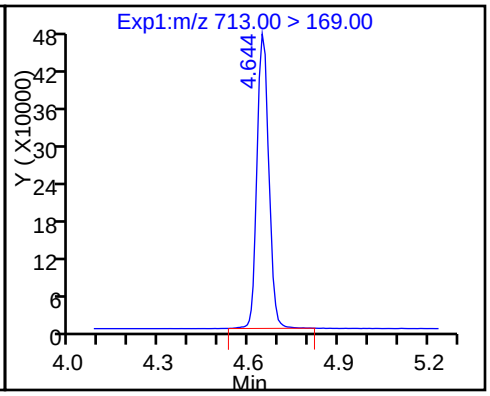
31 Perfluorotridecanoic acid



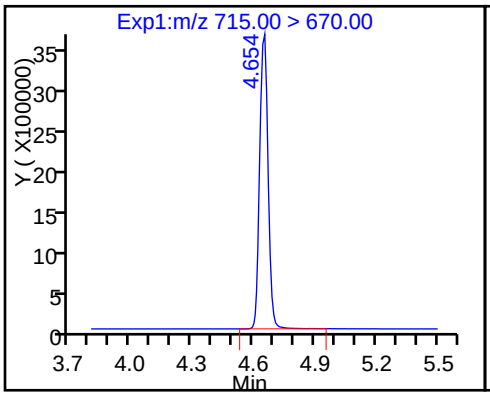
33 Perfluorotetradecanoic acid



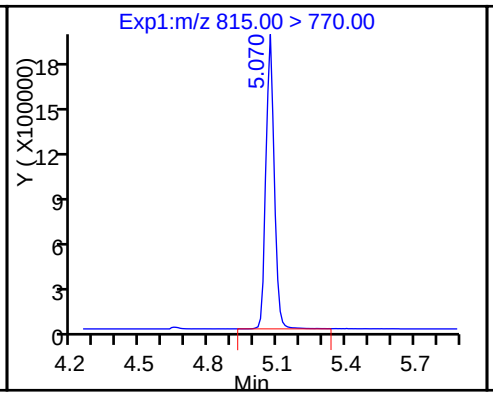
33 Perfluorotetradecanoic acid



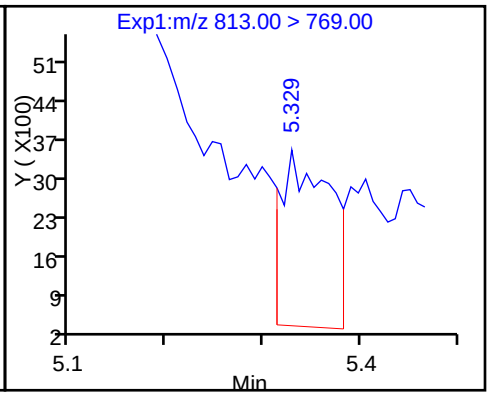
D 32 13C2-PFTeDA



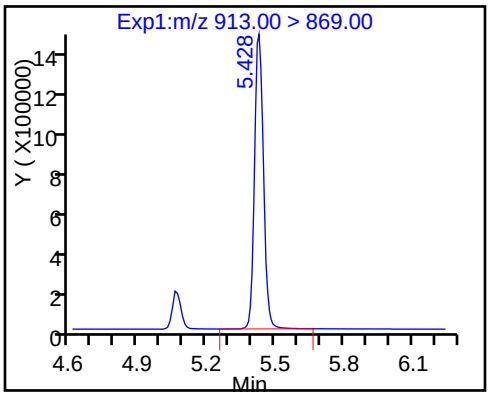
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: CCV 320-144104/63 Calibration Date: 12/28/2016 00:35

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 27DEC2016A_063.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9609		22.5	20.0	12.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.082		21.9	20.0	9.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.669		20.8	17.7	17.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9750		21.0	20.0	5.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.008		20.6	20.0	3.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	0.8972		15.9	18.2	-12.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.264		21.8	19.0	14.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.068		21.3	20.0	6.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9636		20.2	20.0	1.2	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.050		19.6	18.6	5.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.018		21.8	20.0	9.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9650		20.5	20.0	2.3	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6265		20.7	19.3	7.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9893		20.7	20.0	3.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9871		21.5	20.0	7.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9822		21.7	20.0	8.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.928		24.3	20.0	21.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.0002		0.200	20.0	-103.0*	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7926		15.4	20.0	-23.1	25.0
13C4 PFBA	Ave	347743	369431		53.1	50.0	6.2	50.0
13C5-PFPeA	Ave	266072	283690		53.3	50.0	6.6	50.0
13C2 PFHxA	Ave	245110	257067		52.4	50.0	4.9	50.0
13C4-PFHpA	Ave	226344	239716		53.0	50.0	5.9	50.0
18O2 PFHxS	Ave	326976	357599		51.7	47.3	9.4	50.0
13C4 PFOA	Ave	230362	241397		52.4	50.0	4.8	50.0
13C4 PFOS	Ave	248847	261447		50.2	47.8	5.1	50.0
13C5 PFNA	Ave	177687	175073		49.3	50.0	-1.5	50.0
13C8 FOSA	Ave	384141	399179		52.0	50.0	3.9	50.0
13C2 PFDA	Ave	157302	158331		50.3	50.0	0.7	50.0
13C2 PFUnA	Ave	117250	116803		49.8	50.0	-0.4	50.0
13C2 PFDoA	Ave	110957	100396		45.2	50.0	-9.5	50.0
13C2-PFTeDA	Ave	227387	218940		48.1	50.0	-3.7	50.0
13C2-PFHxDA	Ave	124568	106432		42.7	50.0	-14.6	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_063.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 28-Dec-2016 00:35:06 ALS Bottle#: 40 Worklist Smp#: 63
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 10:02:48 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: westendorfc Date: 28-Dec-2016 11:24:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		18471562	53.1		106	1240437	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.534	0.0	1.000	7099981	22.5		113	59500	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		14184491	53.3		107	790520	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	6139721	21.9		110	86020	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.849	0.0	1.000	10552042	20.8		118		
298.90 > 99.00	1.849	1.849	0.0	1.000	4559118		2.31(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.093	2.093	0.0		12853325	52.4		105	785550	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.093	2.093	0.0	1.000	5012616	21.0		105	133959	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.448	2.448	0.0	1.000	5839228	15.9		87.1		
D 11 13C4-PFHpA										
367.00 > 322.00	2.432	2.432	0.0		11985816	53.0		106	871726	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.432	2.432	0.0	1.000	4832683	20.6		103	39415	
D 10 18O2 PFHxS										
403.00 > 84.00	2.448	2.448	0.0		16914437	51.7		109	1021289	
D 14 13C4 PFOA										
417.00 > 372.00	2.784	2.784	0.0		12069845	52.4		105	694030	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.792	2.792	0.0	1.000	5156506	21.3		106	51124	
413.00 > 169.00	2.792	2.792	0.0	1.000	3171206		1.63(0.90-1.10)		157177	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.792	2.792	0.0	1.000	6292915	21.8		115		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.161	3.161	0.0	1.000	5094365	19.6		106	173758	
499.00 > 99.00	3.153	3.161	-0.008	0.997	1150370		4.43(0.90-1.10)		59913	
D 17 13C4 PFOS										
503.00 > 80.00	3.153	3.153	0.0		12497161	50.2		105	332900	
20 Perfluorononanoic acid										
463.00 > 419.00	3.161	3.161	0.0	1.000	3373990	20.2		101	52850	
D 19 13C5 PFNA										
468.00 > 423.00	3.161	3.161	0.0		8753625	49.3		98.5	612932	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.484	0.0		19958945	52.0		104	636238	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.484	3.484	0.0	1.000	8123810	21.8		109	428776	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.518	3.518	0.0	1.000	3055936	20.5		102	94340	
D 23 13C2 PFDA										
515.00 > 470.00	3.518	3.518	0.0		7916571	50.3		101	249007	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.828	3.828	0.0	1.000	3158041	20.7		107		
D 27 13C2 PFUnA										
565.00 > 520.00	3.845	3.845	0.0		5840170	49.8		99.6	311635	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.845	3.845	0.0	1.000	2310990	20.7		103	53865	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.135	4.135	0.0	1.000	1981946	21.5		108	50067	
D 30 13C2 PFDoA										
615.00 > 570.00	4.135	4.135	0.0		5019804	45.2		90.5	160229	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.407	4.407	0.0	1.000	1972179	21.7		108	47821	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.645	4.645	0.0	1.000	3871713	24.3		122	49151	
713.00 > 169.00	4.645	4.645	0.0	1.000	582072		6.65(0.00-0.00)		55778	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.645	4.645	0.0		10947003	48.1		96.3	400701	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.059	0.0		5321583	42.7		85.4	92767	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.345	5.345	0.0	1.000	478	-0.5947		-3.0	0.4	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.421	5.421	0.0	1.000	1591408	15.4		76.9	1963	

Reagents:

LCPFC-L4_00024 Amount Added: 1.00 Units: mL

Report Date: 29-Dec-2016 10:02:49 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_063.d

Injection Date: 28-Dec-2016 00:35:06 Instrument ID: A8_N

Lims ID: CCV L4

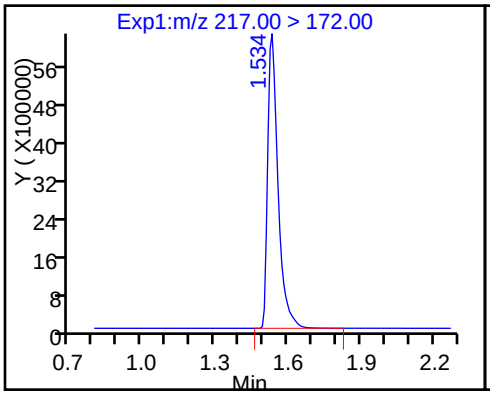
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 63

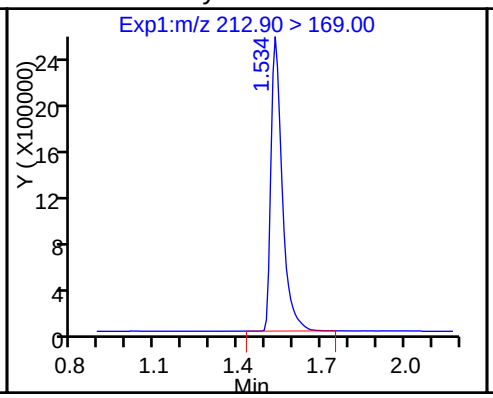
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

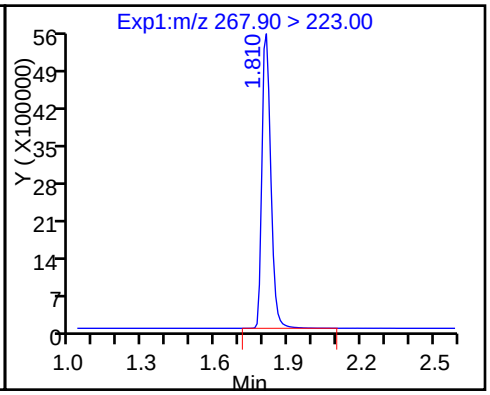
D 2 13C4 PFBA



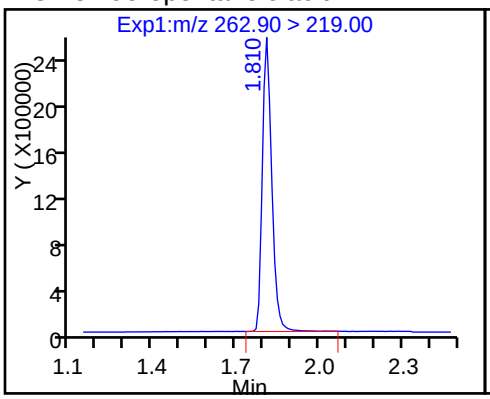
1 Perfluorobutyric acid



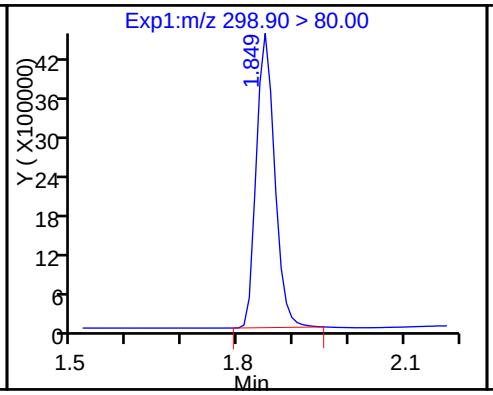
D 4 13C5-PFPeA



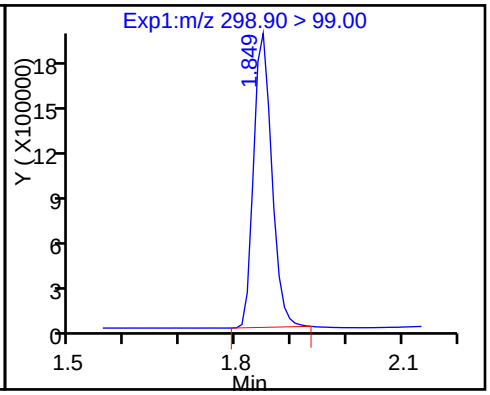
3 Perfluoropentanoic acid



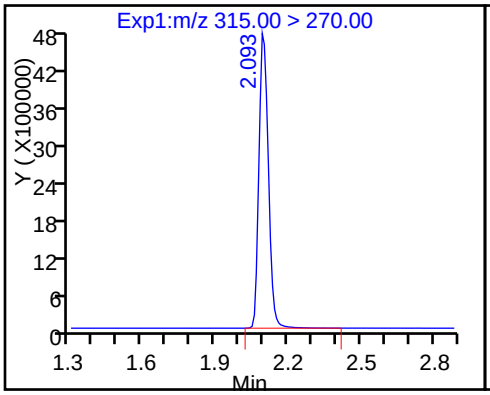
5 Perfluorobutanesulfonic acid



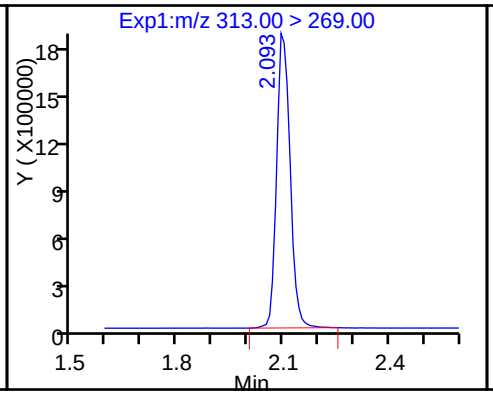
5 Perfluorobutanesulfonic acid



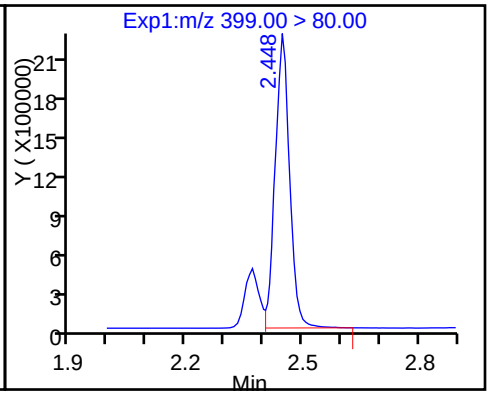
D 6 13C2 PFHxA



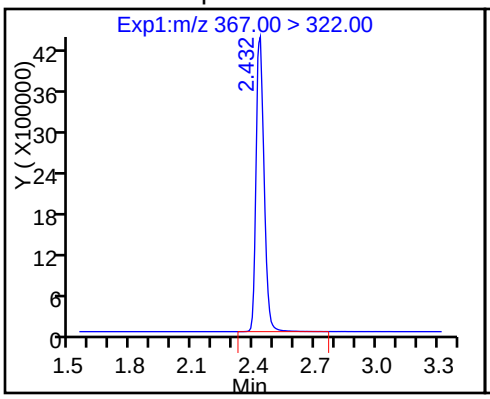
7 Perfluorohexanoic acid



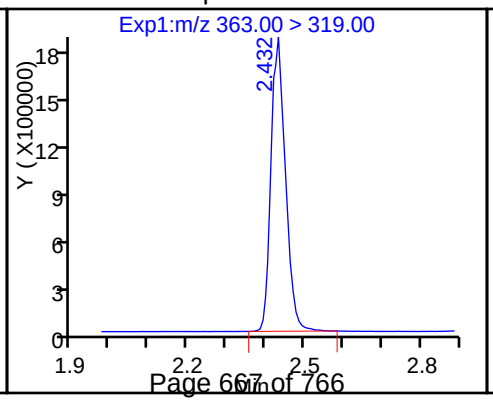
9 Perfluorohexanesulfonic acid



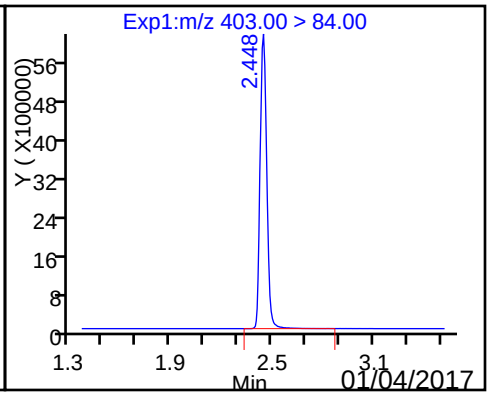
D 11 13C4-PFHpA



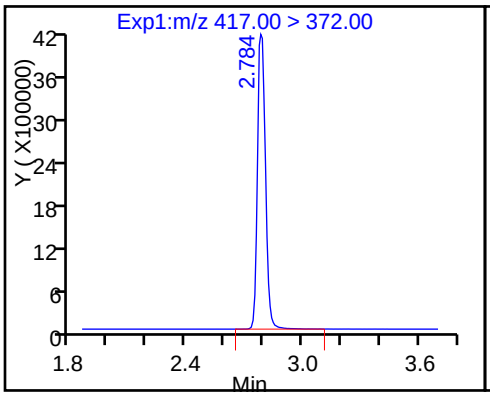
12 Perfluoroheptanoic acid



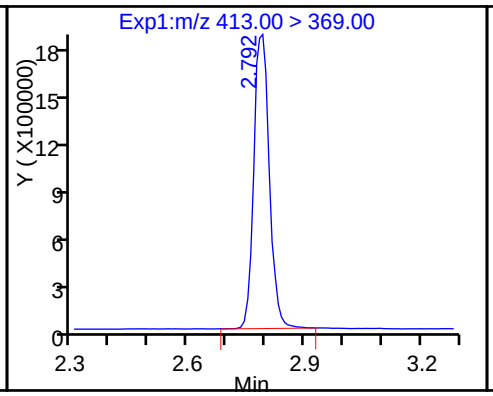
D 10 18O2 PFHxS



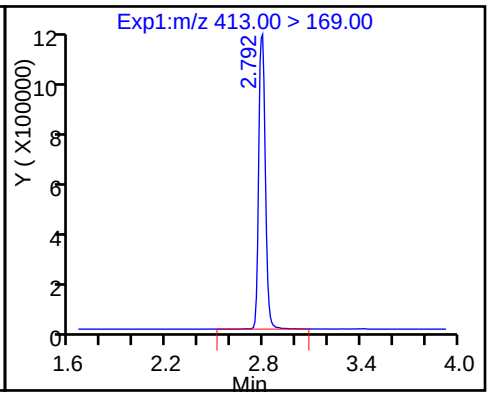
D 14 13C4 PFOA



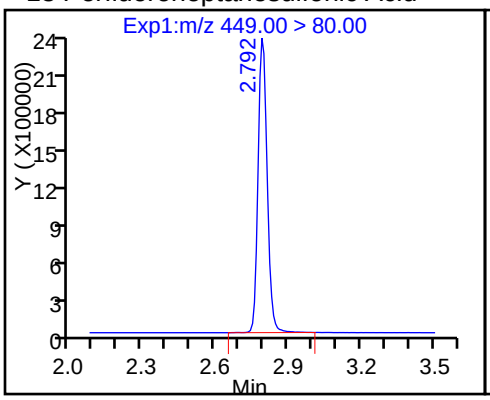
15 Perfluorooctanoic acid



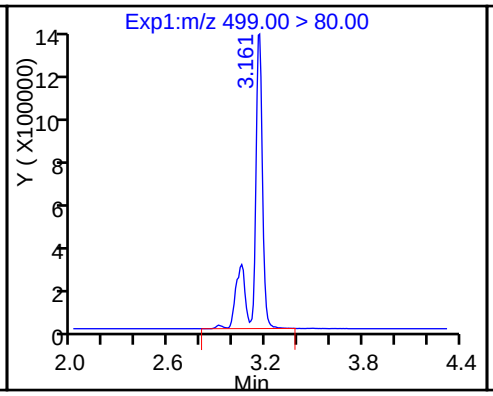
15 Perfluorooctanoic acid



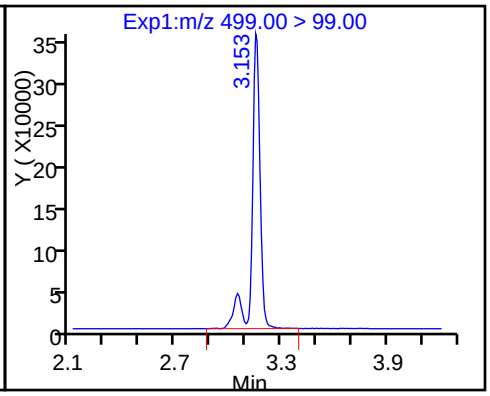
13 Perfluoroheptanesulfonic Acid



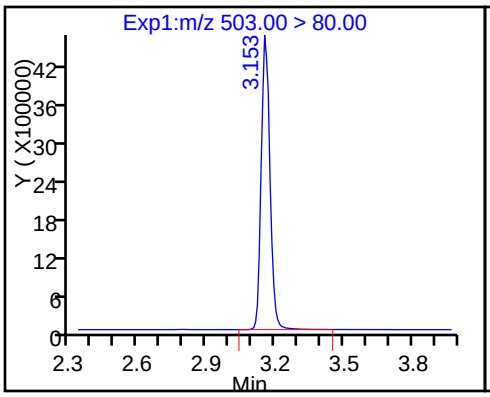
18 Perfluorooctane sulfonic acid



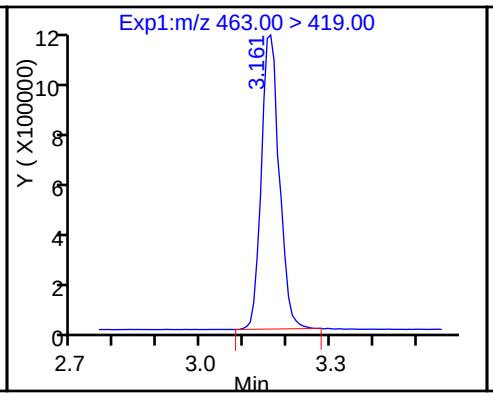
18 Perfluorooctane sulfonic acid



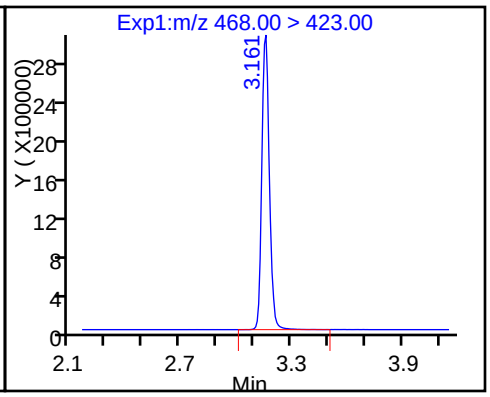
D 17 13C4 PFOS



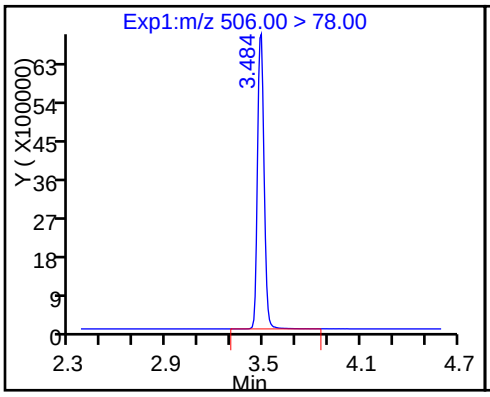
20 Perfluorononanoic acid



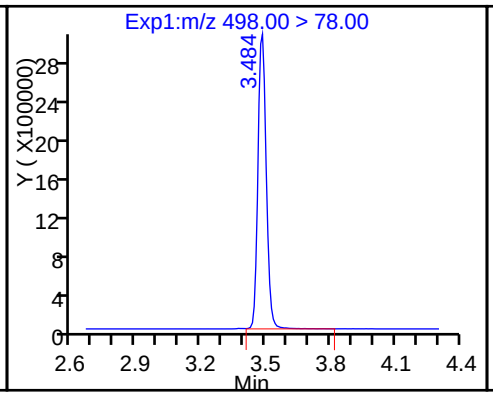
D 19 13C5 PFNA



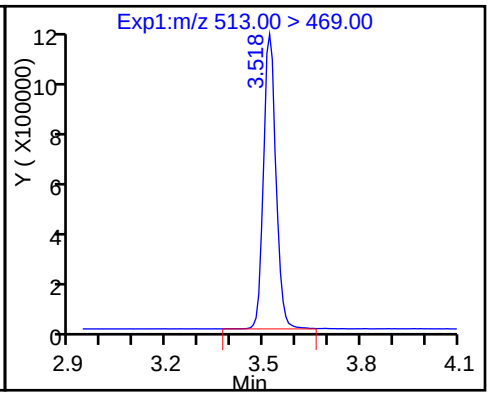
D 21 13C8 FOSA



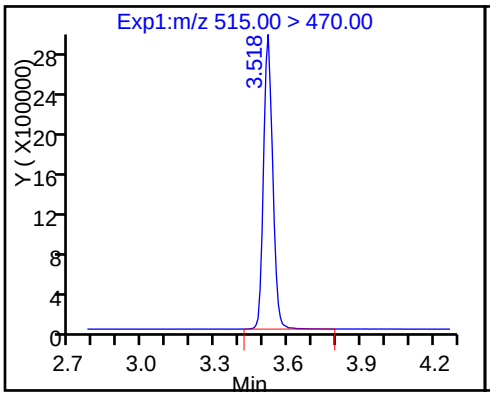
22 Perfluorooctane Sulfonamide



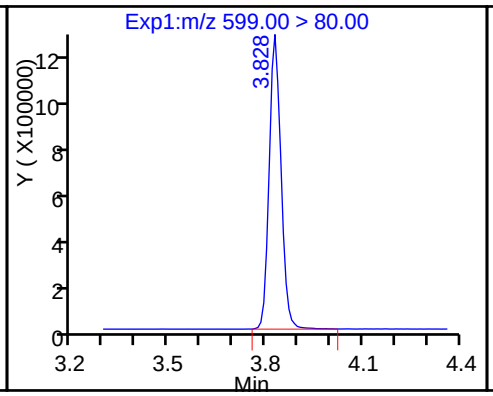
24 Perfluorodecanoic acid



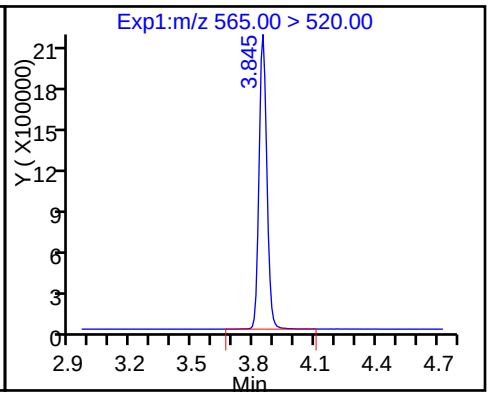
D 23 13C2 PFDA



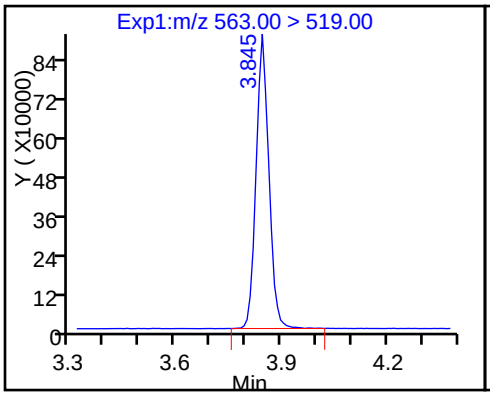
26 Perfluorodecane Sulfonic acid



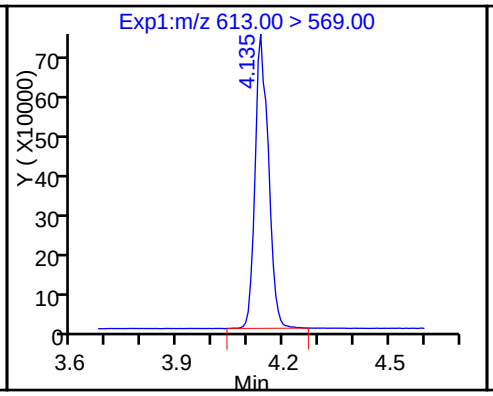
D 27 13C2 PFUnA



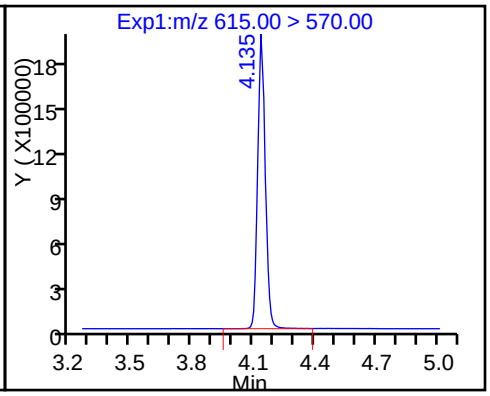
28 Perfluoroundecanoic acid



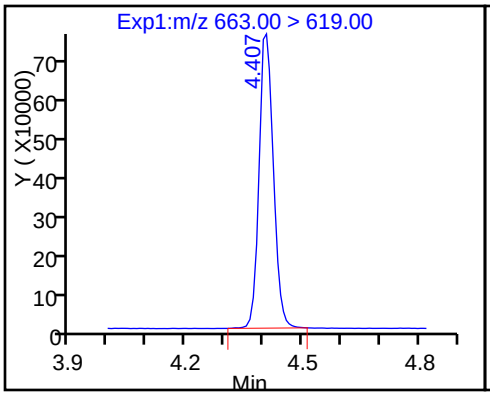
29 Perfluorododecanoic acid



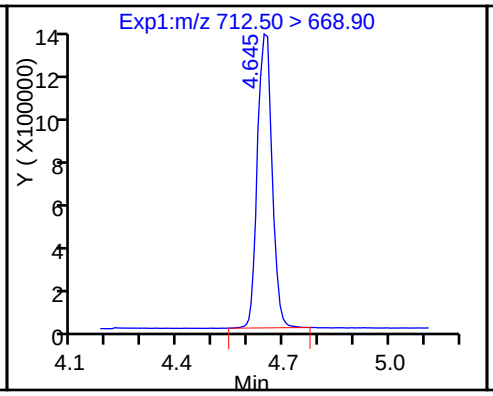
D 30 13C2 PFDoA



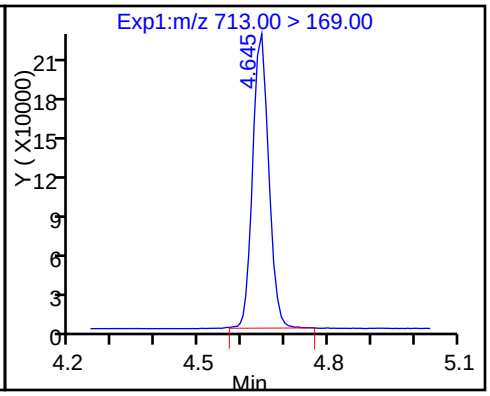
31 Perfluorotridecanoic acid



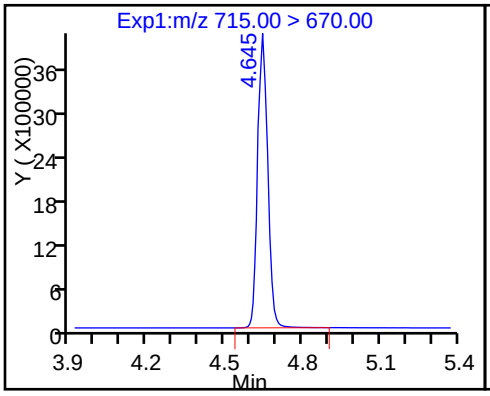
33 Perfluorotetradecanoic acid



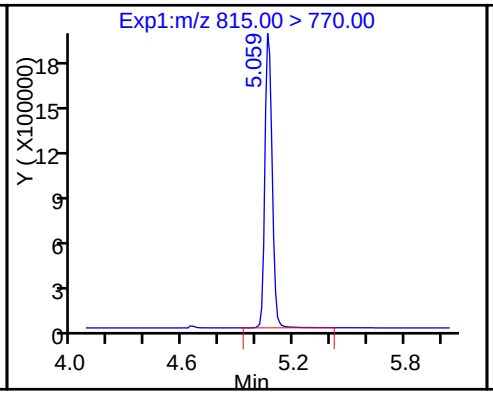
33 Perfluorotetradecanoic acid



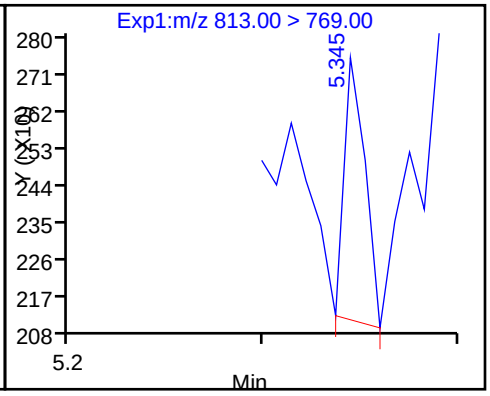
D 32 13C2-PFTeDA



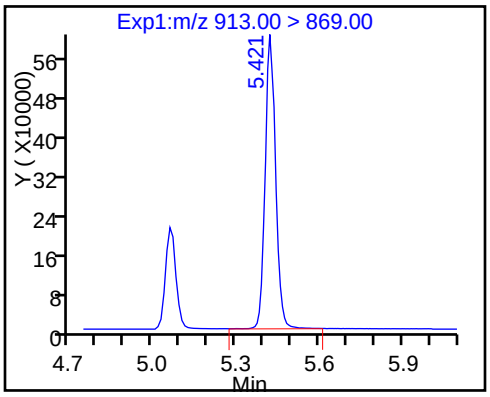
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: CCV 320-144278/5 Calibration Date: 12/29/2016 08:17

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 29DEC2016A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.8611		1.01	1.00	0.9	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.049		1.06	1.00	6.3	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.504		0.938	0.884	6.2	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9325		1.00	1.00	0.4	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9946		1.02	1.00	1.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.243		1.10	0.910	20.7	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.032		1.03	1.00	2.9	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.078		0.931	0.952	-2.2	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.179		1.10	0.928	18.5	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9153		0.962	1.00	-3.8	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9355		1.00	1.00	0.3	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9096		0.964	1.00	-3.6	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5470		0.903	0.964	-6.3	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9741		1.02	1.00	1.9	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9051		0.986	1.00	-1.4	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8789		0.969	1.00	-3.1	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.823		1.15	1.00	15.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.543		1.02	1.00	1.6	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7788		0.756	1.00	-24.4	50.0
13C4 PFBA	Ave	347743	337498		48.5	50.0	-2.9	50.0
13C5-PFPeA	Ave	266072	258740		48.6	50.0	-2.8	50.0
13C2 PFHxA	Ave	245110	227242		46.4	50.0	-7.3	50.0
13C4-PFHpA	Ave	226344	215456		47.6	50.0	-4.8	50.0
18O2 PFHxS	Ave	326976	315896		45.7	47.3	-3.4	50.0
13C4 PFOA	Ave	230362	222004		48.2	50.0	-3.6	50.0
13C4 PFOS	Ave	248847	243951		46.9	47.8	-2.0	50.0
13C5 PFNA	Ave	177687	167303		47.1	50.0	-5.8	50.0
13C8 FOSA	Ave	384141	379835		49.4	50.0	-1.1	50.0
13C2 PFDA	Ave	157302	155212		49.3	50.0	-1.3	50.0
13C2 PFUnA	Ave	117250	114872		49.0	50.0	-2.0	50.0
13C2 PFDoA	Ave	110957	101112		45.6	50.0	-8.9	50.0
13C2-PFTeDA	Ave	227387	197656		43.5	50.0	-13.1	50.0
13C2-PFHxDA	Ave	124568	104446		41.9	50.0	-16.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38295.b\29DEC2016A_005.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 29-Dec-2016 08:17:41 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38295.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 10:46:24 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: phomsophat Date: 29-Dec-2016 10:38:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		16874899	48.5		97.1	1409642	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.534	0.008	1.000	290623	1.01		101	1897	
D 4 13C5-PFPeA										
267.90 > 223.00	1.820	1.810	0.010		12936983	48.6		97.2	1255105	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.820	1.810	0.010	1.000	271414	1.06		106	3052	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.849	0.009	1.000	420022	0.9384		106		
298.90 > 99.00	1.849	1.849	-0.001	0.995	171389		2.45(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.112	2.108	0.004		11362079	46.4		92.7	878443	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.112	2.108	0.004	1.000	211898	1.00		100	5169	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.460	2.426	0.034	1.000	357259	1.10		121		
D 11 13C4-PFHpA										
367.00 > 322.00	2.445	2.440	0.005		10772790	47.6		95.2	653744	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.445	2.440	0.005	1.000	214283	1.02		102	2001	
D 10 18O2 PFHxS										
403.00 > 84.00	2.460	2.456	0.004		14941859	45.7		96.6	943687	
D 14 13C4 PFOA										
417.00 > 372.00	2.804	2.793	0.011		11100204	48.2		96.4	508312	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.804	2.801	0.003	1.000	229160	1.03		103	2333	
413.00 > 169.00	2.804	2.801	0.003	1.000	142947		1.60(0.90-1.10)		4849	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.812	2.801	0.011	1.000	250360	0.9313		97.8		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.172	3.060	0.112	1.000	266884	1.10		119	7721	M
499.00 > 99.00	3.172	3.060	0.112	1.000	58814		4.54(0.90-1.10)		2776	M
D 17 13C4 PFOS										
503.00 > 80.00	3.172	3.169	0.003		11660874	46.9		98.0	839429	
D 19 13C5 PFNA										
468.00 > 423.00	3.172	3.169	0.003		8365132	47.1		94.2	588149	
20 Perfluorononanoic acid										
463.00 > 419.00	3.180	3.169	0.011	1.000	153139	0.9617		96.2	2496	
D 21 13C8 FOSA										
506.00 > 78.00	3.478	3.475	0.003		18991774	49.4		98.9	480958	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.487	3.484	0.003	1.000	355352	1.00		100	19068	
D 23 13C2 PFDA										
515.00 > 470.00	3.537	3.526	0.011		7760598	49.3		98.7	261527	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.537	3.534	0.003	1.000	141173	0.9637		96.4	5169	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.857	3.845	0.012	1.000	128643	0.9030		93.7		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.874	3.863	0.011	1.000	111898	1.02		102	2837	
D 27 13C2 PFUnA										
565.00 > 520.00	3.874	3.871	0.003		5743611	49.0		98.0	371553	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.168	4.157	0.011	1.000	91512	0.9859		98.6	2698	
D 30 13C2 PFDoA										
615.00 > 570.00	4.175	4.157	0.018		5055587	45.6		91.1	254332	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.448	4.429	0.019	1.000	88864	0.9691		96.9	1860	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.688	4.682	0.006		9882798	43.5		86.9	434063	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.688	4.682	0.006	1.000	184358	1.15		115	1541	
713.00 > 169.00	4.679	4.682	-0.003	0.998	28643		6.44(0.00-0.00)		5260	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.112	5.103	0.009		5222305	41.9		83.8	97647	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.112	5.103	0.009	1.000	155979	1.02		102	157	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.489	5.467	0.022	1.000	78742	0.7558		75.6	82.3	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023 Amount Added: 1.00 Units: mL

Report Date: 29-Dec-2016 10:46:25 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38295.b\29DEC2016A_005.d

Injection Date: 29-Dec-2016 08:17:41 Instrument ID: A8_N

Lims ID: CCV L2

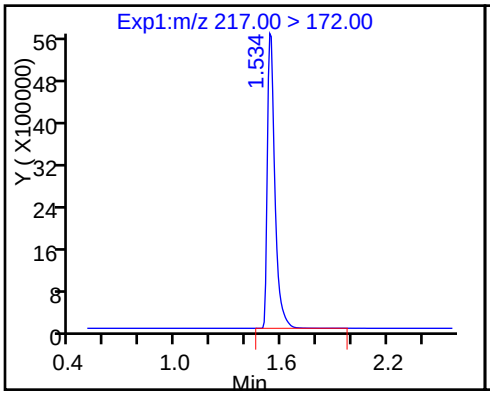
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

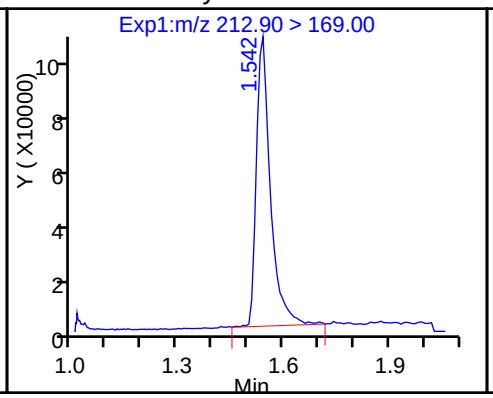
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

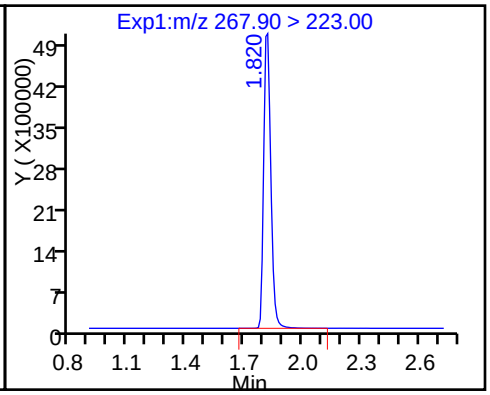
D 2 13C4 PFBA



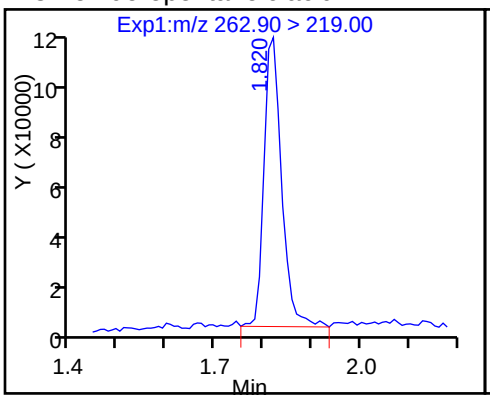
1 Perfluorobutyric acid



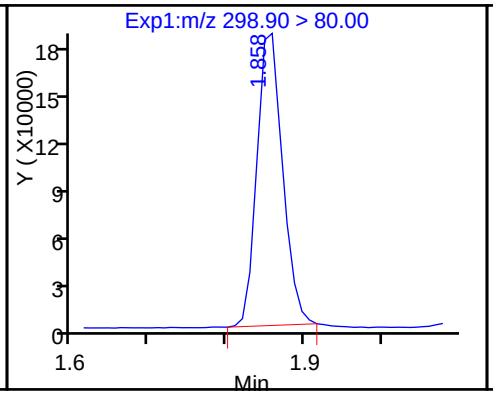
D 4 13C5-PFPeA



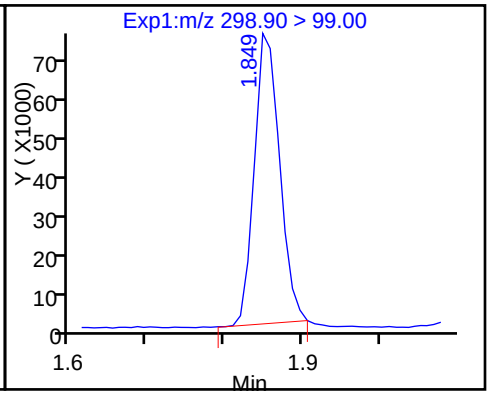
3 Perfluoropentanoic acid



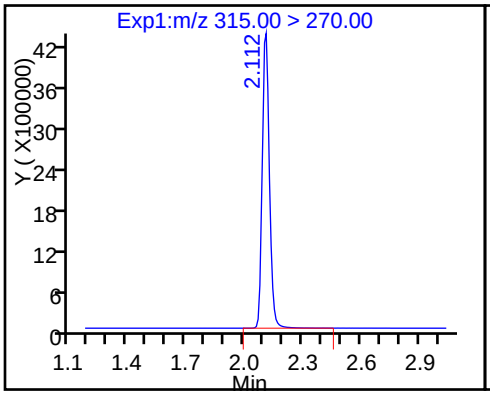
5 Perfluorobutanesulfonic acid



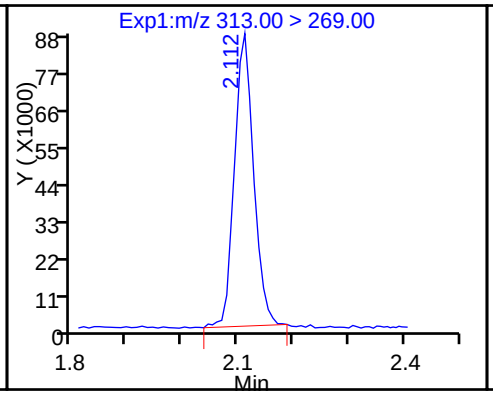
5 Perfluorobutanesulfonic acid



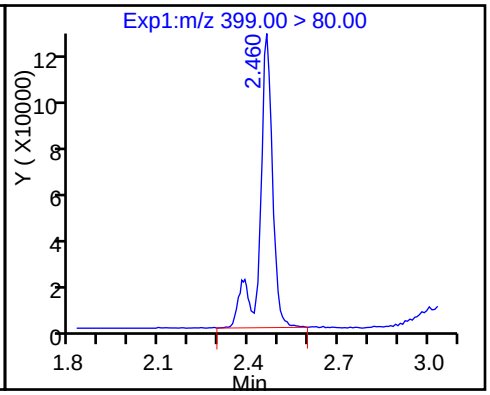
D 6 13C2 PFHxA



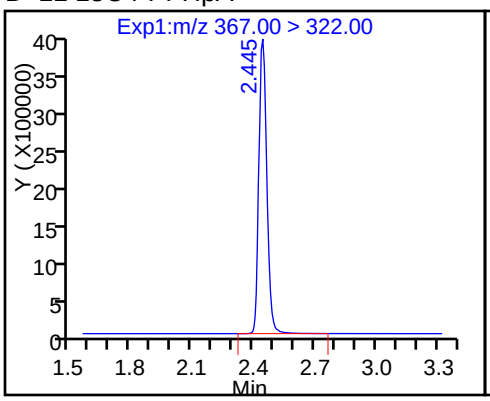
7 Perfluorohexanoic acid



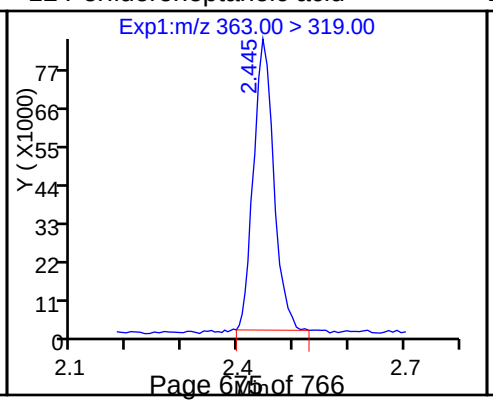
9 Perfluorohexanesulfonic acid



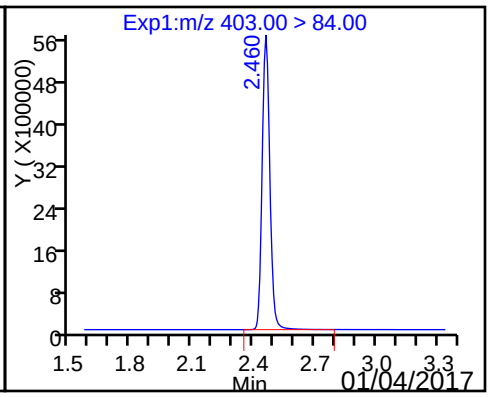
D 11 13C4-PFHpA



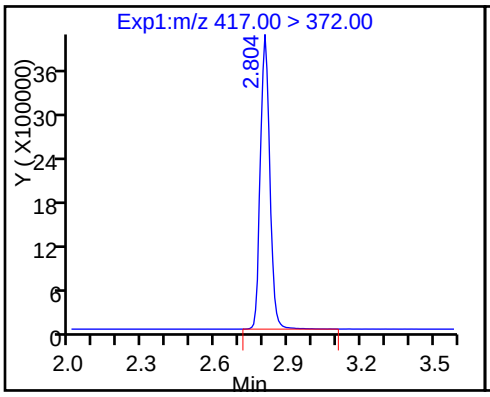
12 Perfluoroheptanoic acid



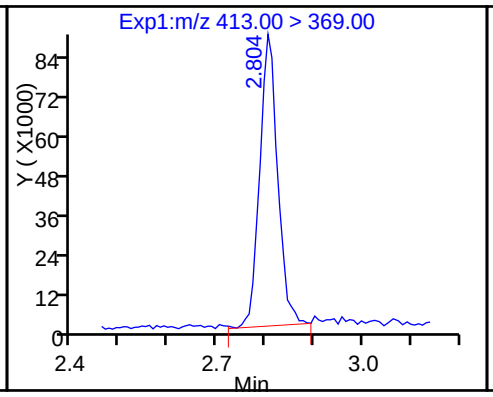
D 10 18O2 PFHxS



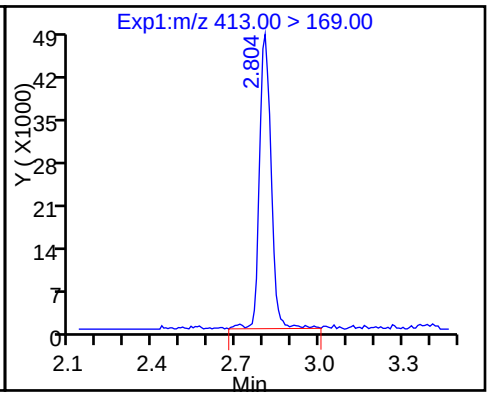
D 14 13C4 PFOA



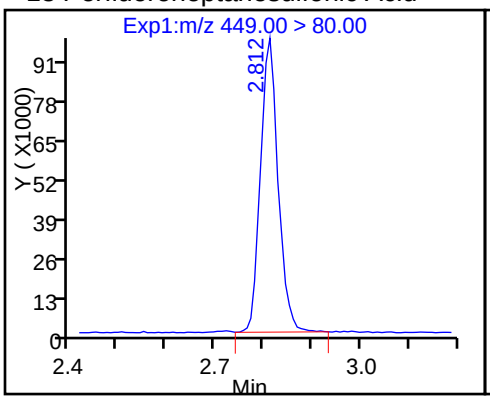
15 Perfluorooctanoic acid



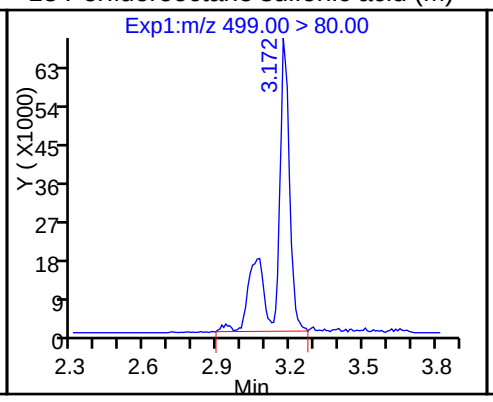
15 Perfluorooctanoic acid



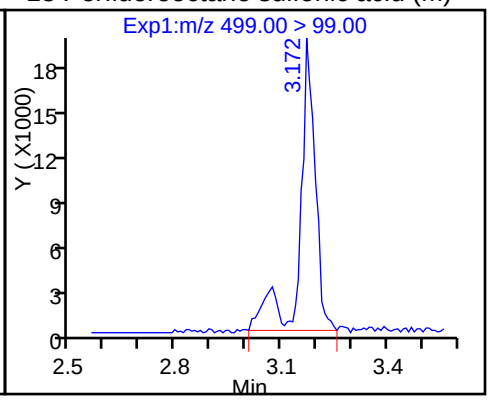
13 Perfluoroheptanesulfonic Acid



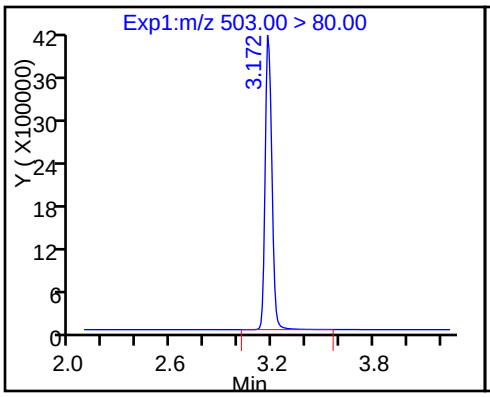
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



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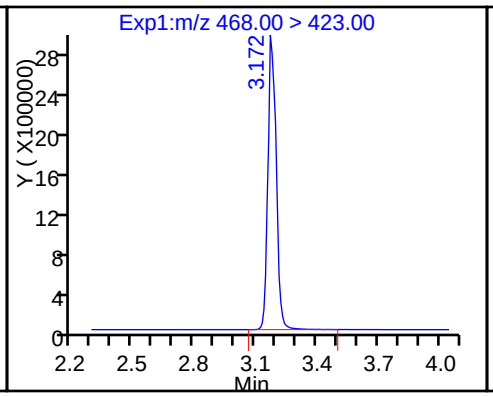
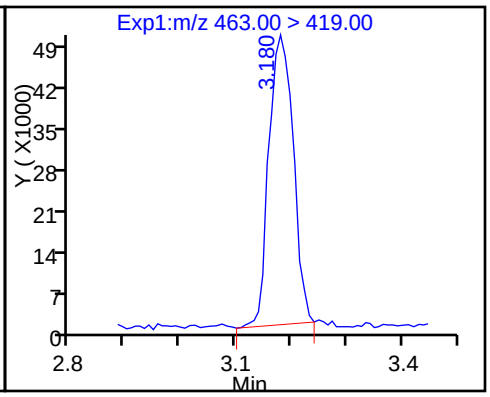
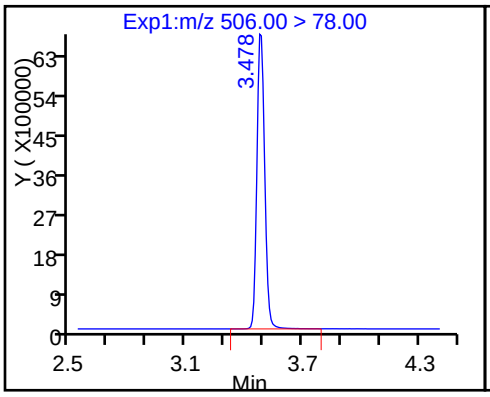


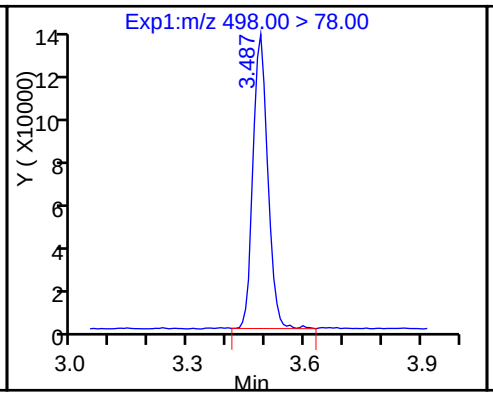
20 Perfluorononanoic acid



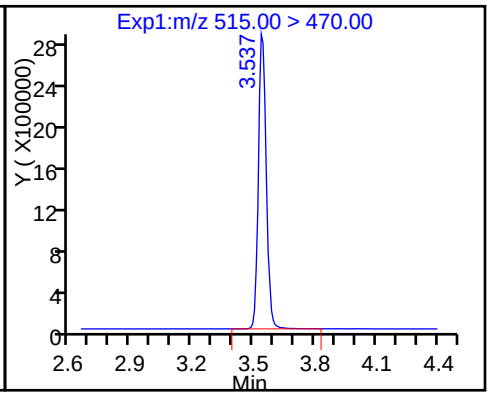
D 21 13C8 FOSA



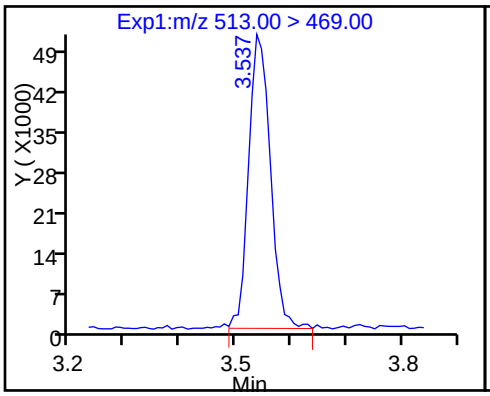
22 Perfluorooctane Sulfonamide



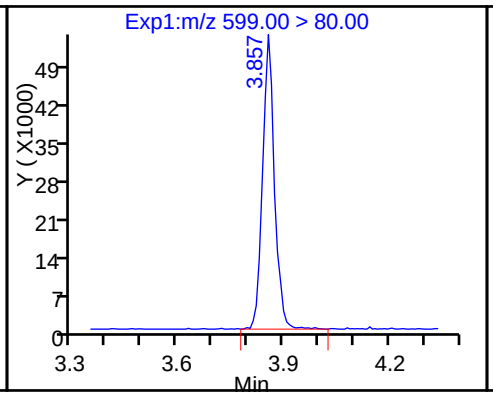
D 23 13C2 PFDA



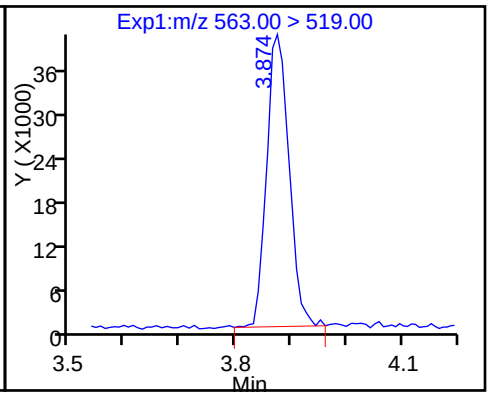
24 Perfluorodecanoic acid



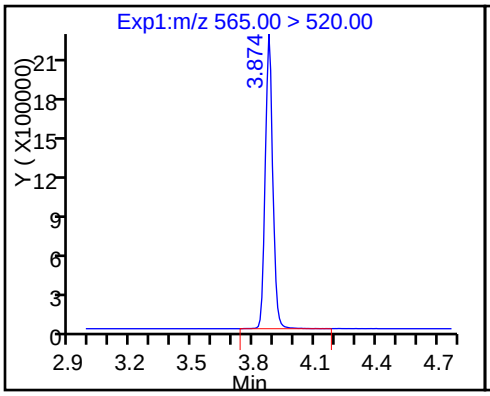
26 Perfluorodecane Sulfonic acid



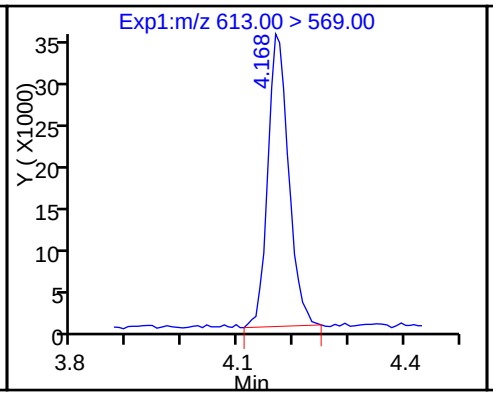
28 Perfluoroundecanoic acid



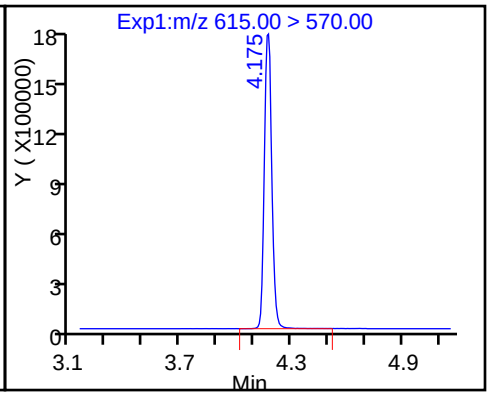
D 27 13C2 PFUnA



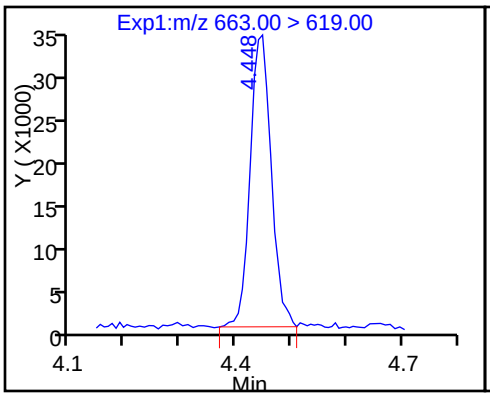
29 Perfluorododecanoic acid



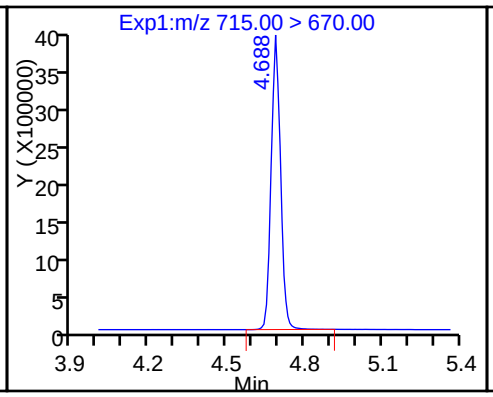
D 30 13C2 PFDoA



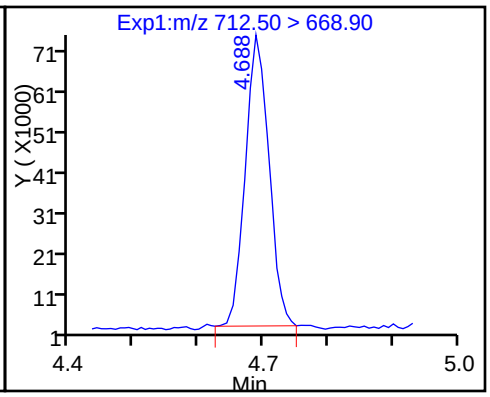
31 Perfluorotridecanoic acid



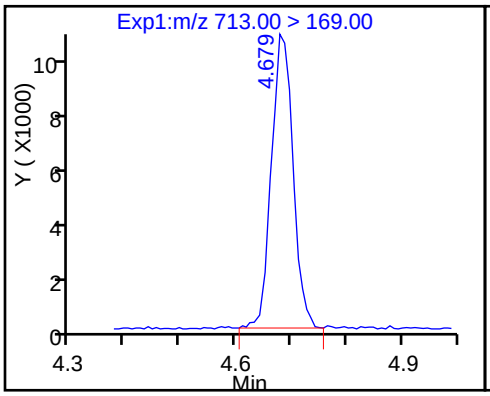
D 32 13C2-PFTeDA



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



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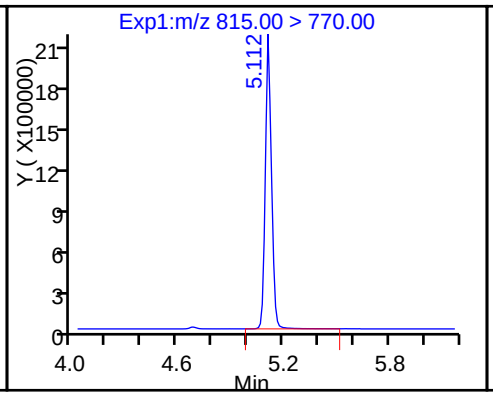
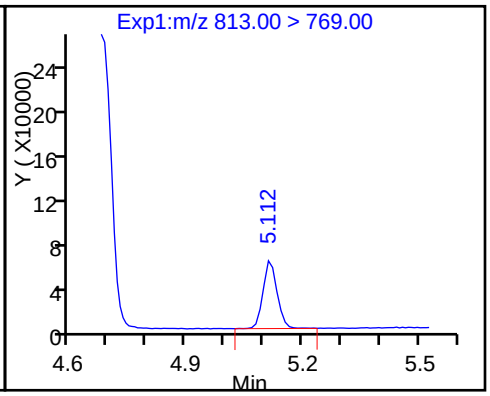
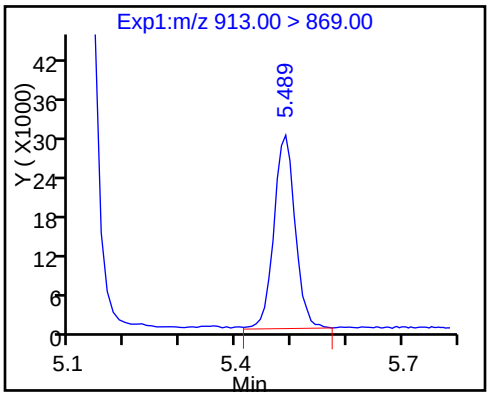


35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

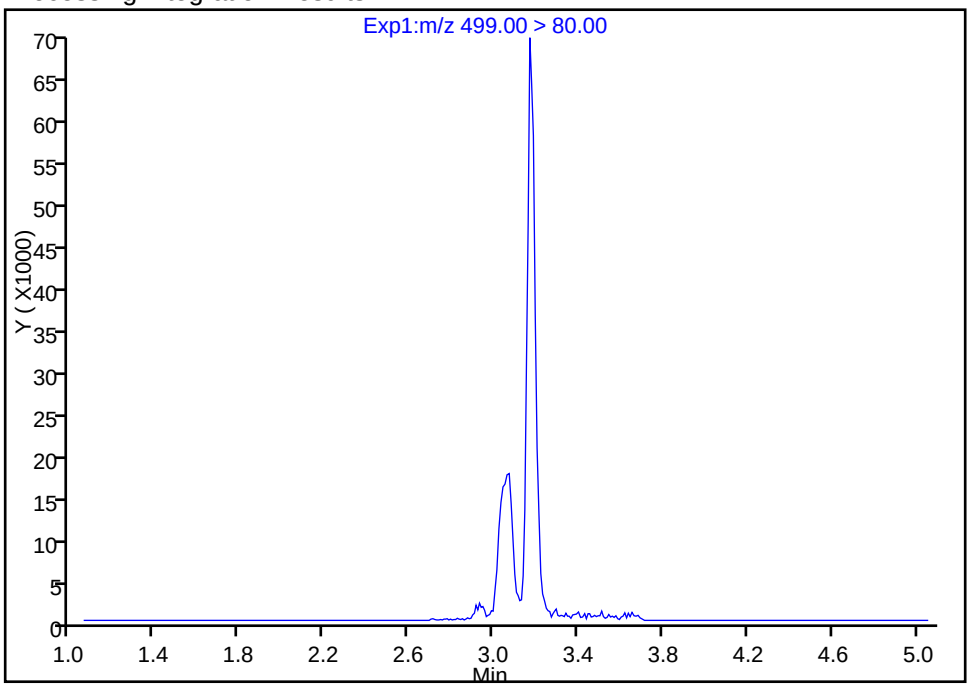
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38295.b\29DEC2016A_005.d
Injection Date: 29-Dec-2016 08:17:41 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

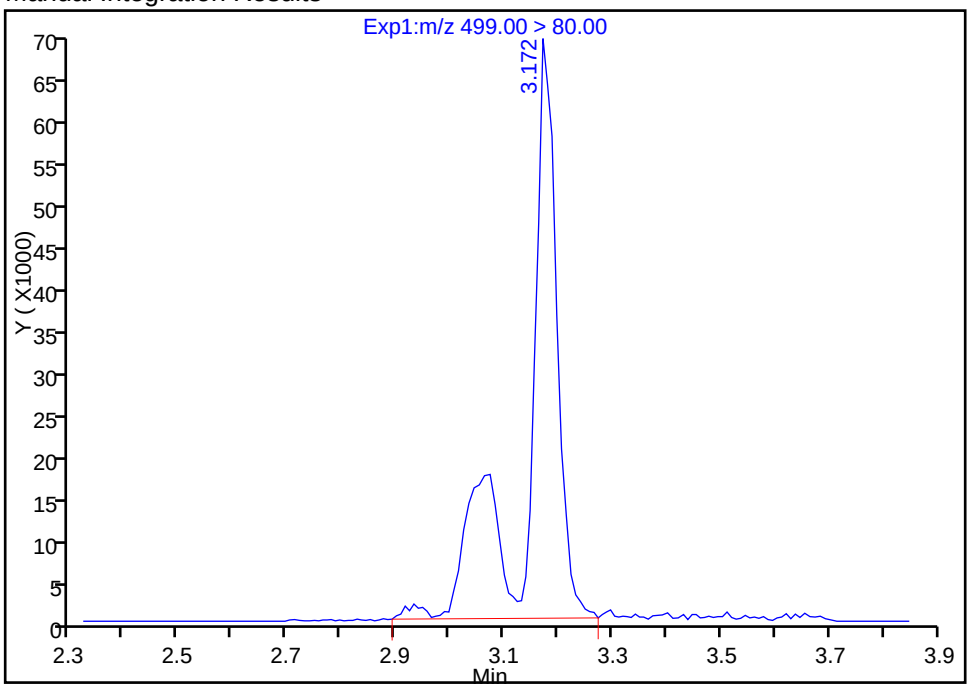
Not Detected
Expected RT: 3.06

Processing Integration Results



Manual Integration Results

RT: 3.17
Area: 266884
Amount: 1.100107
Amount Units: ng/ml



Reviewer: phomsophat, 29-Dec-2016 10:43:13
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

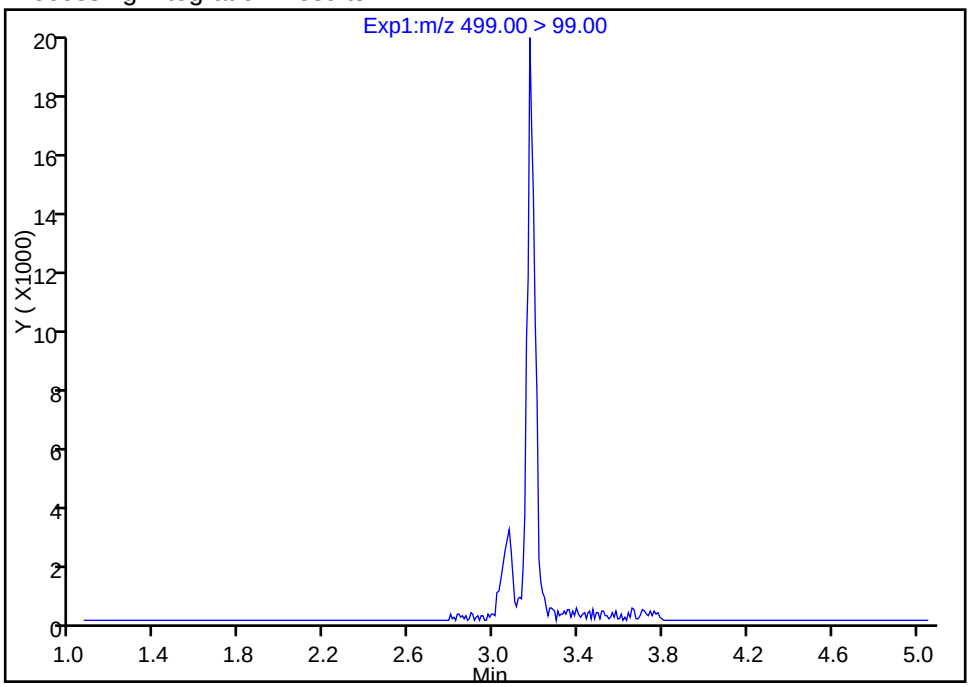
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38295.b\29DEC2016A_005.d
Injection Date: 29-Dec-2016 08:17:41 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

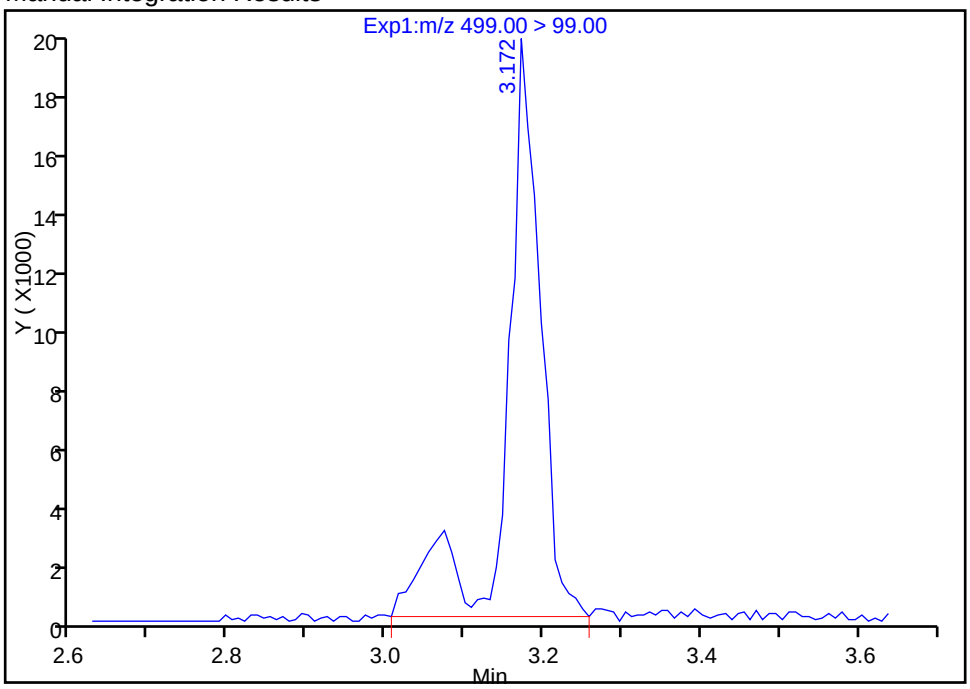
Processing Integration Results

Not Detected
Expected RT: 3.06



Manual Integration Results

RT: 3.17
Area: 58814
Amount: 1.100107
Amount Units: ng/ml



Reviewer: phomsophat, 29-Dec-2016 10:43:13
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: CCV 320-144419/1 Calibration Date: 12/29/2016 13:27

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 29DEC2016C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9146		53.6	50.0	7.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.001		50.7	50.0	1.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.551		48.4	44.2	9.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9418		50.7	50.0	1.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9706		49.6	50.0	-0.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.032		45.6	45.5	0.1	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.018		50.8	50.0	1.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.176		50.8	47.6	6.8	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9643		50.7	50.0	1.3	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.049		48.9	46.4	5.5	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9314		49.9	50.0	-0.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9313		49.3	50.0	-1.3	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6208		51.2	48.2	6.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9674		50.6	50.0	1.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9463		51.5	50.0	3.1	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9234		50.9	50.0	1.8	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.795		56.6	50.0	13.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9573		49.5	50.0	-0.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8920		43.3	50.0	-13.4	25.0
13C4 PFBA	Ave	347743	342080		49.2	50.0	-1.6	50.0
13C5-PFPeA	Ave	266072	255564		48.0	50.0	-3.9	50.0
13C2 PFHxA	Ave	245110	240387		49.0	50.0	-1.9	50.0
13C4-PFHpA	Ave	226344	209424		46.3	50.0	-7.5	50.0
18O2 PFHxS	Ave	326976	320259		46.3	47.3	-2.1	50.0
13C4 PFOA	Ave	230362	209523		45.5	50.0	-9.0	50.0
13C4 PFOS	Ave	248847	242524		46.6	47.8	-2.5	50.0
13C5 PFNA	Ave	177687	160059		45.0	50.0	-9.9	50.0
13C8 FOSA	Ave	384141	384224		50.0	50.0	0.0	50.0
13C2 PFDA	Ave	157302	145366		46.2	50.0	-7.6	50.0
13C2 PFUnA	Ave	117250	106628		45.5	50.0	-9.1	50.0
13C2 PFDoA	Ave	110957	96619		43.5	50.0	-12.9	50.0
13C2-PFTeDA	Ave	227387	203540		44.8	50.0	-10.5	50.0
13C2-PFHxDA	Ave	124568	105448		42.3	50.0	-15.3	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_001.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 29-Dec-2016 13:27:09 ALS Bottle#: 41 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:32 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.533	1.533	0.0		17104019	49.2		98.4	950909	
1 Perfluorobutyric acid										
212.90 > 169.00	1.533	1.533	0.0	1.000	15643658	53.6		107	91445	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	12796773	50.7		101	128901	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		12778206	48.0		96.1	999075	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.848	0.0	1.000	21948072	48.4		109		
298.90 > 99.00	1.848	1.848	0.0	1.000	10164056		2.16(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.097	2.097	0.0	1.000	11319478	50.7		101	295712	
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.097	0.0		12019335	49.0		98.1	891645	
D 11 13C4-PFHpA										
367.00 > 322.00	2.429	2.429	0.0		10471208	46.3		92.5	904039	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.422	2.422	0.0	1.000	10163731	49.6		99.2	95166	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.443	2.443	0.0	1.000	15030827	45.6		100		
D 10 18O2 PFHxS										
403.00 > 84.00	2.443	2.443	0.0		15148272	46.3		97.9	1073386	
D 14 13C4 PFOA										
417.00 > 372.00	2.789	2.789	0.0		10476159	45.5		91.0	594271	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.781	2.781	0.0	1.000	10666971	50.8		102	95982	
413.00 > 169.00	2.781	2.781	0.0	1.000	6602334		1.62(0.90-1.10)		281428	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.789	2.789	0.0	1.000	13580934	50.8		107		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.157	3.157	0.0	1.000	11803108	48.9		105	326960	
499.00 > 99.00	3.157	3.157	0.0	1.000	2558406		4.61(0.90-1.10)		120026	
20 Perfluorononanoic acid										
463.00 > 419.00	3.157	3.157	0.0	1.000	7717531	50.7		101	118976	
D 17 13C4 PFOS										
503.00 > 80.00	3.157	3.157	0.0		11592635	46.6		97.5	188037	
D 19 13C5 PFNA										
468.00 > 423.00	3.157	3.157	0.0		8002950	45.0		90.1	329650	
D 21 13C8 FOSA										
506.00 > 78.00	3.480	3.480	0.0		19211184	50.0		100	963974	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.480	3.480	0.0	1.000	17893990	49.9		99.9	438934	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.514	3.514	0.0	1.000	6769021	49.3		98.7	197879	
D 23 13C2 PFDA										
515.00 > 470.00	3.522	3.522	0.0		7268315	46.2		92.4	256203	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.824	3.824	0.0	1.000	7256920	51.2		106		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.850	3.850	0.0	1.000	5157639	50.6		101	150421	
D 27 13C2 PFUnA										
565.00 > 520.00	3.850	3.850	0.0		5331422	45.5		90.9	208451	
D 30 13C2 PFDoA										
615.00 > 570.00	4.134	4.134	0.0		4830959	43.5		87.1	174512	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.141	4.141	0.0	1.000	4571405	51.5		103	105170	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.411	4.411	0.0	1.000	4461038	50.9		102	95309	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.642	4.642	0.0	1.000	8671256	56.6		113	152306	
713.00 > 169.00	4.642	4.642	0.0	1.000	1285237		6.75(0.00-0.00)		116252	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.642	4.642	0.0		10176995	44.8		89.5	597524	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.069	5.069	0.0	1.000	4624725	49.5		99.1	4323	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.069	5.069	0.0		5272389	42.3		84.7	93678	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.421	5.421	0.0	1.000	4309037	43.3		86.6	4945	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 03-Jan-2017 08:08:32 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_001.d

Injection Date: 29-Dec-2016 13:27:09 Instrument ID: A8_N

Lims ID: CCV L5

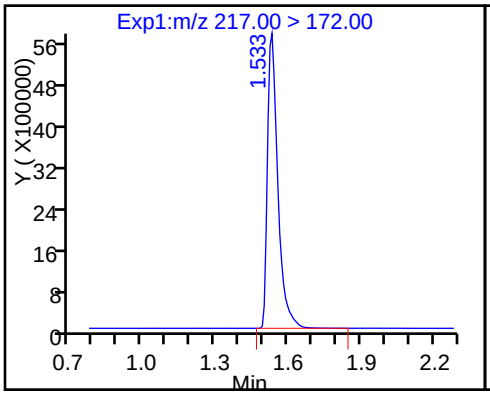
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 1

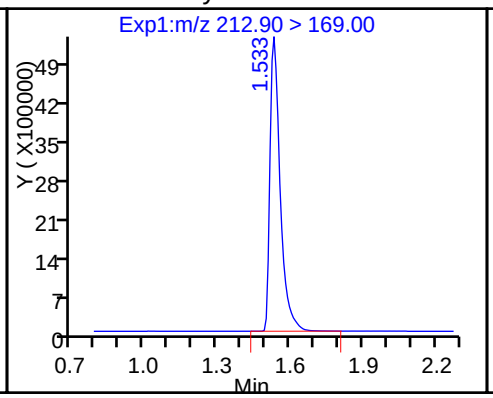
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

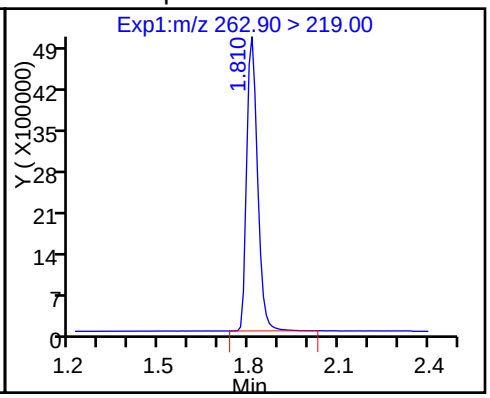
D 2 13C4 PFBA



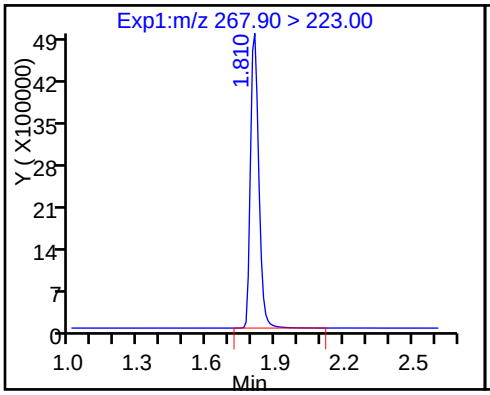
1 Perfluorobutyric acid



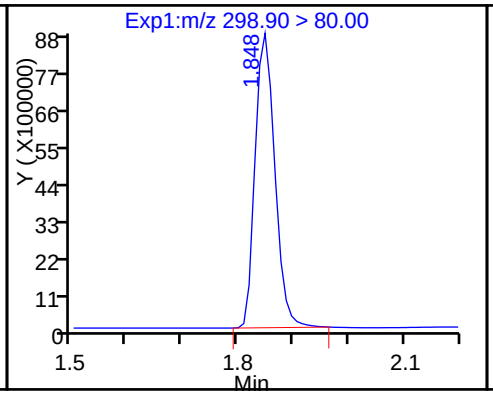
3 Perfluoropentanoic acid



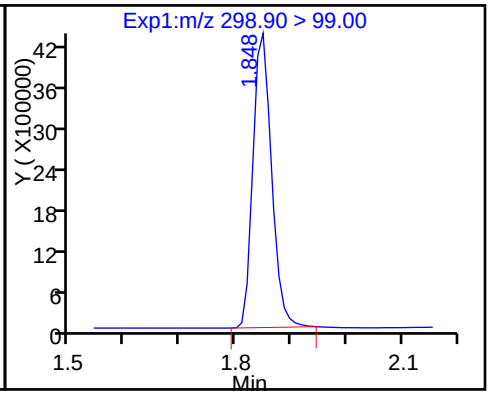
D 4 13C5-PFPeA



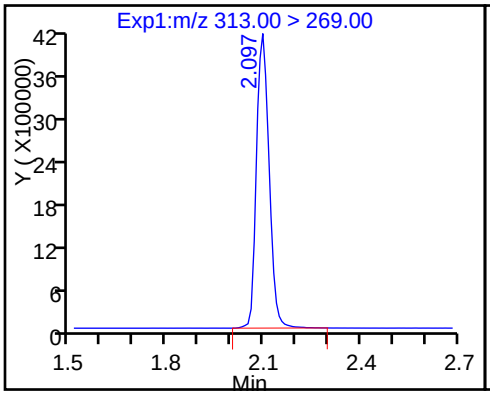
5 Perfluorobutanesulfonic acid



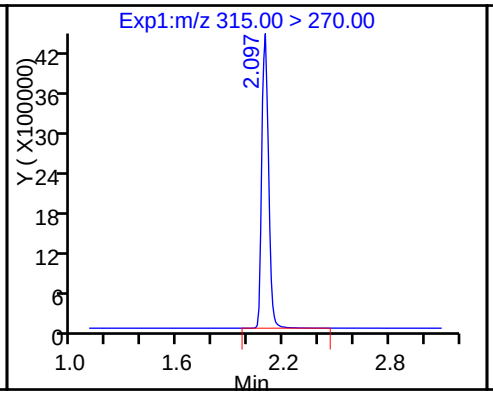
5 Perfluorobutanesulfonic acid



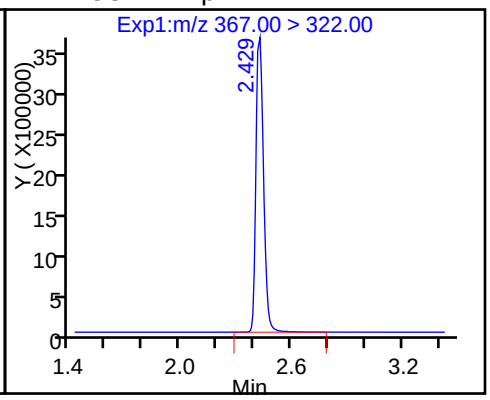
7 Perfluorohexanoic acid



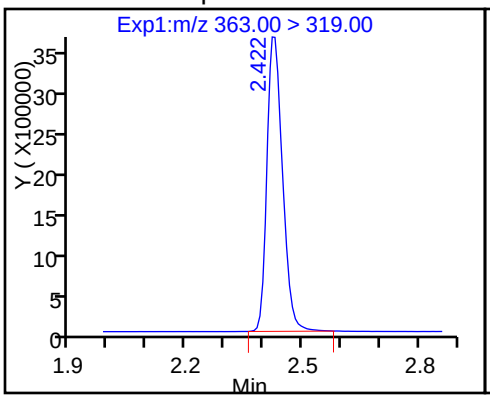
D 6 13C2 PFHxA



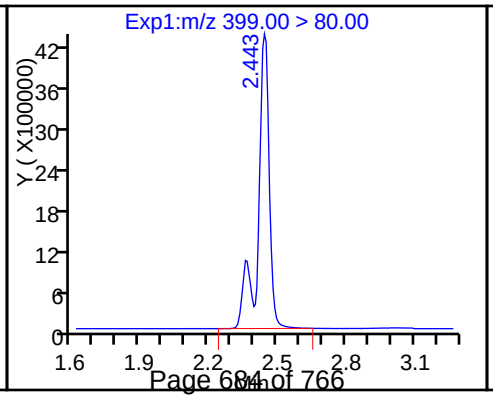
D 11 13C4-PFHpA



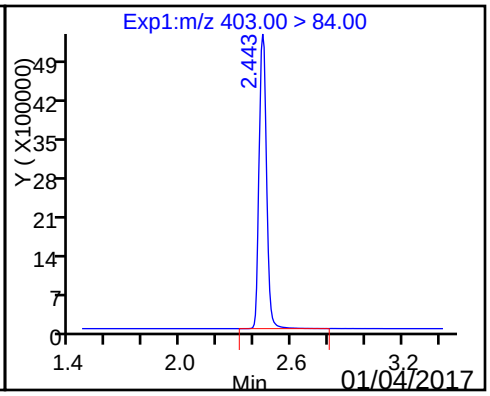
12 Perfluoroheptanoic acid



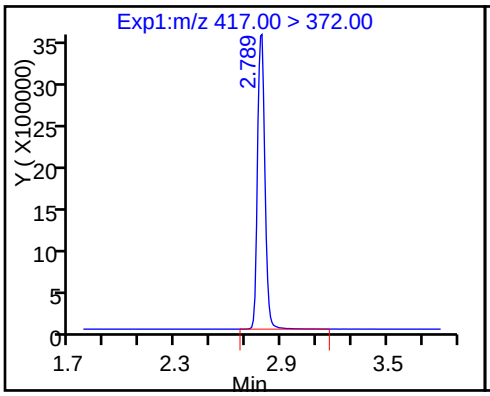
9 Perfluorohexanesulfonic acid



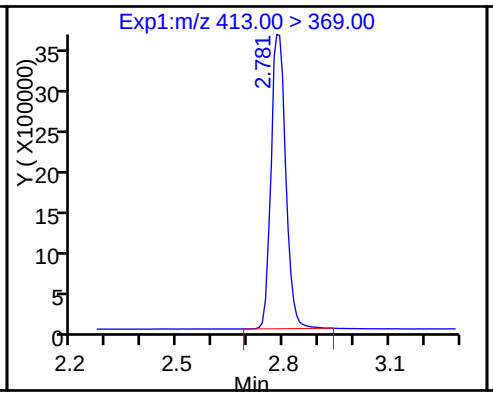
D 10 18O2 PFHxS



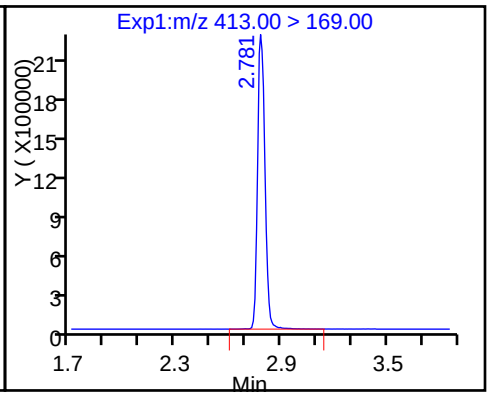
D 14 13C4 PFOA



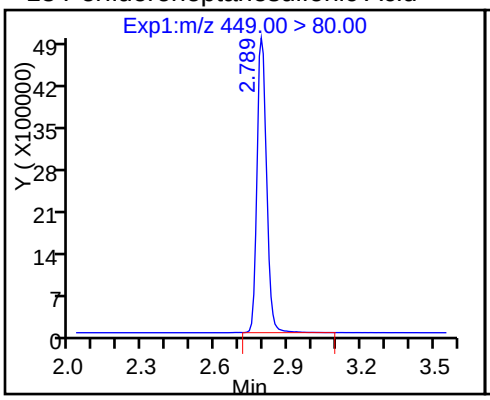
15 Perfluorooctanoic acid



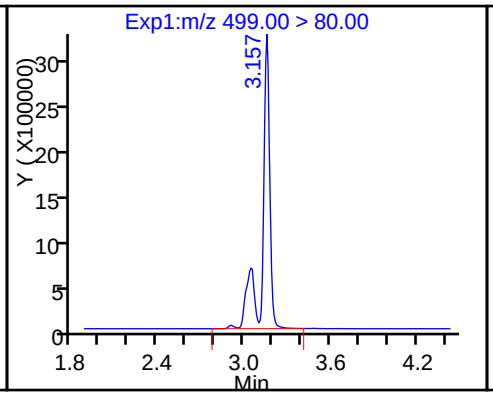
15 Perfluorooctanoic acid



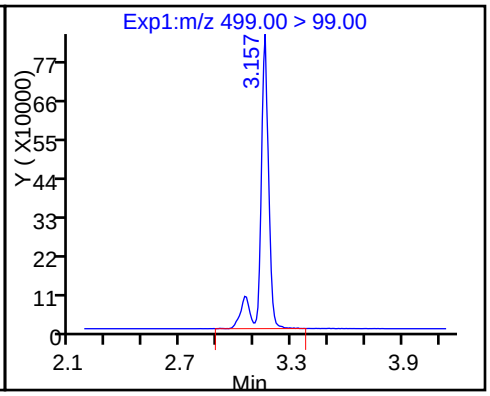
13 Perfluoroheptanesulfonic Acid



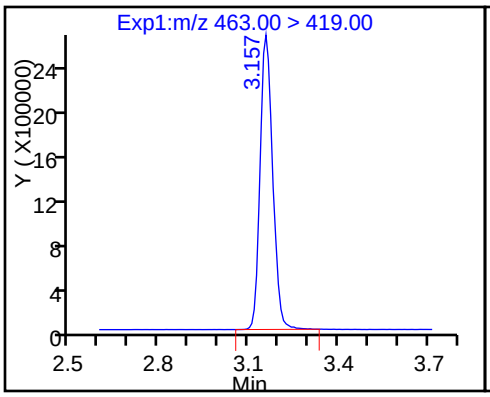
18 Perfluorooctane sulfonic acid



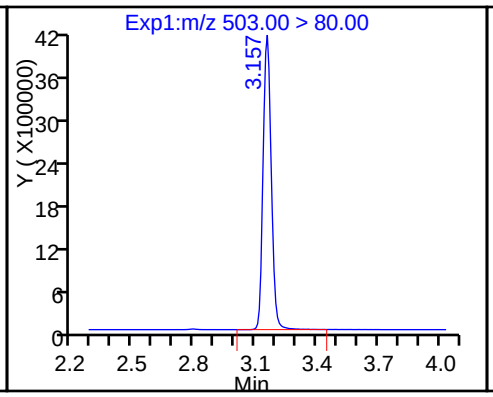
18 Perfluorooctane sulfonic acid



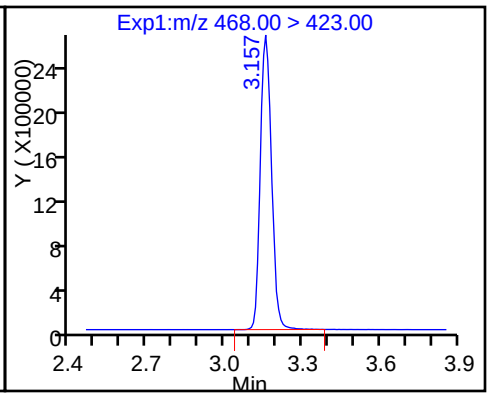
20 Perfluorononanoic acid



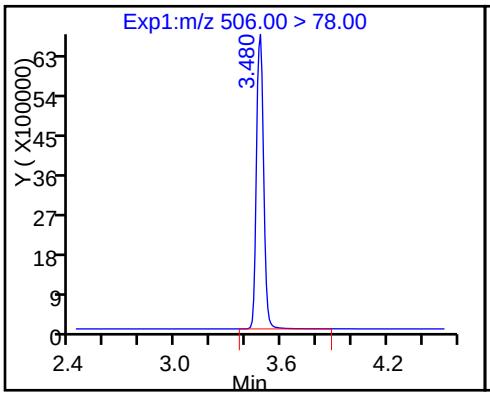
D 17 13C4 PFOS



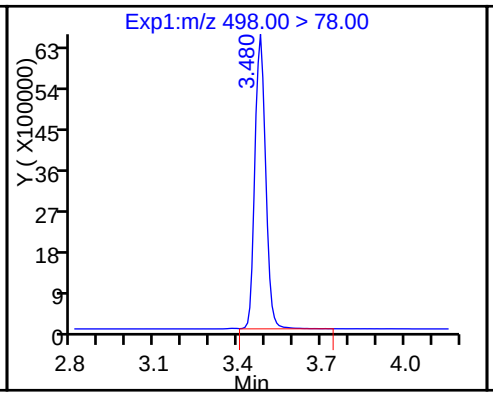
D 19 13C5 PFNA



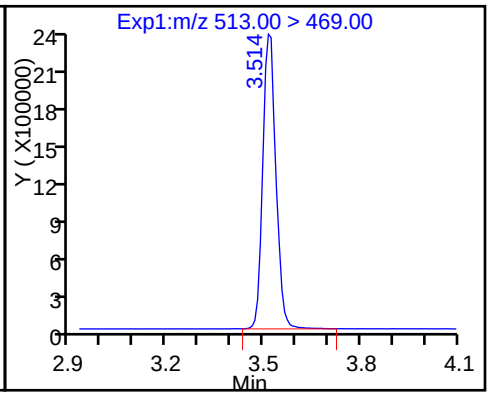
D 21 13C8 FOSA



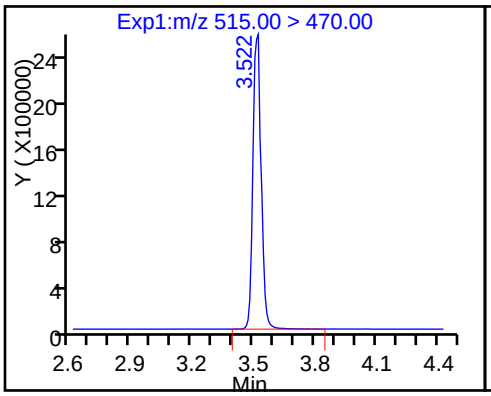
22 Perfluorooctane Sulfonamide



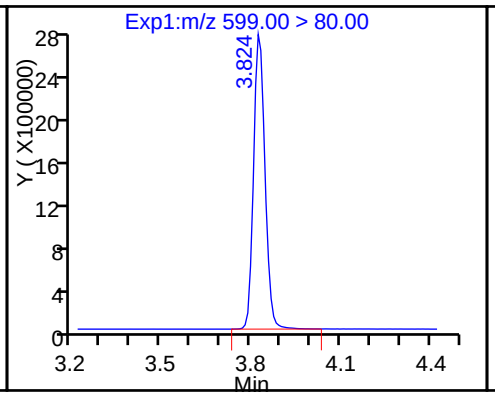
24 Perfluorodecanoic acid



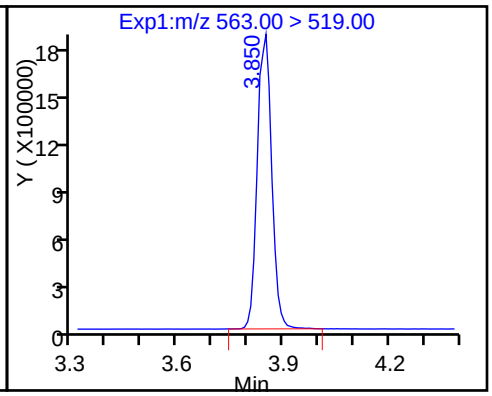
D 23 13C2 PFDA



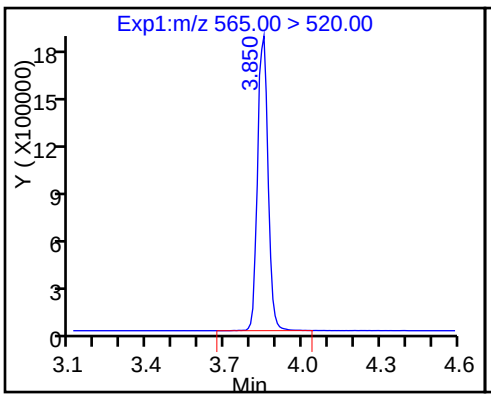
26 Perfluorodecane Sulfonic acid



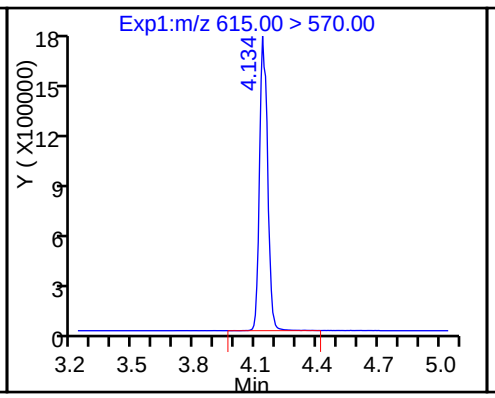
28 Perfluoroundecanoic acid



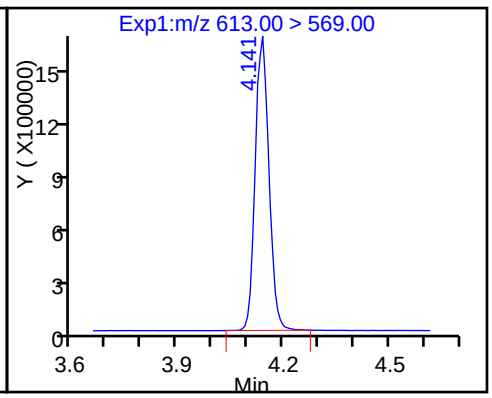
D 27 13C2 PFUnA



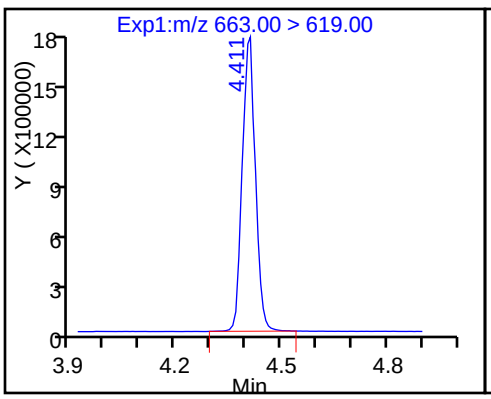
D 30 13C2 PFDoA



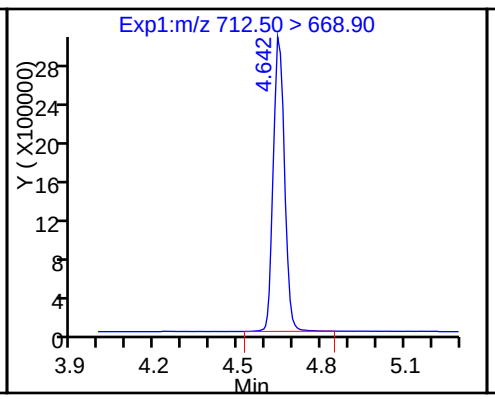
29 Perfluorododecanoic acid



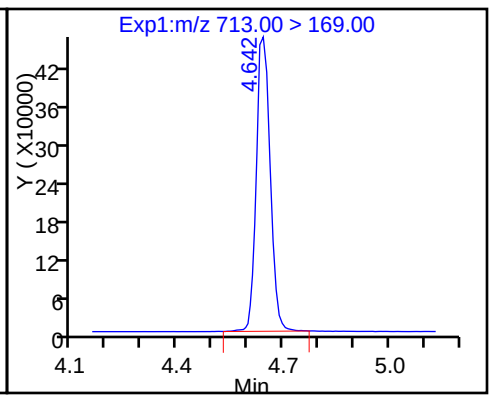
31 Perfluorotridecanoic acid



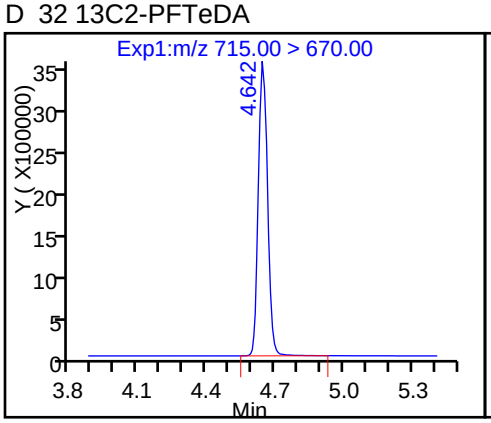
33 Perfluorotetradecanoic acid



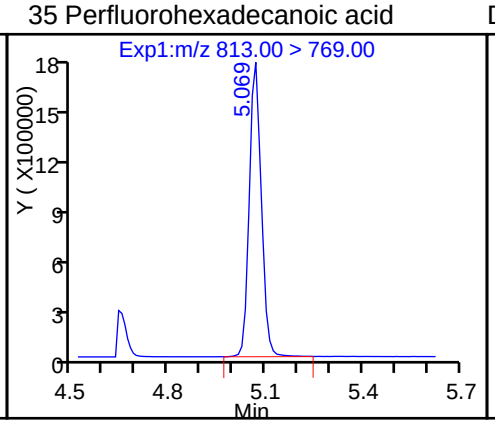
33 Perfluorotetradecanoic acid



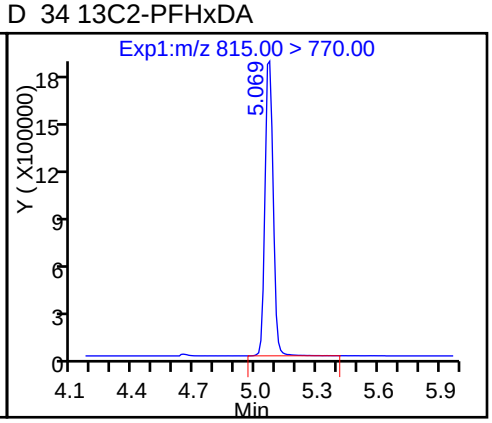
D 32 13C2-PFTeDA



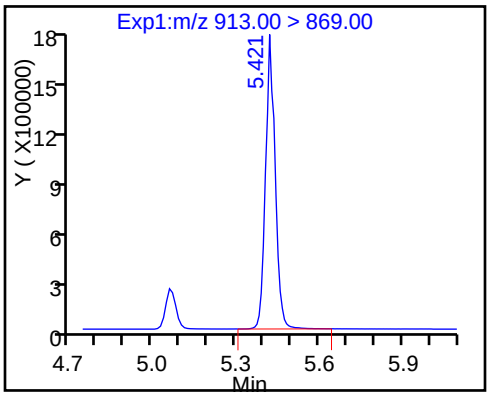
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: CCV 320-144419/13 Calibration Date: 12/29/2016 14:57

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 29DEC2016C_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9607		22.5	20.0	12.5	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.071		21.7	20.0	8.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.640		20.5	17.7	15.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9499		20.5	20.0	2.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.062		18.8	18.2	3.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.026		21.0	20.0	4.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.095		21.8	20.0	9.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.223		21.1	19.0	11.0	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.044		19.5	18.6	5.0	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	1.006		21.1	20.0	5.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.011		21.7	20.0	8.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9252		19.6	20.0	-2.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5927		19.6	19.3	1.5	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9839		20.6	20.0	2.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9325		20.3	20.0	1.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9481		20.9	20.0	4.5	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.771		22.3	20.0	11.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9422		19.1	20.0	-4.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8960		17.4	20.0	-13.0	25.0
13C4 PFBA	Ave	347743	349125		50.2	50.0	0.4	50.0
13C5-PFPeA	Ave	266072	267393		50.2	50.0	0.5	50.0
13C2 PFHxA	Ave	245110	247213		50.4	50.0	0.9	50.0
13C4-PFHpA	Ave	226344	224488		49.6	50.0	-0.8	50.0
18O2 PFHxS	Ave	326976	338301		48.9	47.3	3.5	50.0
13C4 PFOA	Ave	230362	226709		49.2	50.0	-1.6	50.0
13C4 PFOS	Ave	248847	254280		48.8	47.8	2.2	50.0
13C5 PFNA	Ave	177687	170538		48.0	50.0	-4.0	50.0
13C8 FOSA	Ave	384141	378472		49.3	50.0	-1.5	50.0
13C2 PFDA	Ave	157302	158905		50.5	50.0	1.0	50.0
13C2 PFUnA	Ave	117250	112413		47.9	50.0	-4.1	50.0
13C2 PFDoA	Ave	110957	105967		47.8	50.0	-4.5	50.0
13C2-PFTeDA	Ave	227387	213091		46.9	50.0	-6.3	50.0
13C2-PFHxDA	Ave	124568	109499		44.0	50.0	-12.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_013.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 29-Dec-2016 14:57:07 ALS Bottle#: 40 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:08:49 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		17456233	50.2		100	998402	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.534	0.0	1.000	6708275	22.5		113	52907	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	5725753	21.7		108	64842	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		13369633	50.2		100	1362676	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.849	0.0	1.000	9809371	20.5		116		
298.90 > 99.00	1.849	1.849	0.0	1.000	4209241		2.33(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.101	2.101	0.0	1.000	4696455	20.5		102	132423	
D 6 13C2 PFHxA										
315.00 > 270.00	2.101	2.101	0.0		12360638	50.4		101	571132	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.432	2.432	0.0	1.000	4608435	21.0		105	37458	
D 11 13C4-PFHpA										
367.00 > 322.00	2.425	2.425	0.0		11224399	49.6		99.2	590422	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.370	2.370	0.0	1.000	6536682	18.8		103		
D 10 18O2 PFHxS										
403.00 > 84.00	2.448	2.448	0.0		16001624	48.9		103	1146874	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.784	2.784	0.0	1.000	4966886	21.8		109	56085	
413.00 > 169.00	2.784	2.784	0.0	1.000	2950458		1.68(0.90-1.10)		134831	
D 14 13C4 PFOA										
417.00 > 372.00	2.784	2.784	0.0		11335429	49.2		98.4	941114	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.792	2.792	0.0	1.000	5922277	21.1		111		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.050	3.050	0.0	1.000	4926186	19.5		105	43368	
499.00 > 99.00	3.153	3.050	0.103	1.034	1095302		4.50(0.90-1.10)		57313	
20 Perfluorononanoic acid										
463.00 > 419.00	3.153	3.153	0.0	1.000	3429717	21.1		106	75821	
D 17 13C4 PFOS										
503.00 > 80.00	3.153	3.153	0.0		12154572	48.8		102	398024	
D 19 13C5 PFNA										
468.00 > 423.00	3.161	3.161	0.0		8526908	48.0		96.0	474220	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.484	0.0		18923577	49.3		98.5	1340699	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.484	3.484	0.0	1.000	7653959	21.7		108	285098	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.518	3.518	0.0	1.000	2940447	19.6		98.0	96133	
D 23 13C2 PFDA										
515.00 > 470.00	3.518	3.518	0.0		7945269	50.5		101	366564	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.828	3.828	0.0	1.000	2905931	19.6		102		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.846	3.846	0.0	1.000	2212075	20.6		103	69357	
D 27 13C2 PFUnA										
565.00 > 520.00	3.846	3.846	0.0		5620635	47.9		95.9	345314	
D 30 13C2 PFDoA										
615.00 > 570.00	4.135	4.135	0.0		5298372	47.8		95.5	211594	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.135	4.135	0.0	1.000	1976181	20.3		102	61409	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.406	4.406	0.0	1.000	2009331	20.9		105	44463	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.645	4.645	0.0	1.000	3753084	22.3		112	63673	
713.00 > 169.00	4.645	4.645	0.0	1.000	569812		6.59(0.00-0.00)		69105	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.645	4.645	0.0		10654528	46.9		93.7	1190826	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.060	5.060	0.0	1.000	1996849	19.1		95.7	1668	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.060	5.060	0.0		5474973	44.0		87.9	93478	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.422	5.422	0.0	1.000	1898829	17.4		87.0	1981	

Reagents:

LCPFC-L4_00024 Amount Added: 1.00 Units: mL

Report Date: 03-Jan-2017 08:08:50 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_013.d

Injection Date: 29-Dec-2016 14:57:07 Instrument ID: A8_N

Lims ID: CCV L4

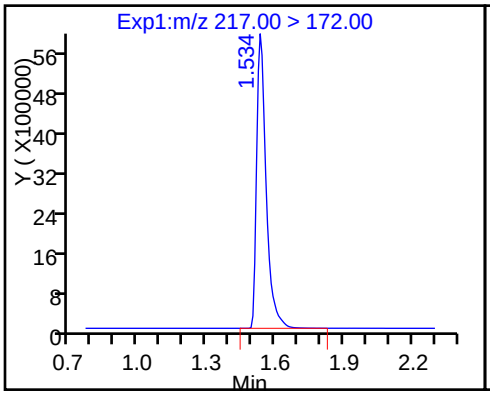
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 13

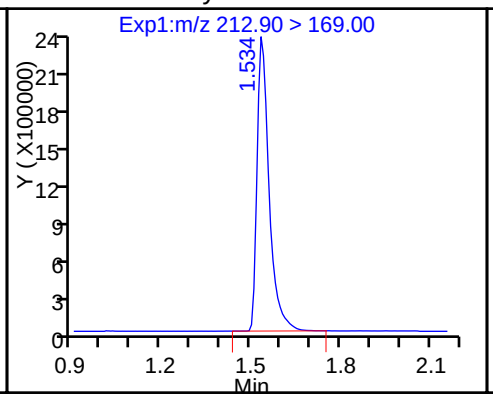
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

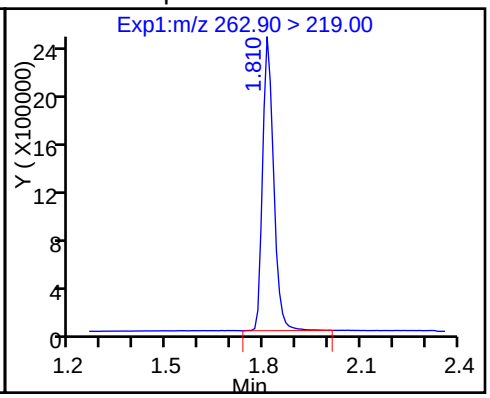
D 2 13C4 PFBA



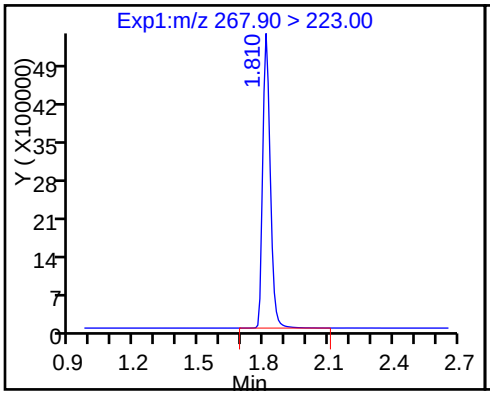
1 Perfluorobutyric acid



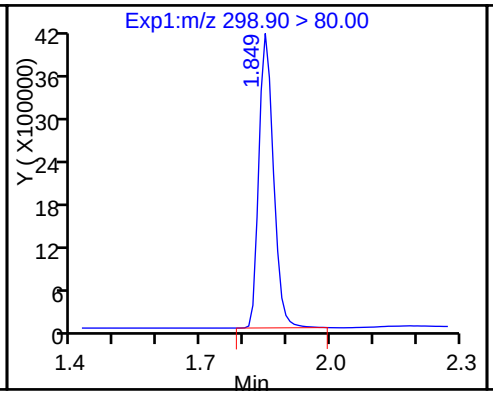
3 Perfluoropentanoic acid



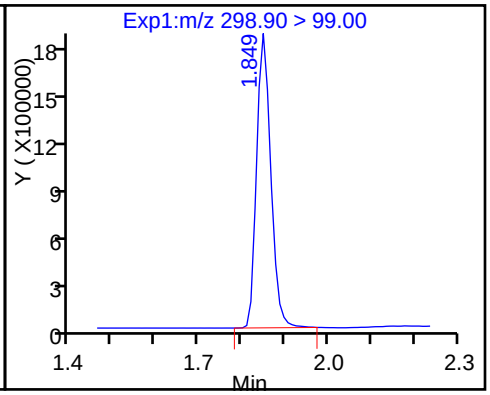
D 4 13C5-PFPeA



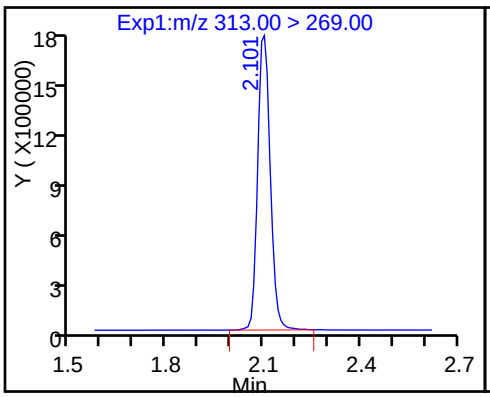
5 Perfluorobutanesulfonic acid



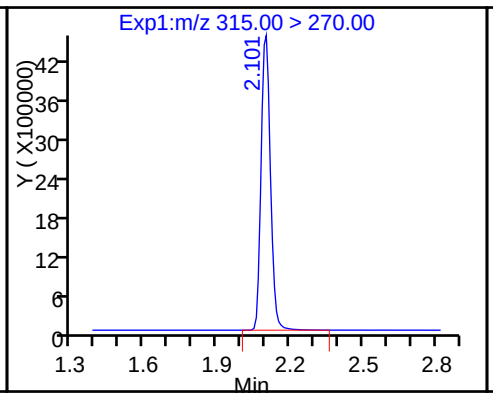
5 Perfluorobutanesulfonic acid



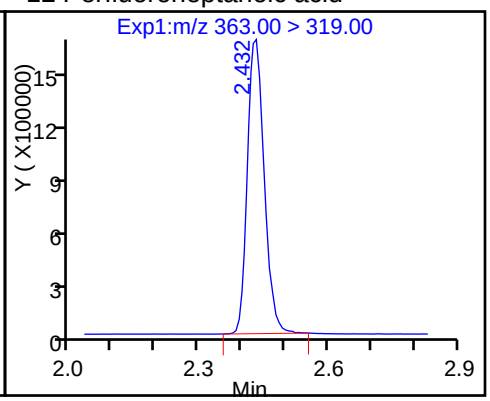
7 Perfluorohexanoic acid



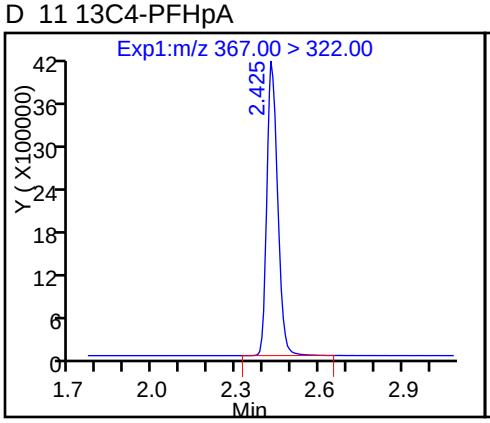
D 6 13C2 PFHxA



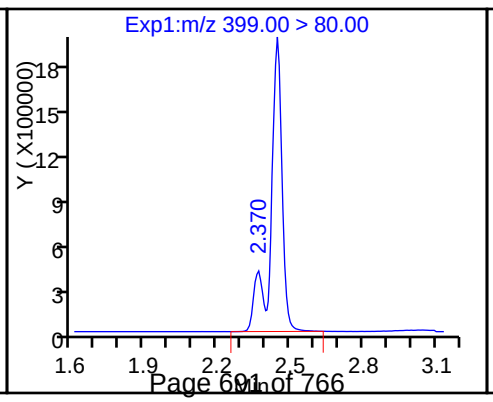
12 Perfluoroheptanoic acid



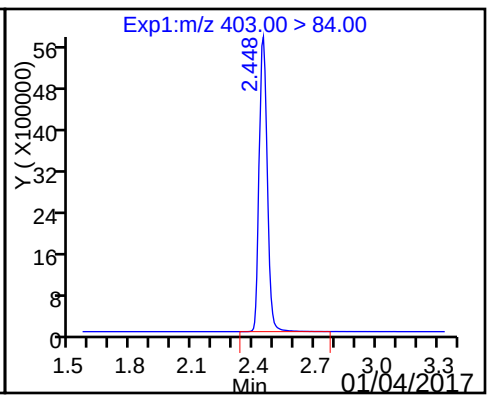
D 11 13C4-PFHpA



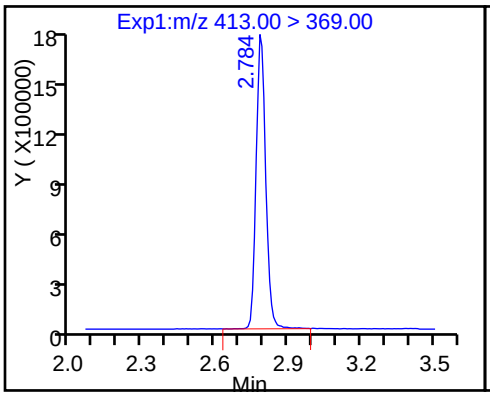
9 Perfluorohexanesulfonic acid



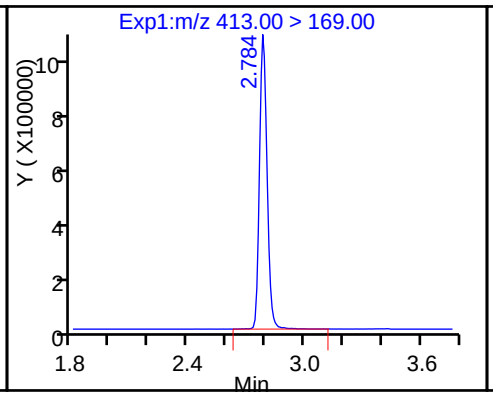
D 10 18O2 PFHxS



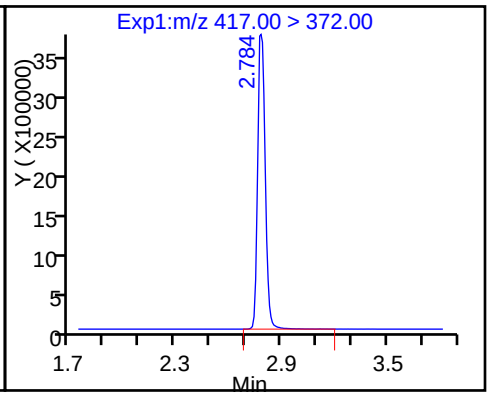
15 Perfluorooctanoic acid



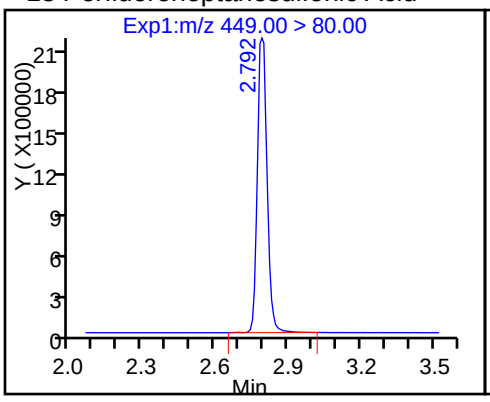
15 Perfluorooctanoic acid



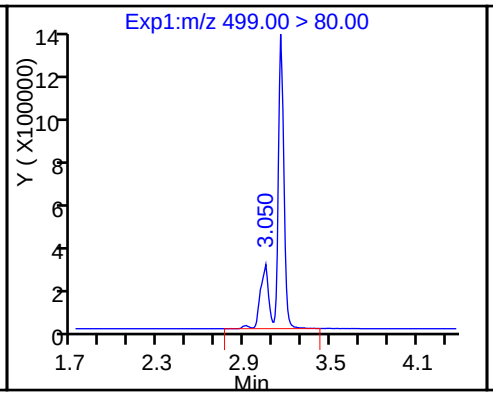
D 14 13C4 PFOA



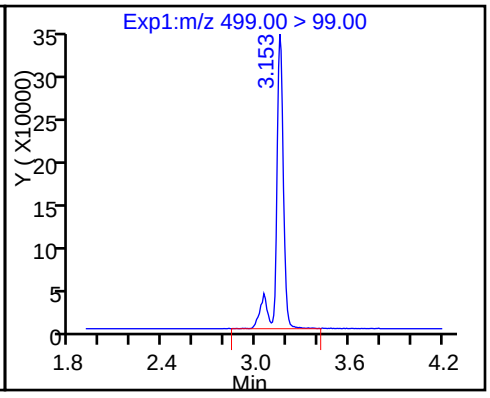
13 Perfluoroheptanesulfonic Acid



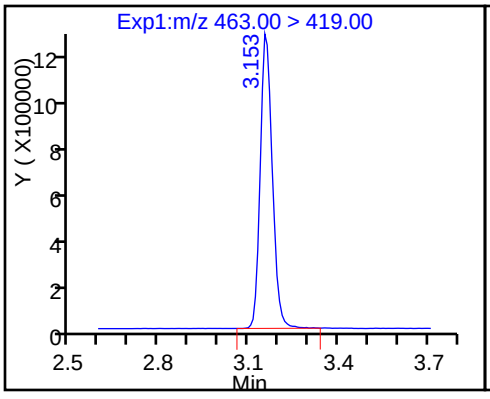
18 Perfluorooctane sulfonic acid



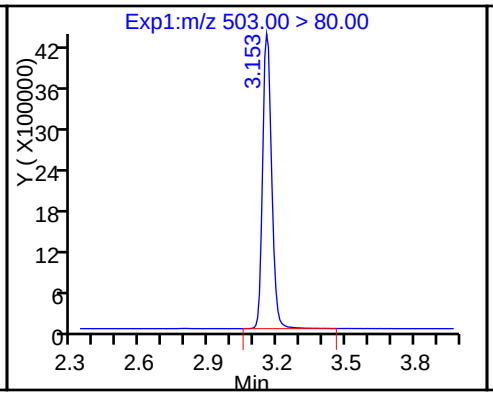
18 Perfluorooctane sulfonic acid



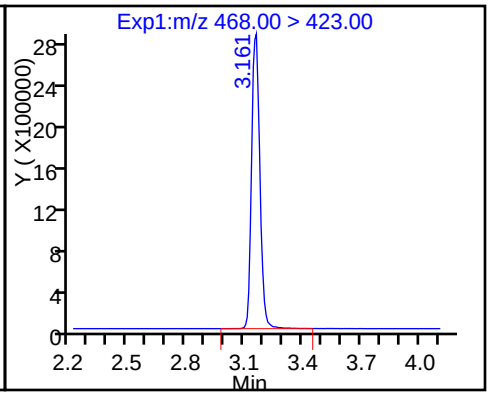
20 Perfluorononanoic acid



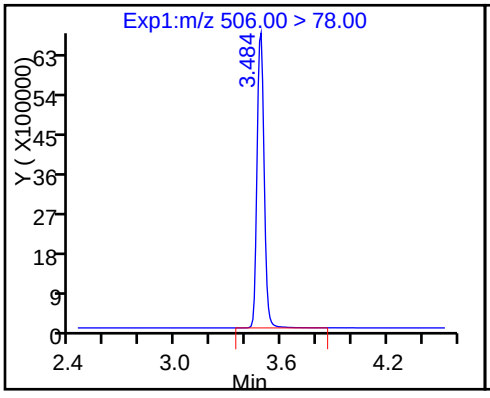
D 17 13C4 PFOS



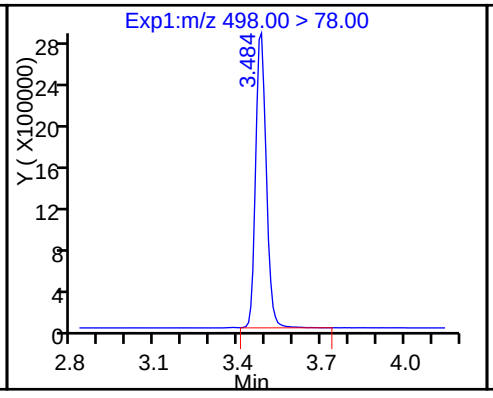
D 19 13C5 PFNA



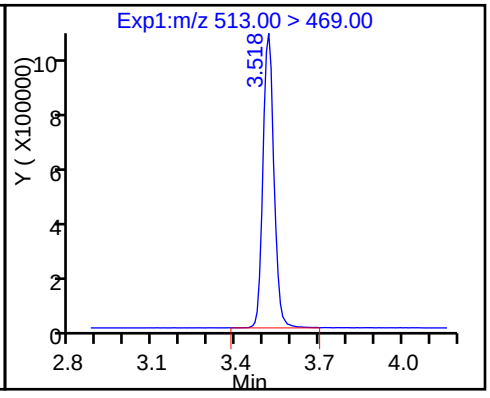
D 21 13C8 FOSA



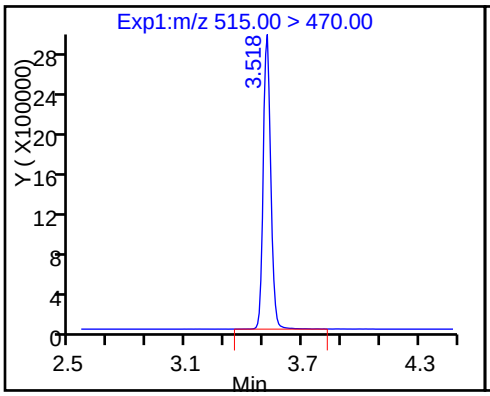
22 Perfluorooctane Sulfonamide



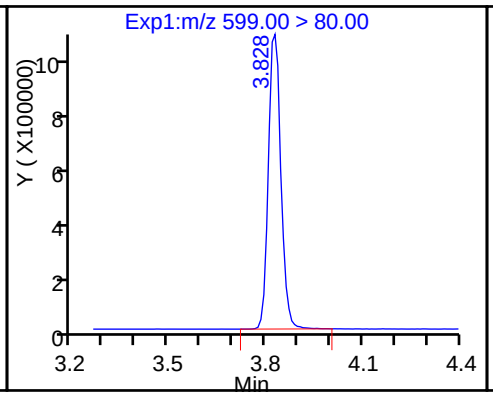
24 Perfluorodecanoic acid



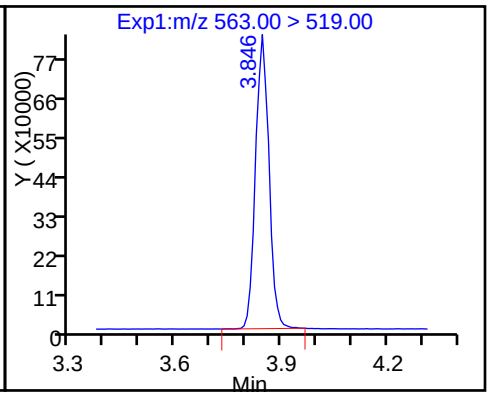
D 23 13C2 PFDA



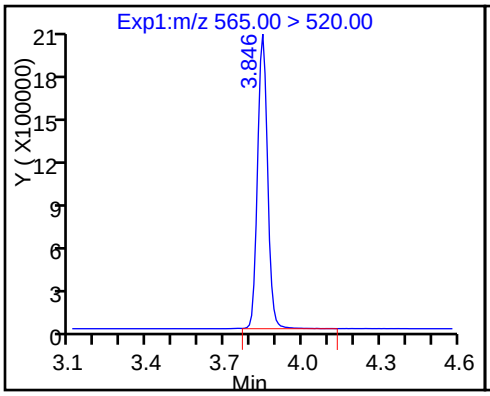
26 Perfluorodecane Sulfonic acid



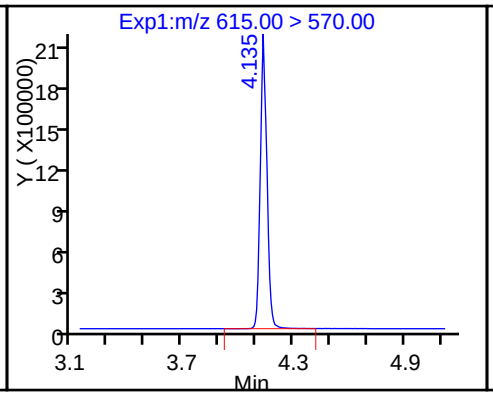
28 Perfluoroundecanoic acid



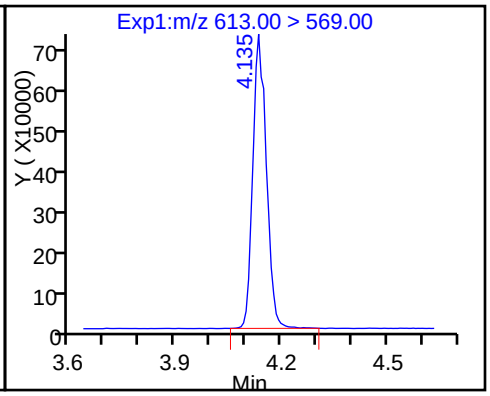
D 27 13C2 PFUnA



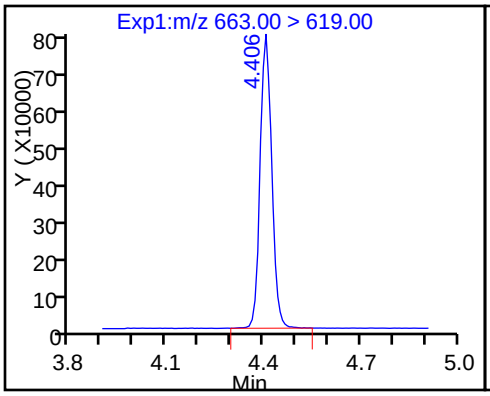
D 30 13C2 PFDoA



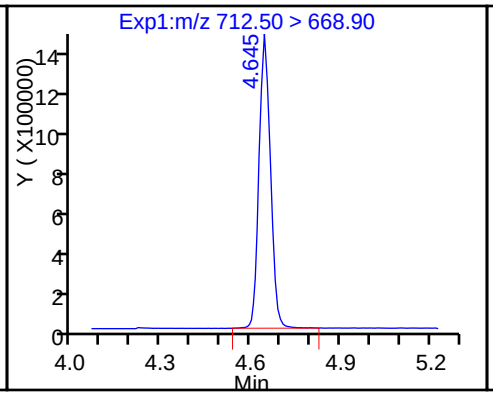
29 Perfluorododecanoic acid



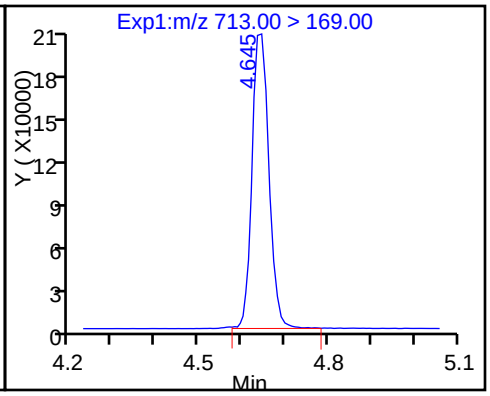
31 Perfluorotridecanoic acid



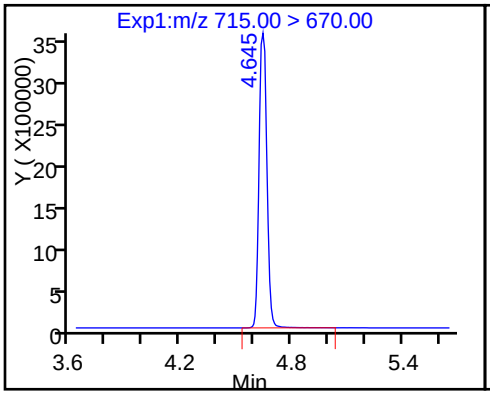
33 Perfluorotetradecanoic acid



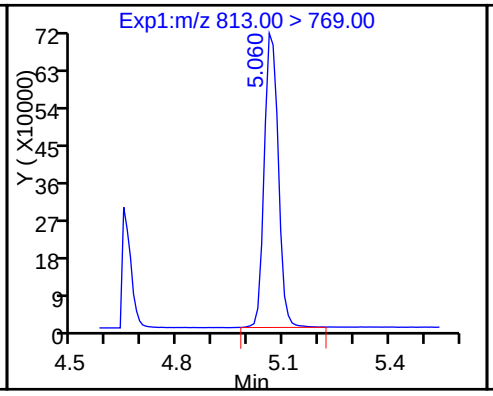
33 Perfluorotetradecanoic acid



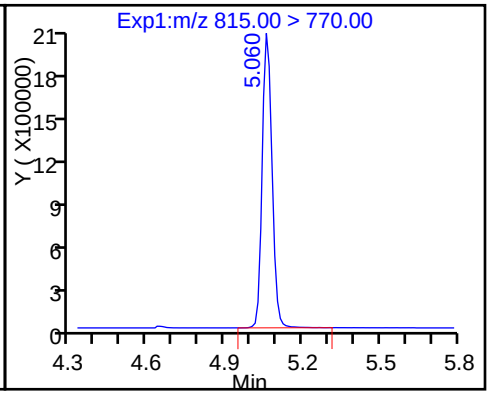
D 32 13C2-PFTeDA



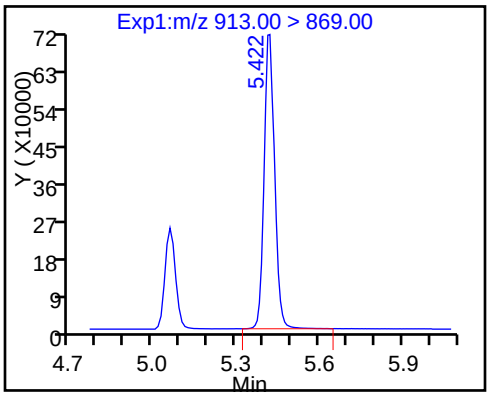
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Lab Sample ID: CCV 320-144419/24 Calibration Date: 12/29/2016 16:19

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 29DEC2016C_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9052		53.0	50.0	6.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.018		51.6	50.0	3.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.530		47.7	44.2	8.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9442		50.8	50.0	1.7	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9844		50.3	50.0	0.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.033		45.7	45.5	0.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.169		50.5	47.6	6.1	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.045		52.1	50.0	4.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9589		50.4	50.0	0.7	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.043		48.7	46.4	4.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9482		50.8	50.0	1.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9512		50.4	50.0	0.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6160		50.8	48.2	5.5	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9694		50.7	50.0	1.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9285		50.6	50.0	1.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8915		49.2	50.0	-1.7	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.670		52.7	50.0	5.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9020		46.6	50.0	-6.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8421		40.9	50.0	-18.3	25.0
13C4 PFBA	Ave	347743	345355		49.7	50.0	-0.7	50.0
13C5-PFPeA	Ave	266072	257580		48.4	50.0	-3.2	50.0
13C2 PFHxA	Ave	245110	231464		47.2	50.0	-5.6	50.0
13C4-PFHpA	Ave	226344	210557		46.5	50.0	-7.0	50.0
18O2 PFHxS	Ave	326976	324458		46.9	47.3	-0.8	50.0
13C4 PFOA	Ave	230362	210446		45.7	50.0	-8.6	50.0
13C4 PFOS	Ave	248847	243732		46.8	47.8	-2.1	50.0
13C5 PFNA	Ave	177687	165832		46.7	50.0	-6.7	50.0
13C8 FOSA	Ave	384141	374302		48.7	50.0	-2.6	50.0
13C2 PFDA	Ave	157302	147959		47.0	50.0	-5.9	50.0
13C2 PFUnA	Ave	117250	110288		47.0	50.0	-5.9	50.0
13C2 PFDoA	Ave	110957	103419		46.6	50.0	-6.8	50.0
13C2-PFTeDA	Ave	227387	210407		46.3	50.0	-7.5	50.0
13C2-PFHxDA	Ave	124568	111120		44.6	50.0	-10.8	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_024.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 29-Dec-2016 16:19:35 ALS Bottle#: 41 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 03-Jan-2017 08:09:06 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 03-Jan-2017 08:08:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.528	1.528	0.0		17267729	49.7		99.3	1415046	
1 Perfluorobutyric acid										
212.90 > 169.00	1.536	1.536	0.0	1.000	15629892	53.0		106	102574	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.803	1.803	0.0	1.000	13111969	51.6		103	158835	
D 4 13C5-PFPeA										
267.90 > 223.00	1.803	1.803	0.0		12878980	48.4		96.8	1257314	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.842	0.0	1.000	21942425	47.7		108		
298.90 > 99.00	1.842	1.842	0.0	1.000	10201756		2.15(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.094	2.094	0.0	1.000	10927634	50.8		102	335295	
D 6 13C2 PFHxA										
315.00 > 270.00	2.094	2.094	0.0		11573215	47.2		94.4	538196	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.440	2.440	0.0	1.000	15256866	45.7		100		
D 11 13C4-PFHpA										
367.00 > 322.00	2.420	2.420	0.0		10527869	46.5		93.0	968216	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.425	2.425	0.0	1.000	10363090	50.3		101	87012	
D 10 18O2 PFHxS										
403.00 > 84.00	2.440	2.440	0.0		15346868	46.9		99.2	795452	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.783	2.783	0.0	1.000	10994894	52.1		104	114579	
413.00 > 169.00	2.776	2.783	-0.007	0.997	6645474		1.65(0.90-1.10)		323030	
D 14 13C4 PFOA										
417.00 > 372.00	2.776	2.776	0.0		10522276	45.7		91.4	475314	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.783	2.783	0.0	1.000	13559527	50.5		106		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.145	3.145	0.0	1.000	11797854	48.7		105	272523	
499.00 > 99.00	3.145	3.145	0.0	1.000	2601216		4.54(0.90-1.10)		118514	
20 Perfluorononanoic acid										
463.00 > 419.00	3.145	3.145	0.0	1.000	7950492	50.4		101	131791	
D 17 13C4 PFOS										
503.00 > 80.00	3.145	3.145	0.0		11650380	46.8		97.9	219495	
D 19 13C5 PFNA										
468.00 > 423.00	3.145	3.145	0.0		8291611	46.7		93.3	552514	
D 21 13C8 FOSA										
506.00 > 78.00	3.467	3.467	0.0		18715092	48.7		97.4	600599	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.475	3.475	0.0	1.000	17745311	50.8		102	481809	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.500	3.500	0.0	1.000	7036907	50.4		101	206538	
D 23 13C2 PFDA										
515.00 > 470.00	3.509	3.509	0.0		7397948	47.0		94.1	329558	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.818	3.818	0.0	1.000	7237192	50.8		105		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.835	3.835	0.0	1.000	5345575	50.7		101	128704	
D 27 13C2 PFUnA										
565.00 > 520.00	3.835	3.835	0.0		5514378	47.0		94.1	318619	
D 30 13C2 PFDoA										
615.00 > 570.00	4.127	4.127	0.0		5170942	46.6		93.2	232289	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.127	4.127	0.0	1.000	4801403	50.6		101	103170	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.398	0.0	1.000	4609957	49.2		98.3	99683	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.634	4.634	0.0	1.000	8634978	52.7		105	115263	
713.00 > 169.00	4.634	4.634	0.0	1.000	1309883		6.59(0.00-0.00)		95170	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.644	4.644	0.0		10520354	46.3		92.5	866724	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.048	5.048	0.0	1.000	4664308	46.6		93.3	4674	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.048	5.048	0.0		5556015	44.6		89.2	83663	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.405	5.405	0.0	1.000	4354330	40.9		81.7	4497	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 03-Jan-2017 08:09:06 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38331.b\29DEC2016C_024.d

Injection Date: 29-Dec-2016 16:19:35 Instrument ID: A8_N

Lims ID: CCV L5

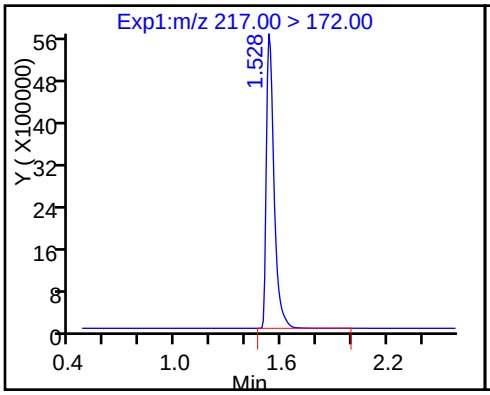
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 24

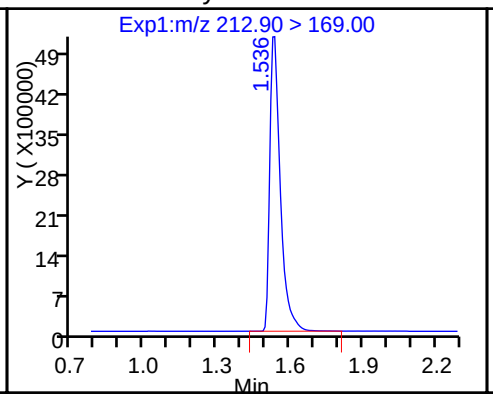
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

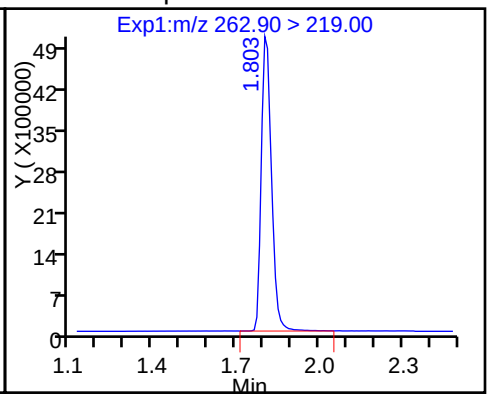
D 2 13C4 PFBA



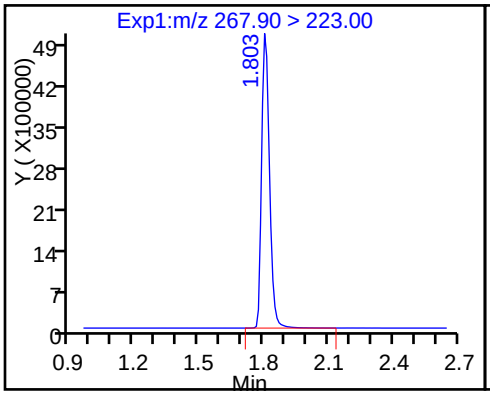
1 Perfluorobutyric acid



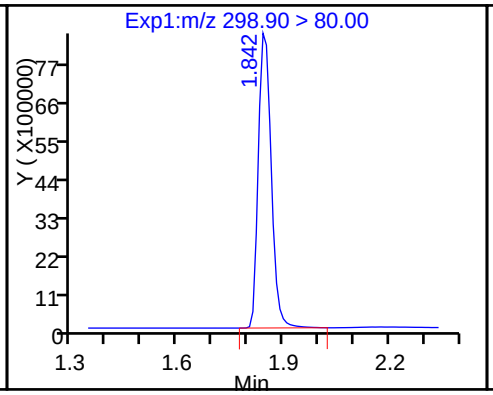
3 Perfluoropentanoic acid



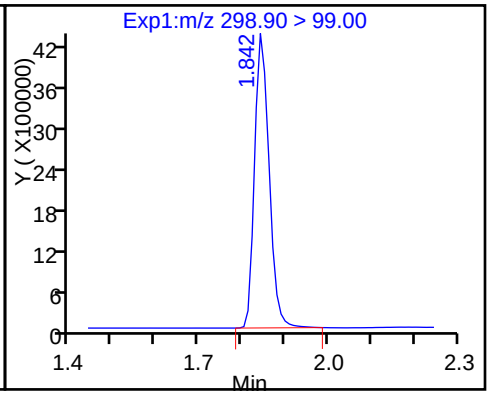
D 4 13C5-PFPeA



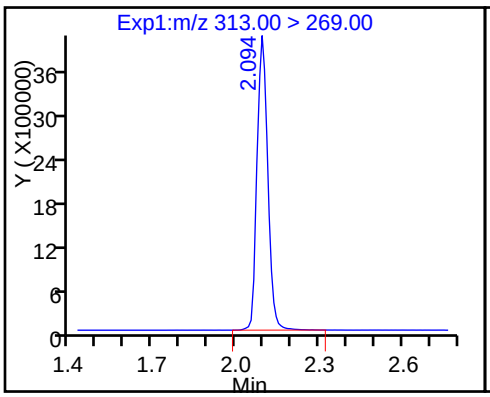
5 Perfluorobutanesulfonic acid



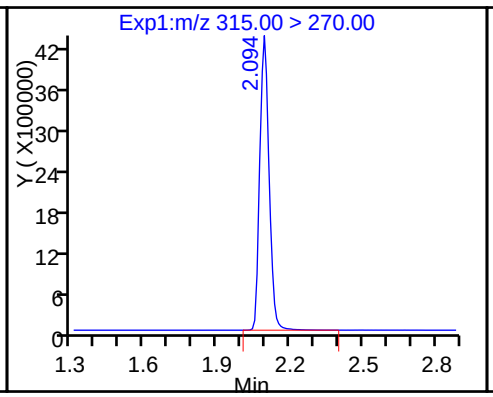
5 Perfluorobutanesulfonic acid



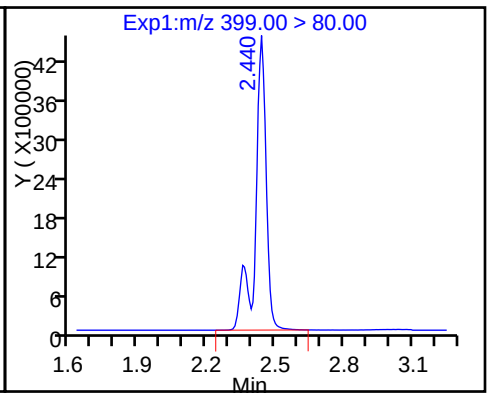
7 Perfluorohexanoic acid



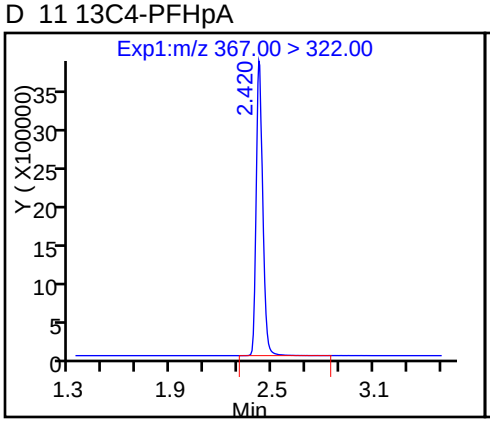
D 6 13C2 PFHxA



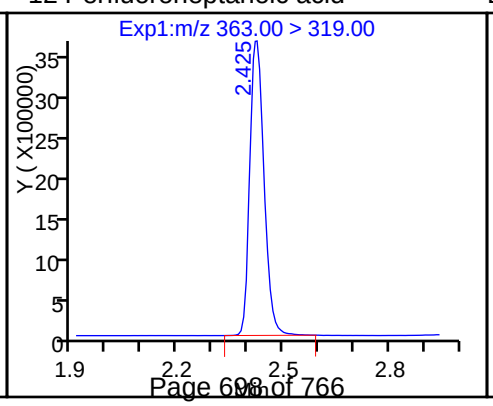
9 Perfluorohexanesulfonic acid



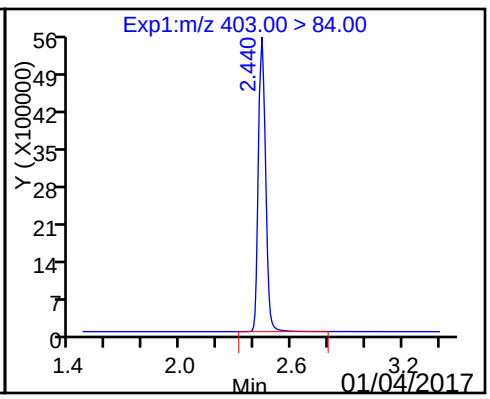
D 11 13C4-PFHpA



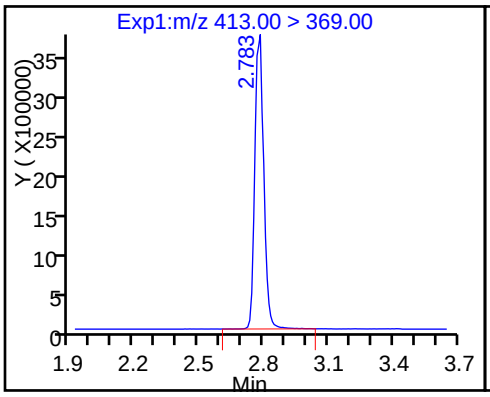
12 Perfluoroheptanoic acid



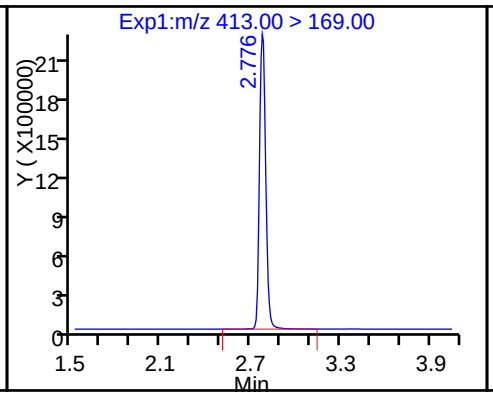
D 10 18O2 PFHxS



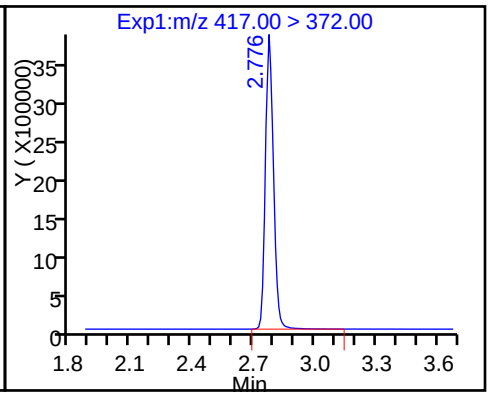
15 Perfluorooctanoic acid



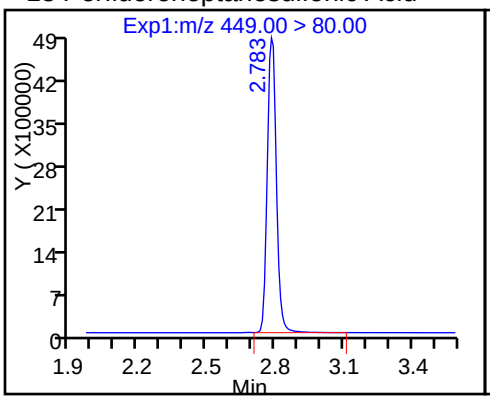
15 Perfluorooctanoic acid



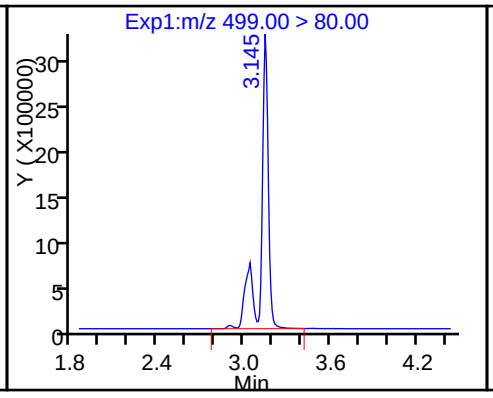
D 14 13C4 PFOA



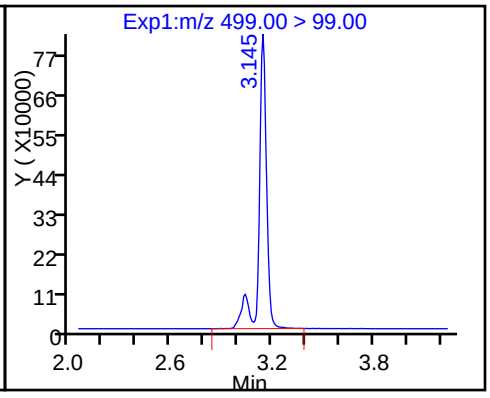
13 Perfluoroheptanesulfonic Acid



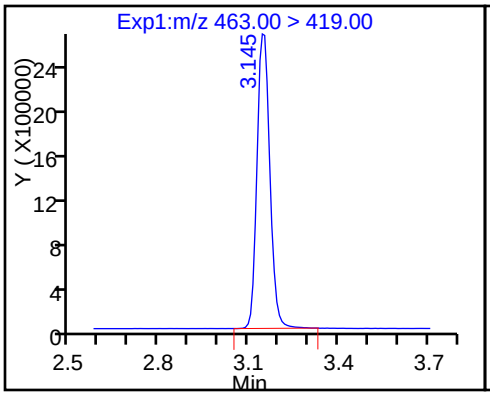
18 Perfluorooctane sulfonic acid



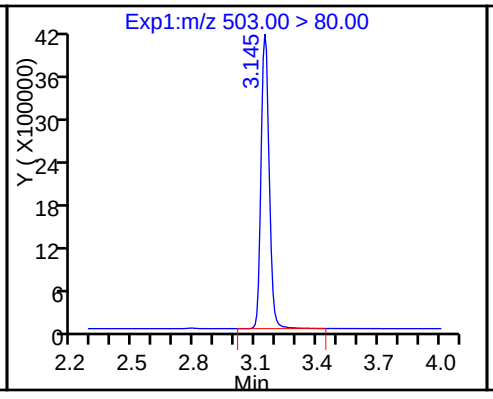
18 Perfluorooctane sulfonic acid



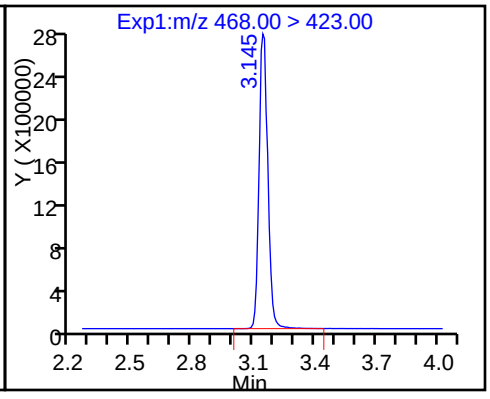
20 Perfluorononanoic acid



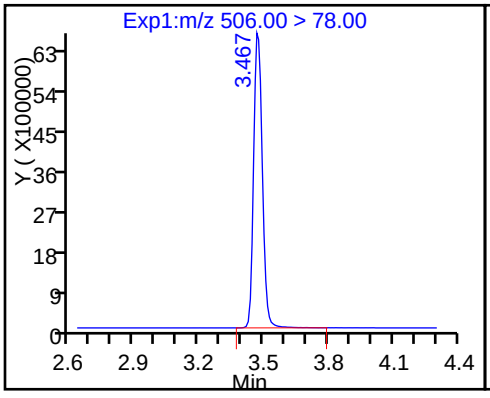
D 17 13C4 PFOS



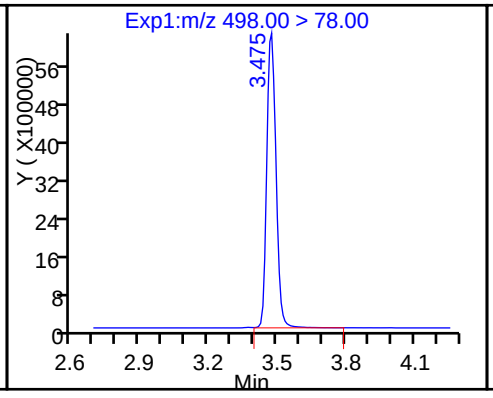
D 19 13C5 PFNA



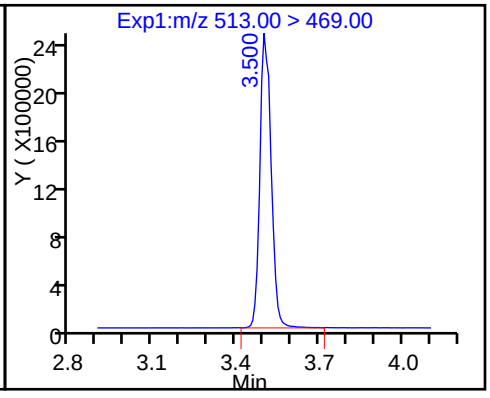
D 21 13C8 FOSA



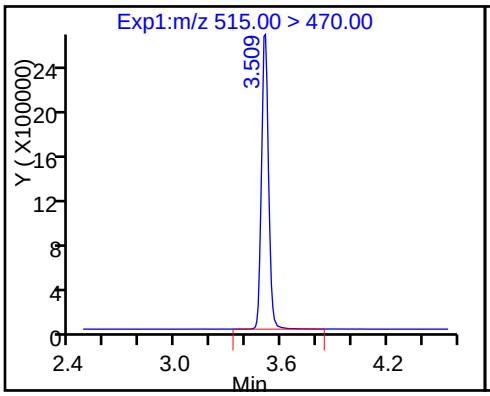
22 Perfluorooctane Sulfonamide



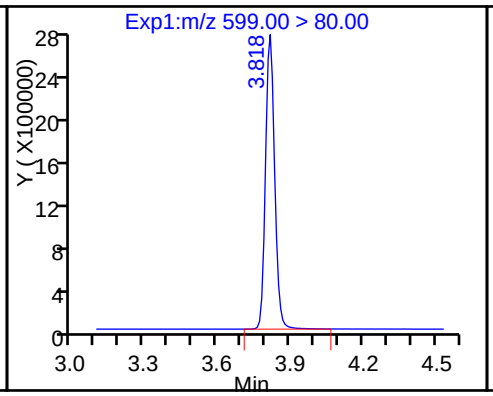
24 Perfluorodecanoic acid



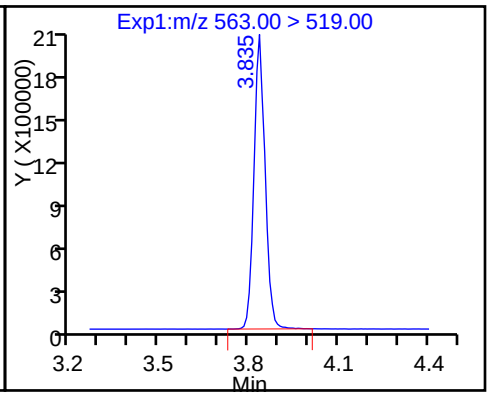
D 23 13C2 PFDA



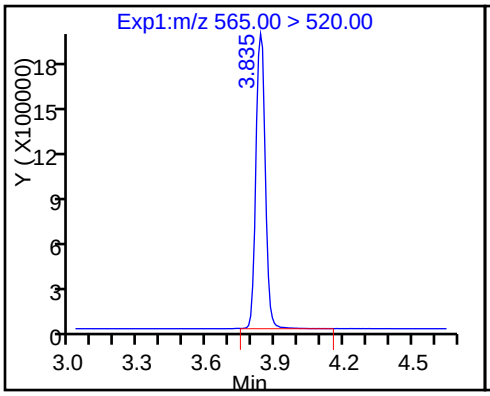
26 Perfluorodecane Sulfonic acid



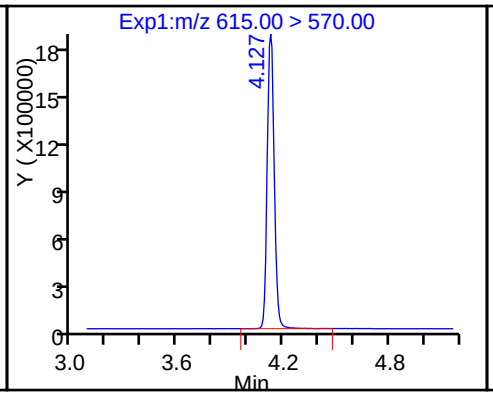
28 Perfluoroundecanoic acid



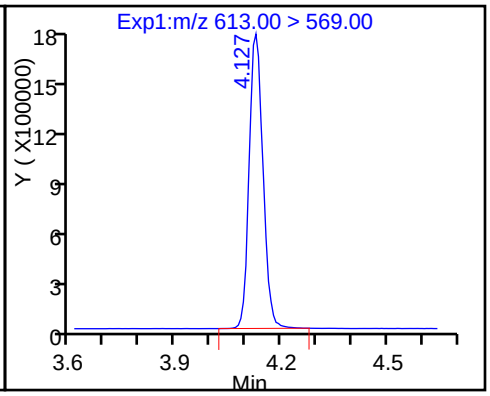
D 27 13C2 PFUnA



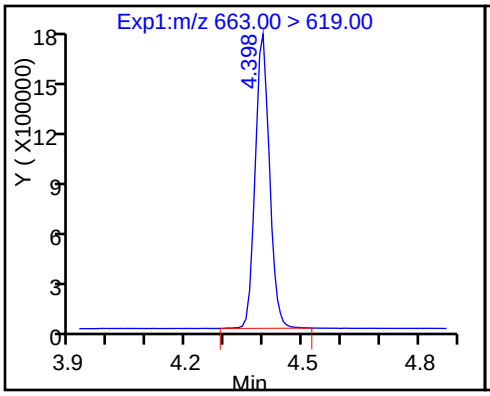
D 30 13C2 PFDoA



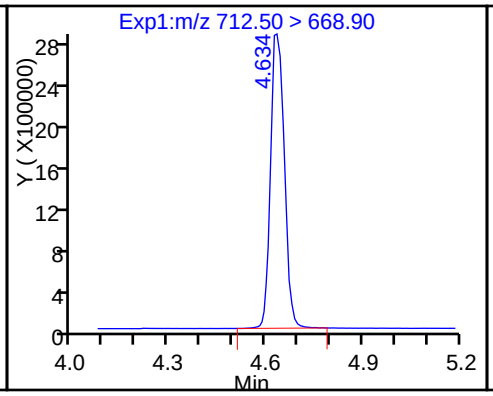
29 Perfluorododecanoic acid



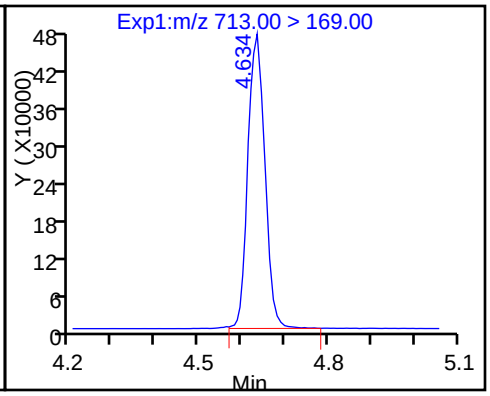
31 Perfluorotridecanoic acid



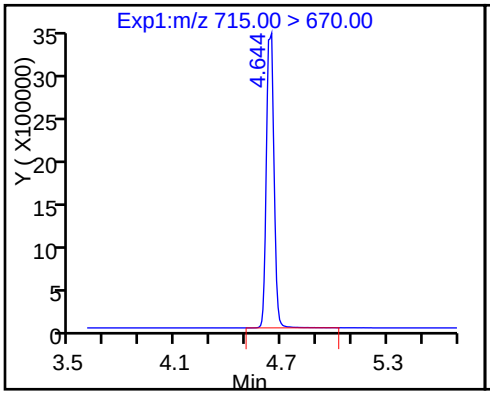
33 Perfluorotetradecanoic acid



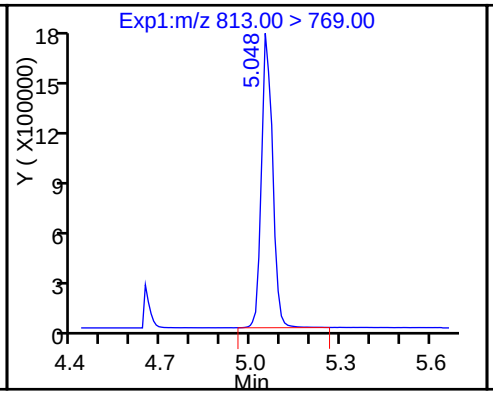
33 Perfluorotetradecanoic acid



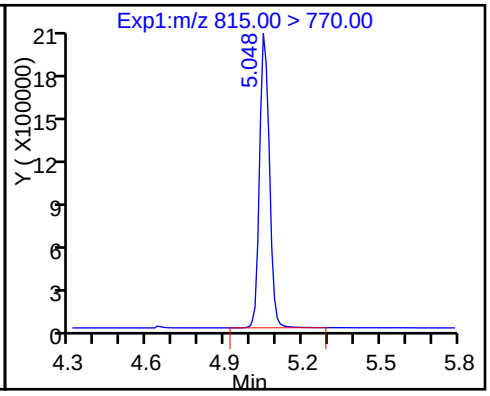
D 32 13C2-PFTeDA



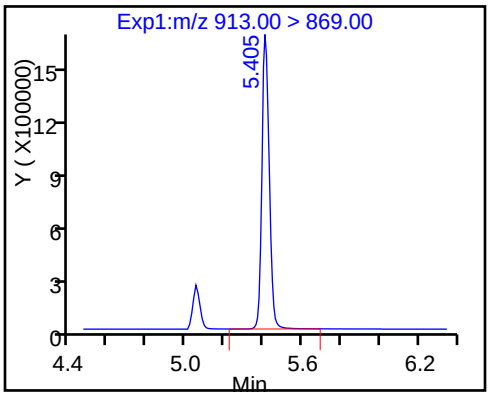
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-142688/1-A

Matrix: Water Lab File ID: 27DEC2016A_033.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 250.00(mL) Date Analyzed: 12/27/2016 20:50

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.0020	0.00075
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00092
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	112		25-150
STL00994	18O2 PFHxS	107		25-150
STL00991	13C4 PFOS	105		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_033.d
Lims ID: MB 320-142688/1-A
Client ID:
Sample Type: MB
Inject. Date: 27-Dec-2016 20:50:14 ALS Bottle#: 23 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-142688/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:43:13 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		19692056	56.6		113	1603534	
1 Perfluorobutyric acid										
212.90 > 169.00	1.558	1.542	0.016	1.000	16033	0.0477			90.2	
D 4 13C5-PFPeA										
267.90 > 223.00	1.811	1.820	-0.009		15891983	59.7		119	1039907	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.811	1.820	-0.009	1.000	32388	0.1033			206	
D 6 13C2 PFHxA										
315.00 > 270.00	2.106	2.110	-0.004		13543724	55.3		111	639701	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.114	2.110	0.004	1.000	11650	0.0463			294	
D 11 13C4-PFHpA										
367.00 > 322.00	2.437	2.439	-0.002		12983008	57.4		115	794651	
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.462	-0.010		16593163	50.7		107	3032211	
D 47 M2-6:2FTS										
429.00 > 409.00	2.767	2.725	0.042		813	0.006950		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.741	2.725	0.016	1.000	496	NR				
D 14 13C4 PFOA										
417.00 > 372.00	2.798	2.799	-0.001		12923824	56.1		112	573159	
D 17 13C4 PFOS										
503.00 > 80.00	3.167	3.175	-0.008		12521603	50.3		105	762551	
D 19 13C5 PFNA										
468.00 > 423.00	3.167	3.175	-0.008		9956214	56.0		112	858252	
D 21 13C8 FOSA										
506.00 > 78.00	3.482	3.482	0.0		8505194	22.1		44.3	405055	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.507	3.533	-0.026	1.000	5802	0.0359			77.3	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.532	3.533	-0.001		8556884	54.4		109	437686	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.532	3.602	-0.070		732554	7.71		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.808	3.757	0.051		226	0.002103		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.591	3.775	-0.184	0.943	577	NR				
D 51 d-N-EtFOSA-M										
531.00 > 169.00	3.869	3.802	0.067		414	0.004826		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.843	3.853	-0.010	1.000	1536	0.0100				
D 27 13C2 PFUnA										
565.00 > 520.00	3.860	3.862	-0.002		6492173	55.4		111	390620	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.869	3.870	-0.001	1.000	17639	0.1421			225	
D 46 d5-NEtFOSAA										
589.00 > 419.00	4.002	4.005	-0.003		1009	0.0129		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.869	4.030	-0.161	0.967	2073	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.155	4.164	-0.009		5416532	48.8		97.6	194014	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.671	4.673	-0.002	1.000	38444	0.2239			320	
713.00 > 169.00	4.662	4.673	-0.011	0.998	5982		6.43(0.00-0.00)		1355	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.662	4.673	-0.011		12721893	55.9		112	2386706	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.091	5.092	-0.001		5483135	44.0		88.0	200083	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.314	5.103	0.211	1.000	13721	-0.4670			14.5	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.452	5.467	-0.015	1.000	2058	0.0184			6.1	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 29-Dec-2016 09:43:37 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_033.d

Injection Date: 27-Dec-2016 20:50:14 Instrument ID: A8_N

Lims ID: MB 320-142688/1-A

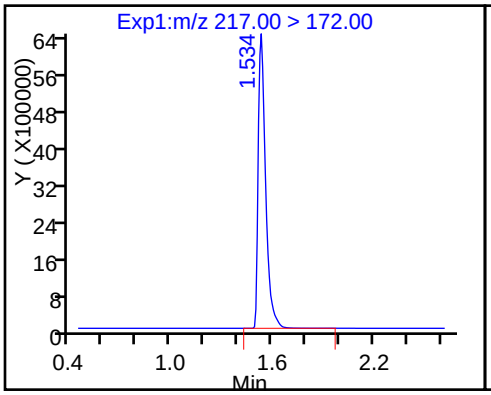
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 23 Worklist Smp#: 33

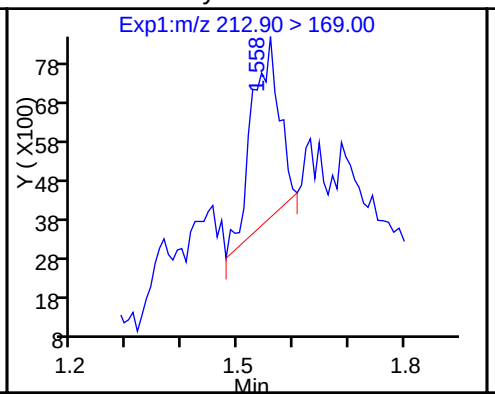
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

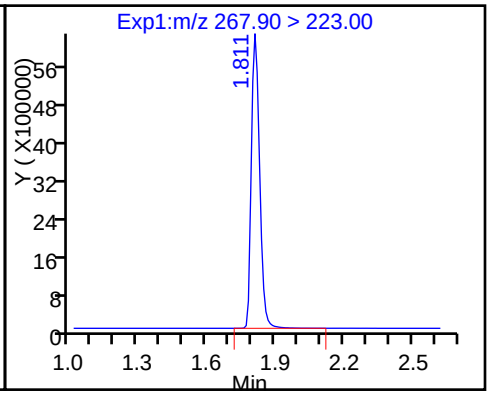
D 2 13C4 PFBA



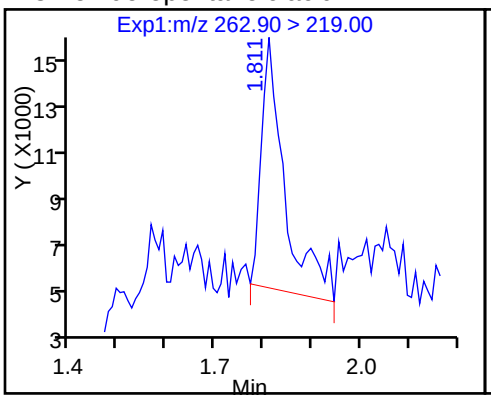
1 Perfluorobutyric acid



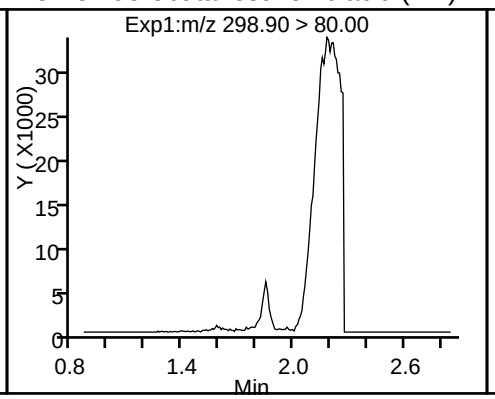
D 4 13C5-PFPeA



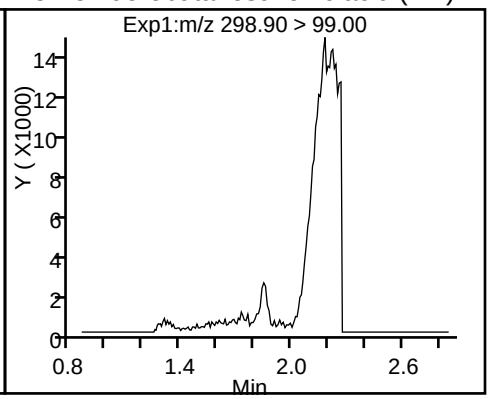
3 Perfluoropentanoic acid



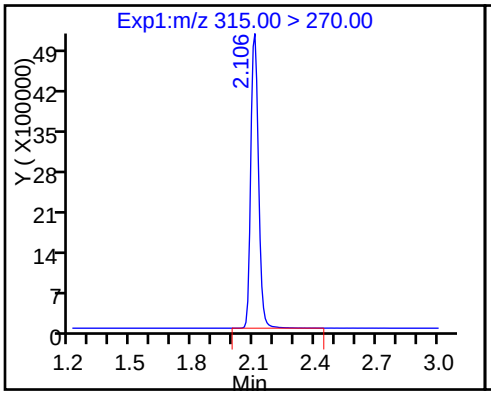
5 Perfluorobutanesulfonic acid (ND)



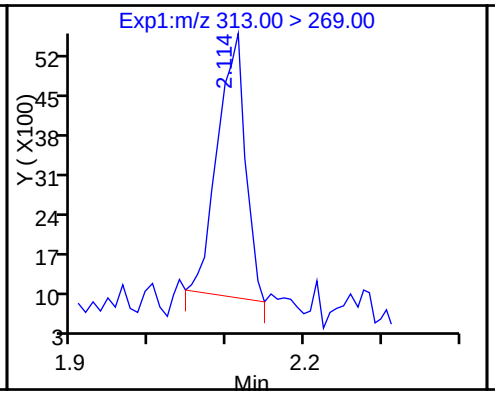
5 Perfluorobutanesulfonic acid (ND)



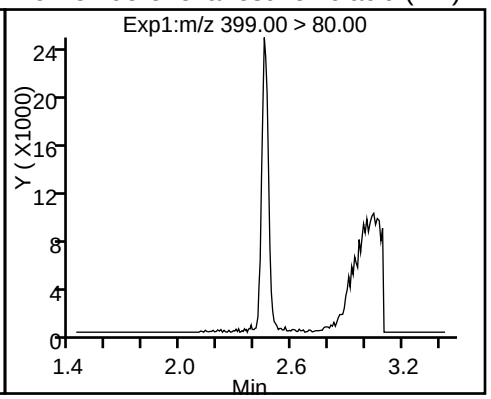
D 6 13C2 PFHxA



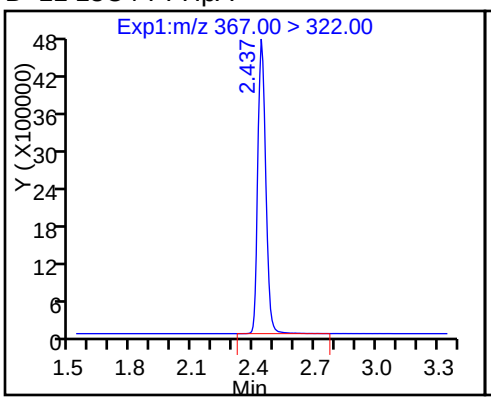
7 Perfluorohexanoic acid



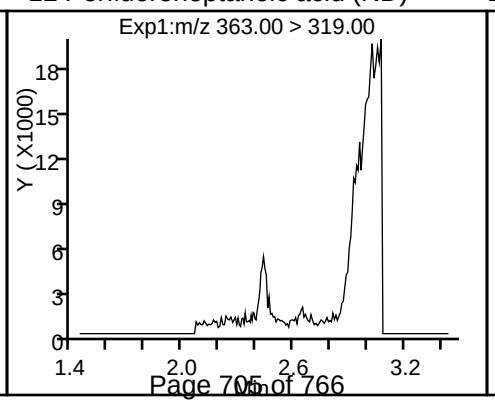
9 Perfluorohexanesulfonic acid (ND)



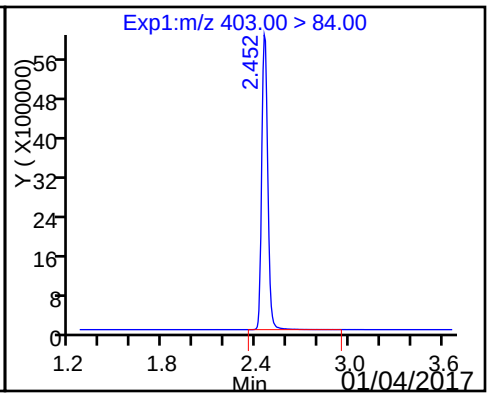
D 11 13C4-PFHpA



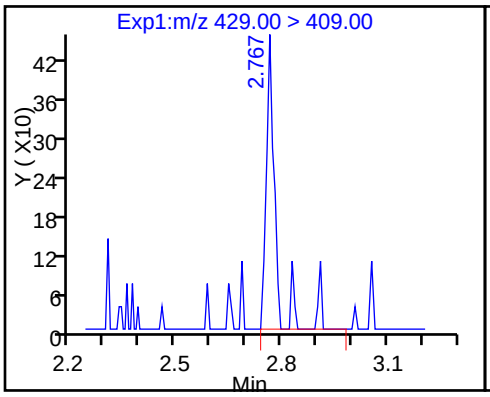
12 Perfluoroheptanoic acid (ND)



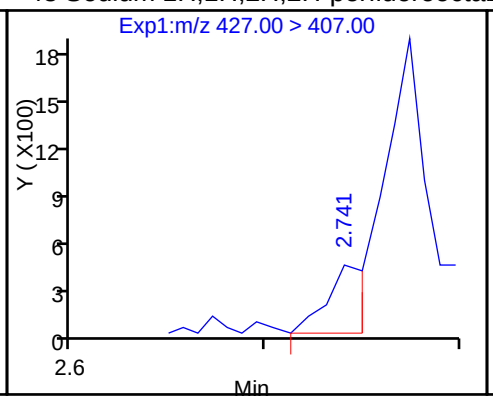
D 10 18O2 PFHxS



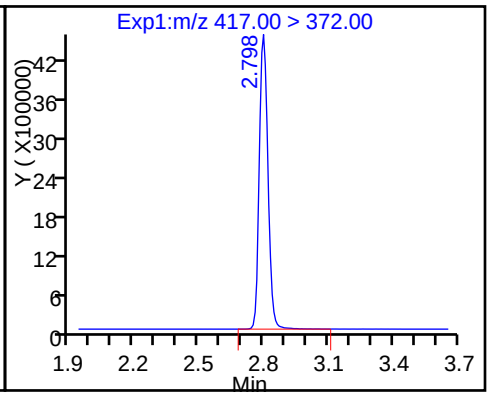
D 47 M2-6:2FTS



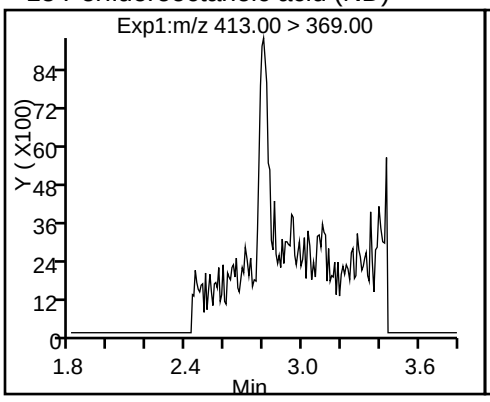
48 Sodium 1H,1H,2H,2H-perfluorooctane



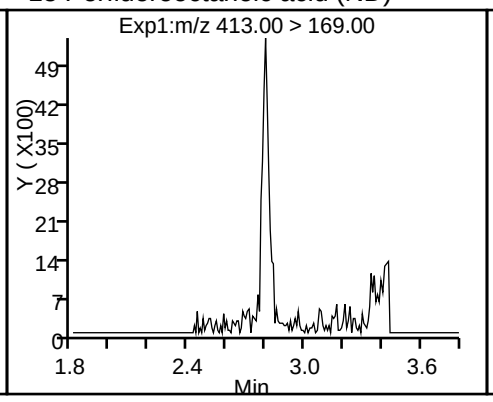
D 14 13C4 PFOA



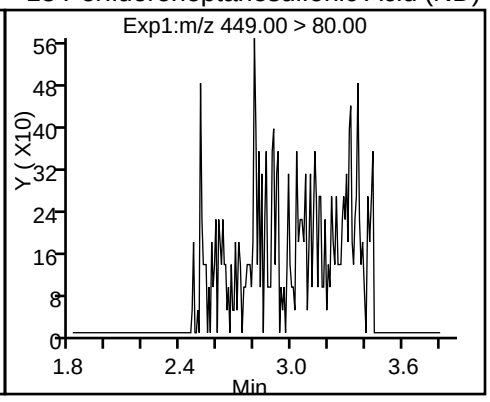
15 Perfluorooctanoic acid (ND)



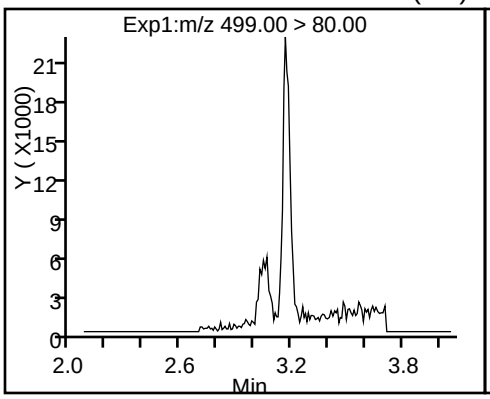
15 Perfluorooctanoic acid (ND)



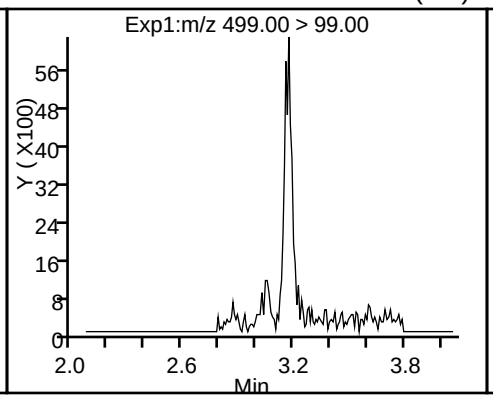
13 Perfluoroheptanesulfonic Acid (ND)



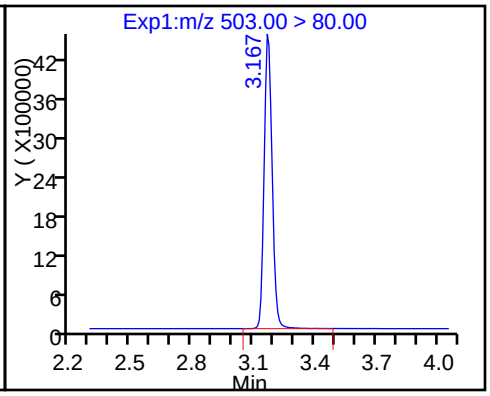
18 Perfluorooctane sulfonic acid (ND)



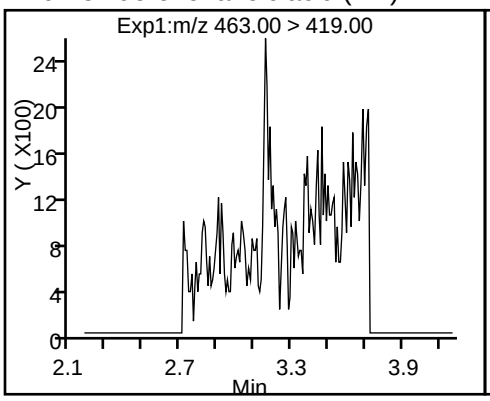
18 Perfluorooctane sulfonic acid (ND)



D 17 13C4 PFOS



20 Perfluorononanoic acid (ND)



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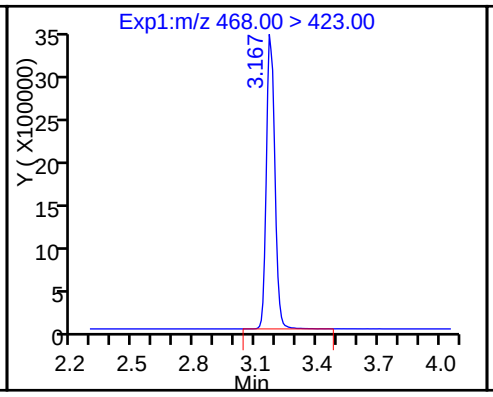
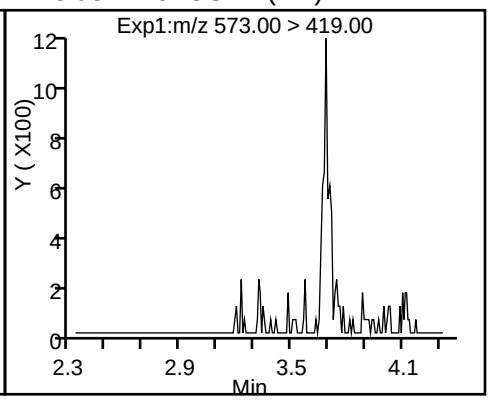
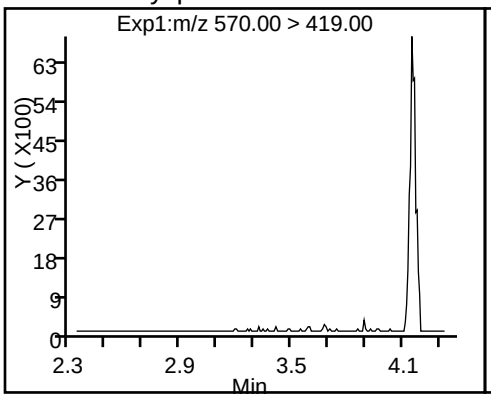


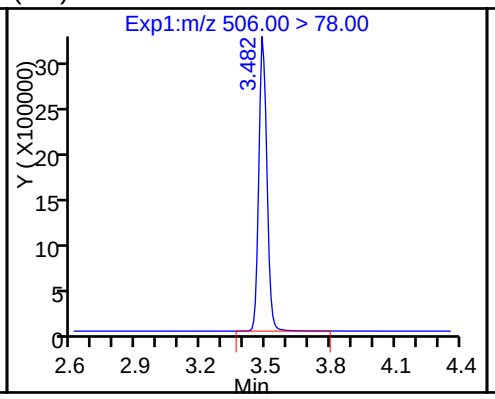
D 45 d3-NMeFOSAA (ND)



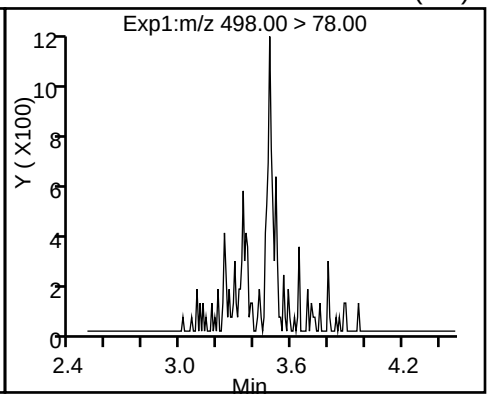
44 N-methyl perfluorooctane sulfonamid (ND)



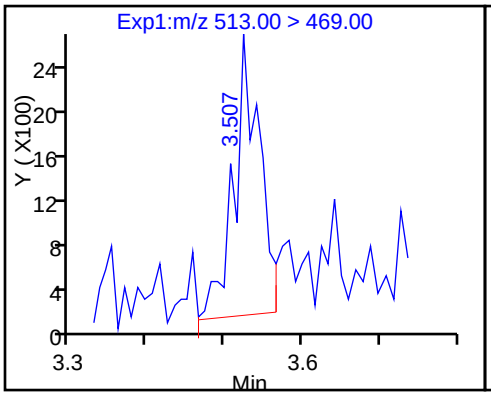
D 21 13C8 FOSA



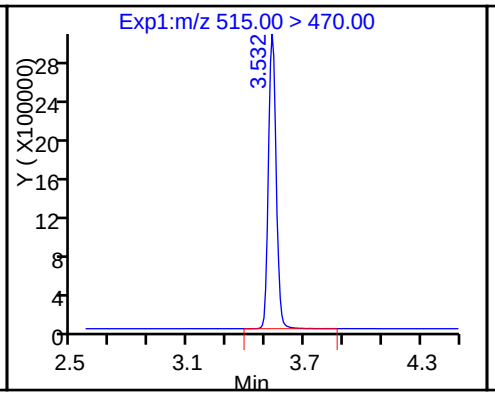
22 Perfluorooctane Sulfonamide (ND)



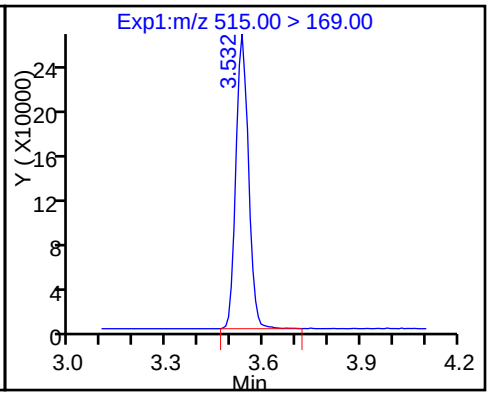
24 Perfluorodecanoic acid



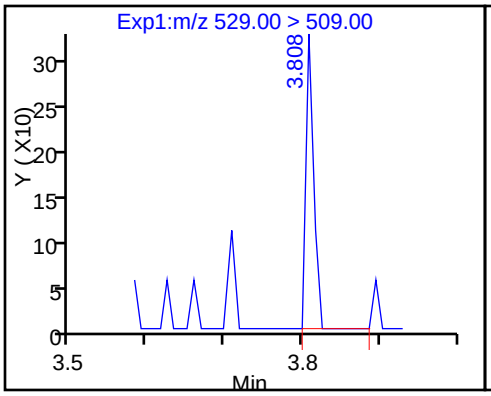
D 23 13C2 PFDA



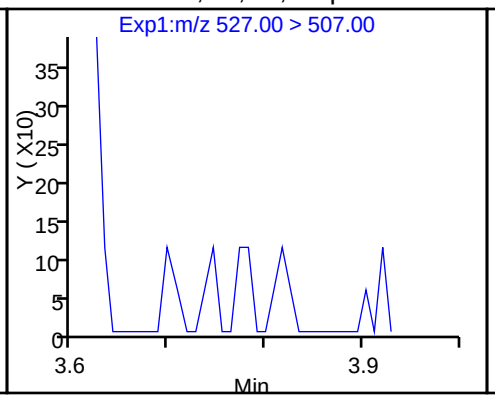
D 52 d-N-MeFOSA-M



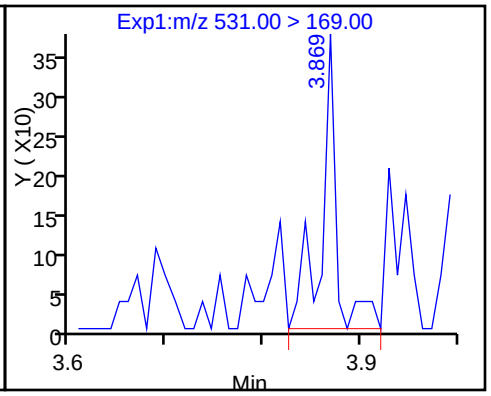
D 42 M2-8:2FTS



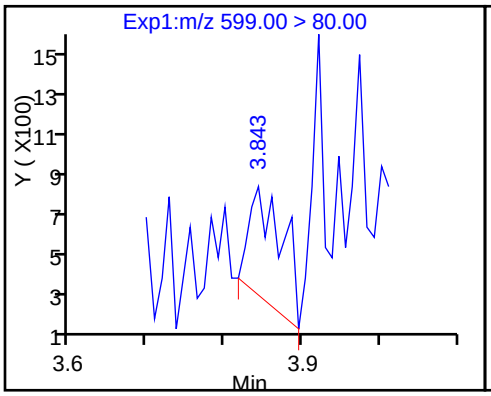
43 Sodium 1H,1H,2H,2H-perfluorooctane



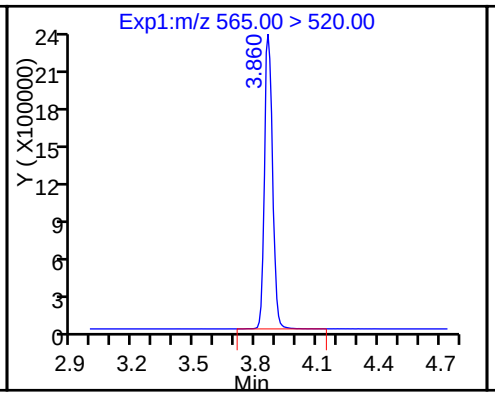
D 51 d-N-EtFOSA-M



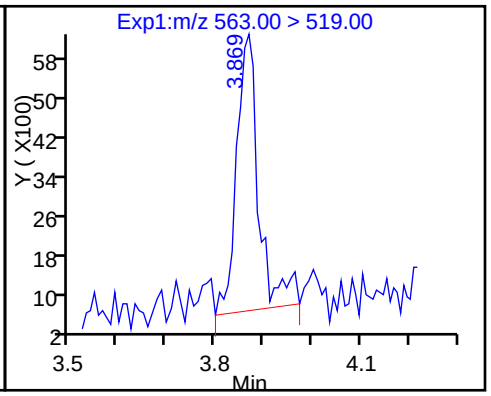
26 Perfluorodecane Sulfonic acid



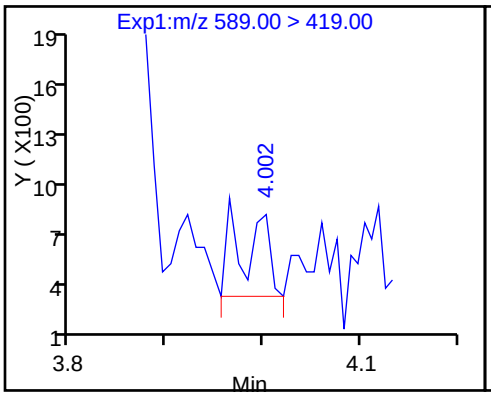
D 27 13C2 PFUnA



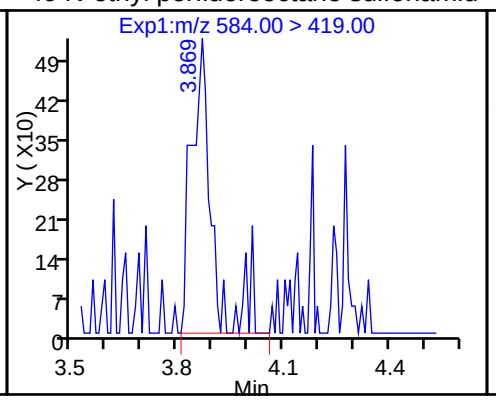
28 Perfluoroundecanoic acid



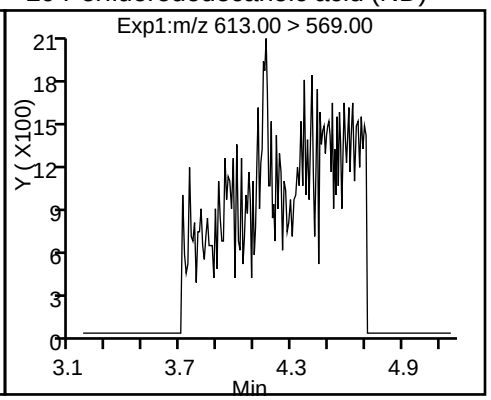
D 46 d5-NEtFOSAA



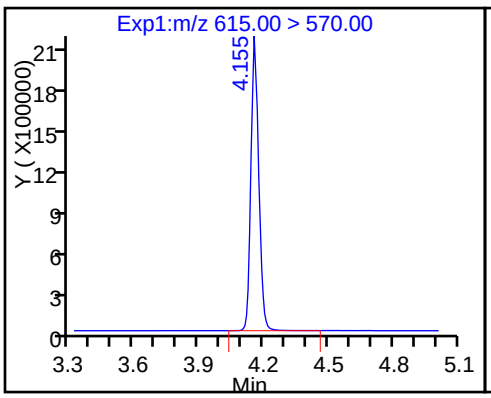
49 N-ethyl perfluorooctane sulfonamid



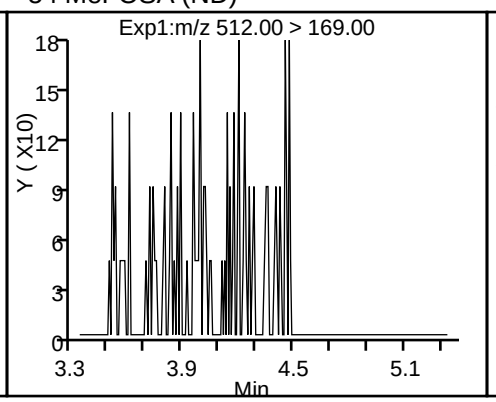
29 Perfluorododecanoic acid (ND)



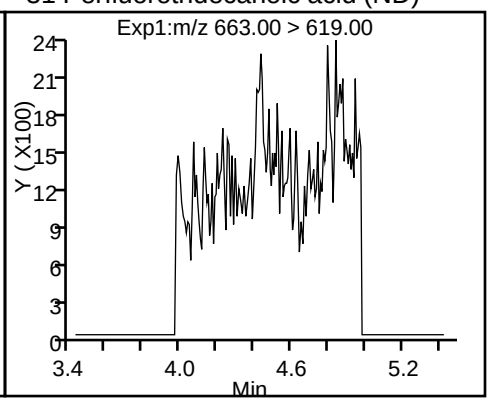
D 30 13C2 PFDoA



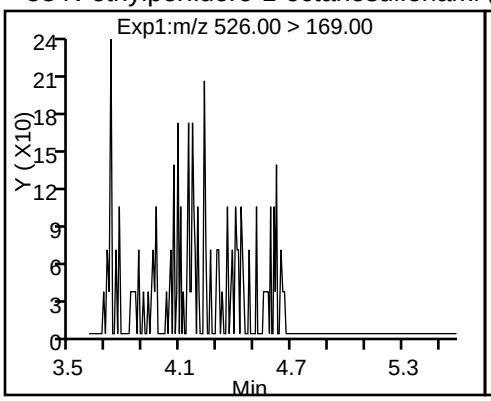
54 MeFOSA (ND)



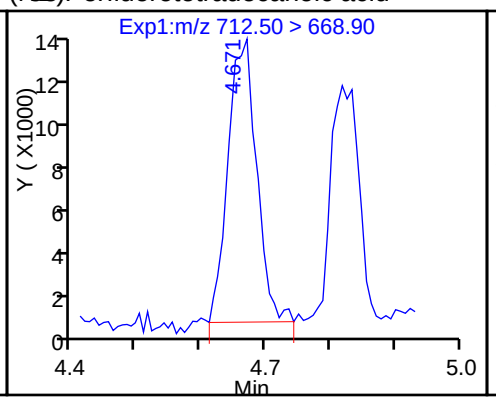
31 Perfluorotridecanoic acid (ND)



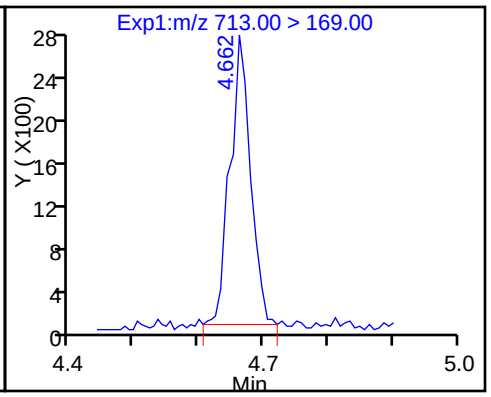
53 N-ethylperfluoro-1-octanesulfonami (ND)



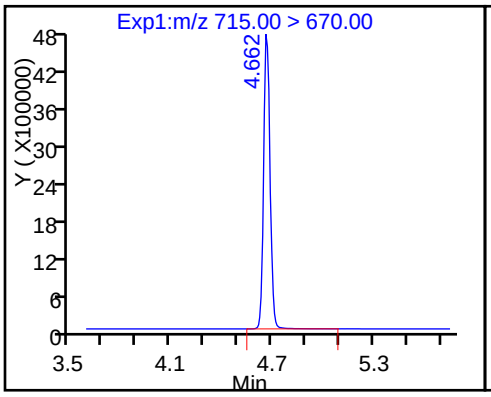
33 Perfluorotetradecanoic acid



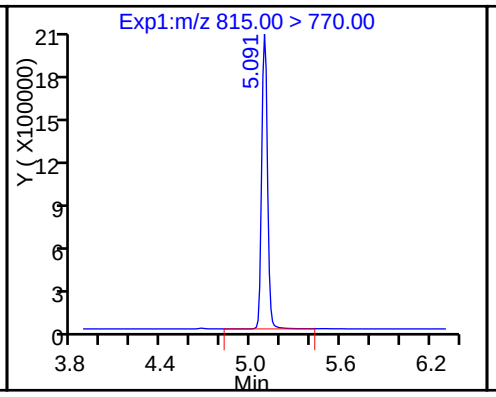
33 Perfluorotetradecanoic acid



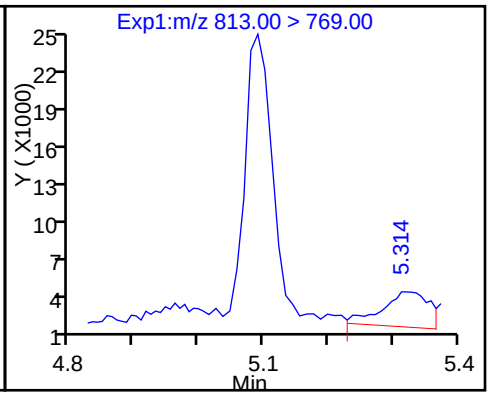
D 32 13C2-PFTeDA



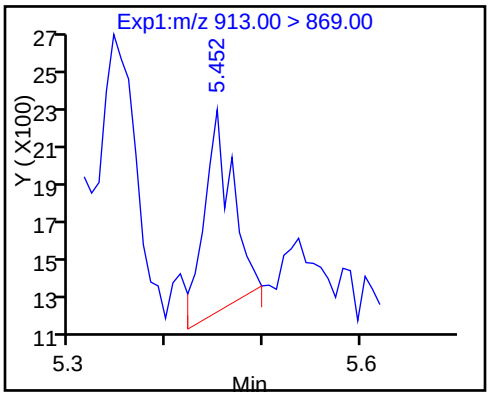
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-142688/2-A

Matrix: Water Lab File ID: 27DEC2016A_034.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 250.00(mL) Date Analyzed: 12/27/2016 20:57

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0412		0.0025	0.0020	0.00075
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0432		0.0025	0.0020	0.00092
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0404		0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	108		25-150
STL00994	18O2 PFHxS	109		25-150
STL00991	13C4 PFOS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_034.d
Lims ID: LCS 320-142688/2-A
Client ID:
Sample Type: LCS
Inject. Date: 27-Dec-2016 20:57:42 ALS Bottle#: 24 Worklist Smp#: 34
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-142688/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:43:13 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:38:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		19265928	55.4		111	900910	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.542	-0.008	1.000	7130504	21.7		108	52923	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.820	-0.010		15467564	58.1		116	874821	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.820	-0.010	1.000	6258180	20.5		103	61400	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.858	-0.010	1.000	10938897	21.6		122		
298.90 > 99.00	1.848	1.858	-0.010	1.000	4599851		2.38(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.095	2.110	-0.015		13730394	56.0		112	619731	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.103	2.110	-0.007	1.000	4960180	19.4		97.2	158402	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.372	2.432	-0.060	1.000	6912440	18.8		103		
D 11 13C4-PFHpA										
367.00 > 322.00	2.437	2.439	-0.002		12369825	54.7		109	1438377	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.437	2.439	-0.002	1.000	5106182	21.1		105	36333	
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.462	-0.010		16918088	51.7		109	692699	
D 14 13C4 PFOA										
417.00 > 372.00	2.798	2.799	-0.001		12427407	53.9		108	543510	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.790	2.799	-0.009	1.000	5134798	20.6		103	49838	
413.00 > 169.00	2.798	2.799	-0.001	1.003	3061098		1.68(0.90-1.10)		126606	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.798	2.807	-0.009	1.000	5980669	20.4		107		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.057	3.067	-0.010	1.000	5333785	20.2		109	63138	
499.00 > 99.00	3.167	3.067	0.100	1.036	1170010		4.56(0.90-1.10)		73474	
D 17 13C4 PFOS										
503.00 > 80.00	3.167	3.175	-0.008		12701917	51.0		107	372421	
20 Perfluorononanoic acid										
463.00 > 419.00	3.167	3.175	-0.008	1.000	3506038	19.9		99.7	51569	
D 19 13C5 PFNA										
468.00 > 423.00	3.167	3.175	-0.008		9232932	52.0		104	1052406	
D 21 13C8 FOSA										
506.00 > 78.00	3.482	3.482	0.0		7095617	18.5		36.9	219857	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.482	3.491	-0.009	1.000	2607641	19.7		98.5	139043	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.532	3.533	-0.001	1.000	3161895	19.5		97.7	98347	
D 23 13C2 PFDA										
515.00 > 470.00	3.524	3.533	-0.009		8571371	54.5		109	250890	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.843	3.853	-0.010	1.000	2944678	19.0		98.4		
D 27 13C2 PFUnA										
565.00 > 520.00	3.852	3.862	-0.010		6166638	52.6		105	315716	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.860	3.870	-0.010	1.000	2308192	19.6		97.9	51514	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.155	4.164	-0.009	1.000	1874795	19.1		95.3	44970	
D 30 13C2 PFDoA										
615.00 > 570.00	4.148	4.164	-0.016		5355088	48.3		96.5	198536	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.419	4.429	-0.010	1.000	1798052	18.5		92.6	33482	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.662	4.673	-0.011	1.000	4229812	24.9		125	46780	
713.00 > 169.00	4.653	4.673	-0.020	0.998	675874		6.26(0.00-0.00)		90656	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.662	4.673	-0.011		12515782	55.0		110	976179	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.080	5.092	-0.012		5372406	43.1		86.3	195882	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.322	5.103	0.219	1.000	6572	-0.5354		-2.7	2.0	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.460	5.467	-0.007	1.000	2171285	19.7		98.4	3824	

Report Date: 29-Dec-2016 09:43:38 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_034.d

Injection Date: 27-Dec-2016 20:57:42 Instrument ID: A8_N

Lims ID: LCS 320-142688/2-A

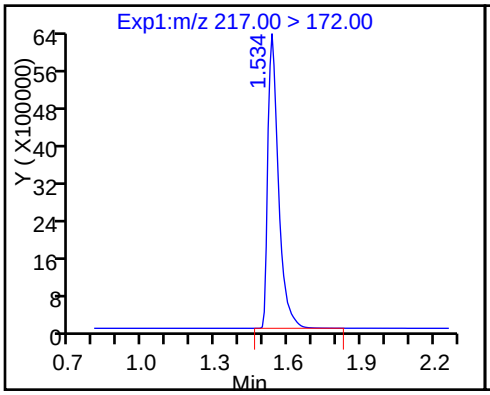
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 24 Worklist Smp#: 34

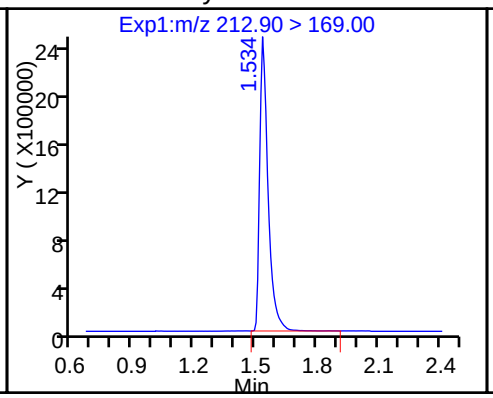
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

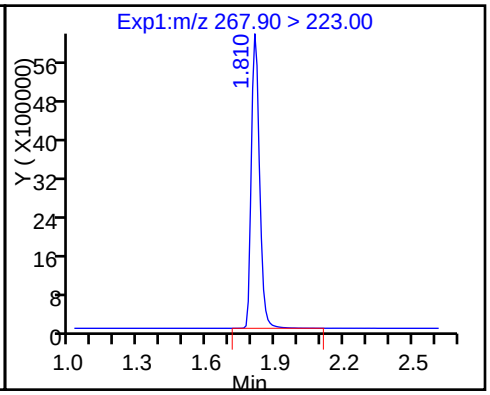
D 2 13C4 PFBA



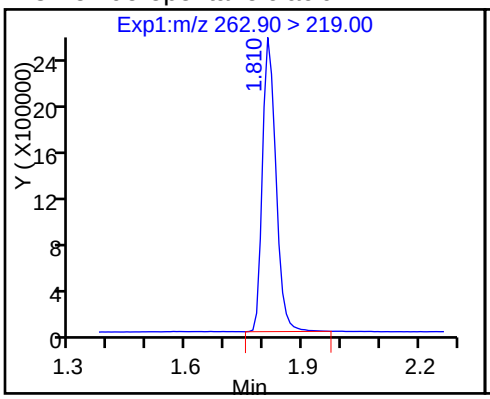
1 Perfluorobutyric acid



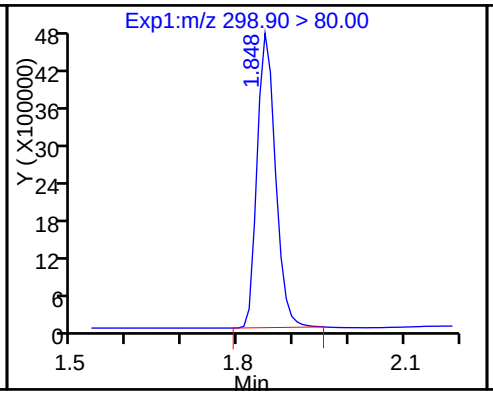
D 4 13C5-PFPeA



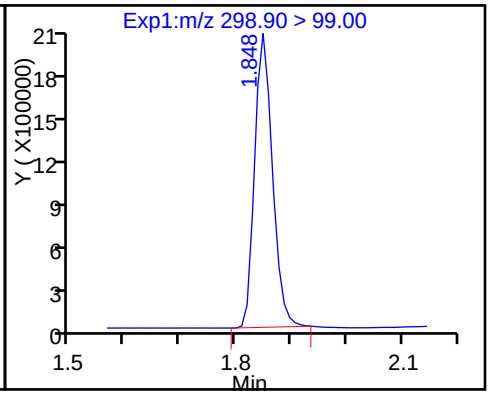
3 Perfluoropentanoic acid



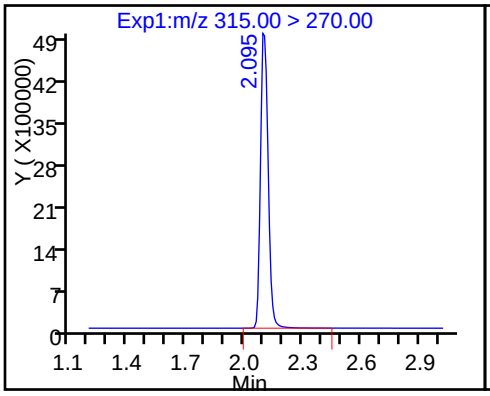
5 Perfluorobutanesulfonic acid



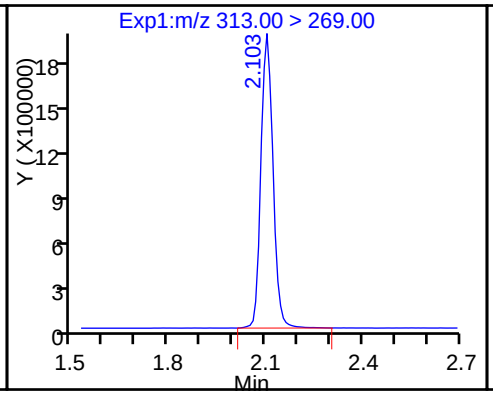
5 Perfluorobutanesulfonic acid



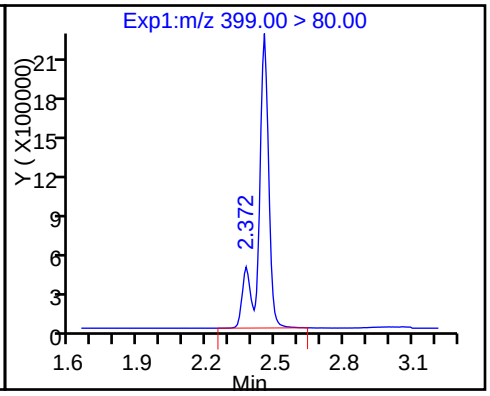
D 6 13C2 PFHxA



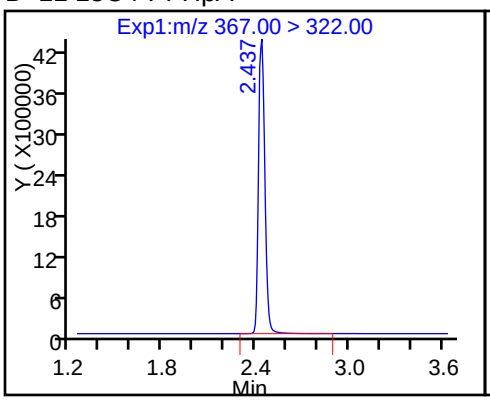
7 Perfluorohexanoic acid



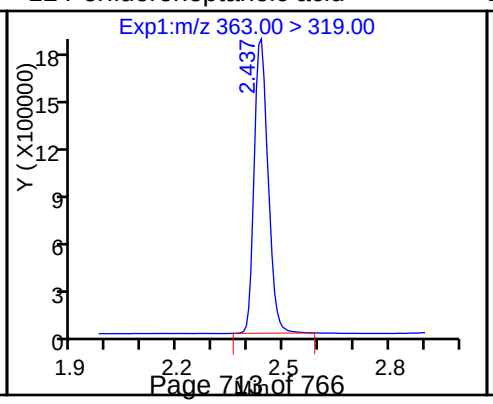
9 Perfluorohexanesulfonic acid



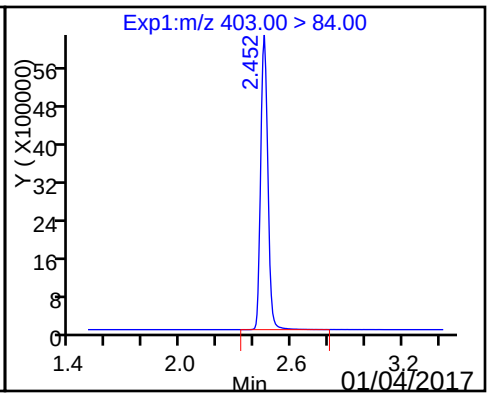
D 11 13C4-PFHpA



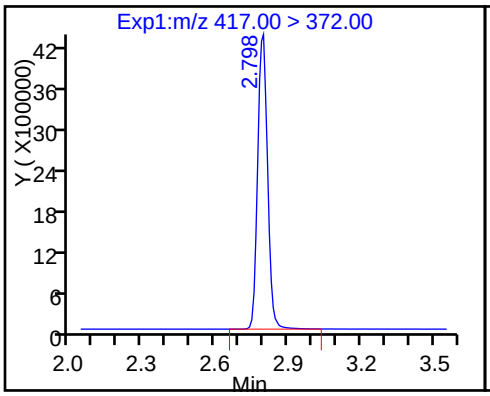
12 Perfluoroheptanoic acid



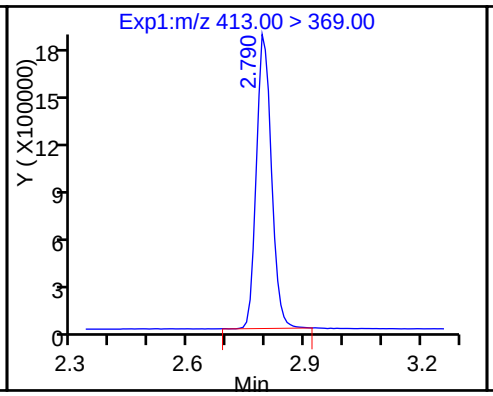
D 10 18O2 PFHxS



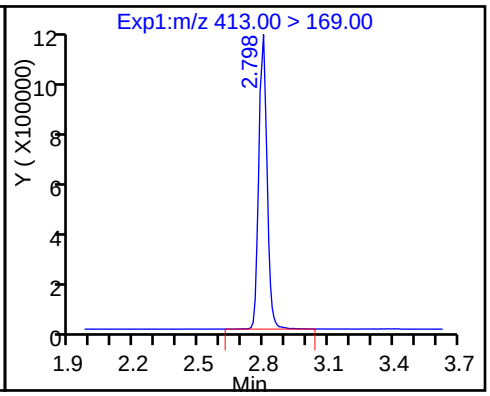
D 14 13C4 PFOA



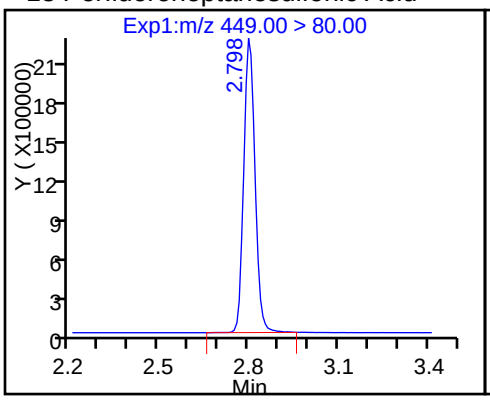
15 Perfluorooctanoic acid



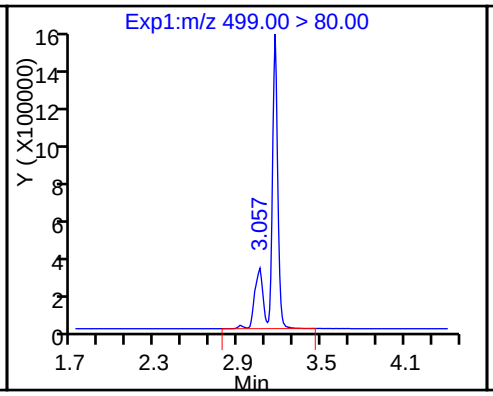
15 Perfluorooctanoic acid



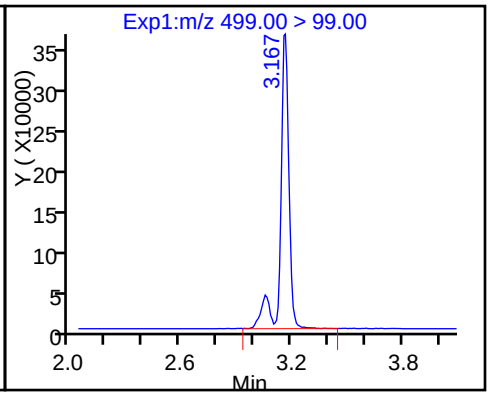
13 Perfluoroheptanesulfonic Acid



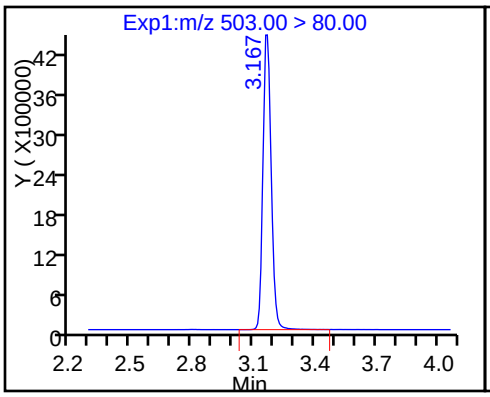
18 Perfluorooctane sulfonic acid



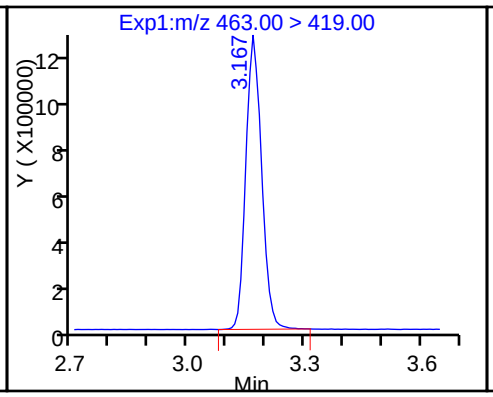
18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



20 Perfluorononanoic acid



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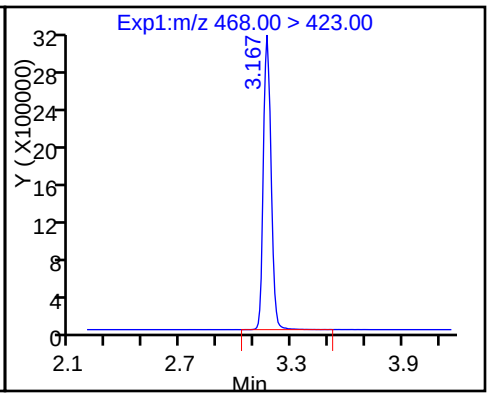
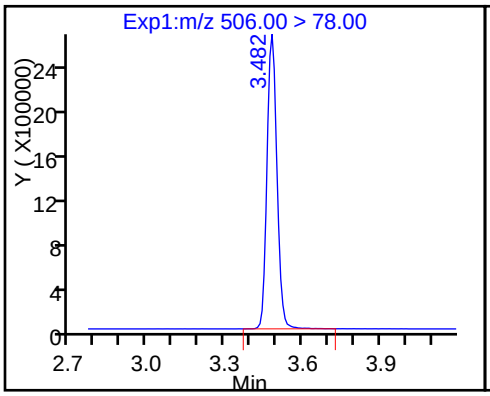
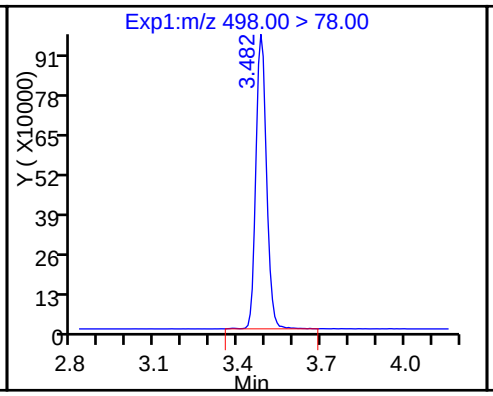


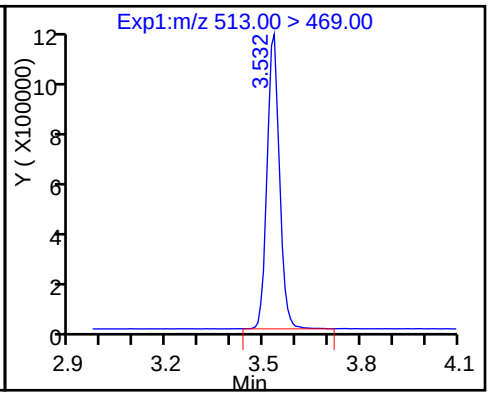
D 21 13C8 FOSA



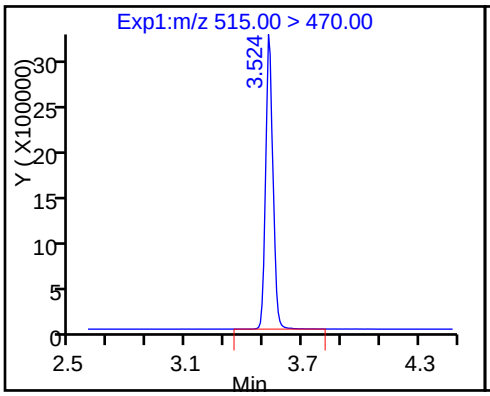
22 Perfluorooctane Sulfonamide



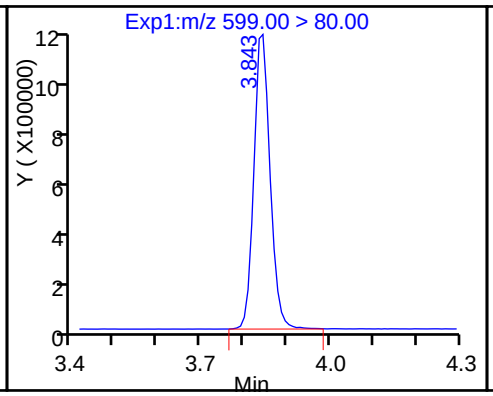
24 Perfluorodecanoic acid



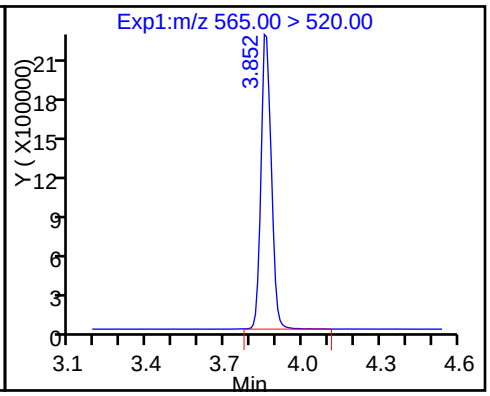
D 23 13C2 PFDA



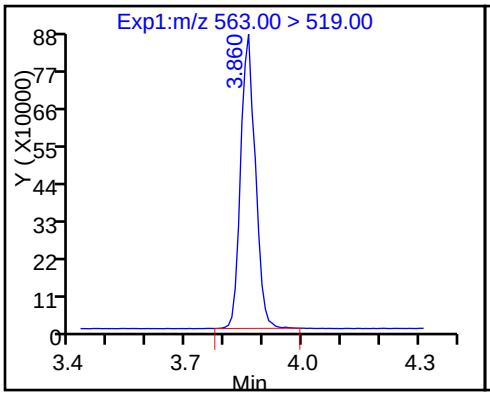
26 Perfluorodecane Sulfonic acid



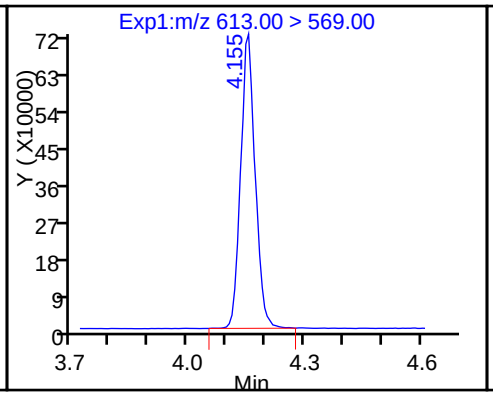
D 27 13C2 PFUnA



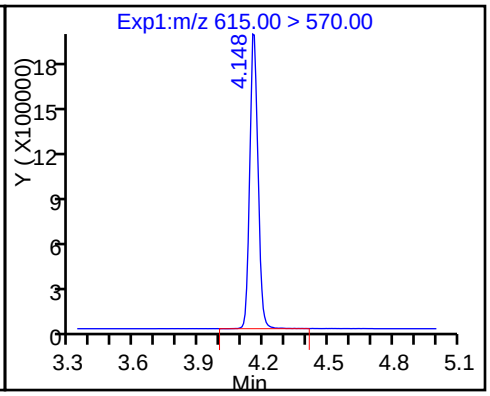
28 Perfluoroundecanoic acid



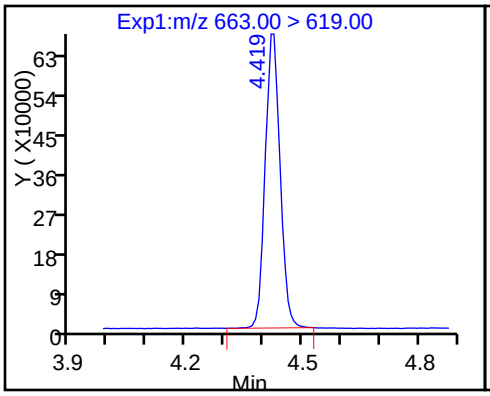
29 Perfluorododecanoic acid



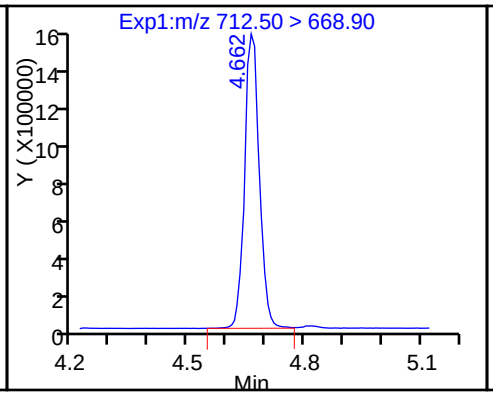
D 30 13C2 PFDoA



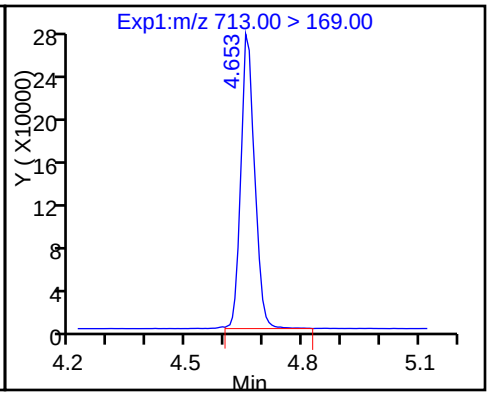
31 Perfluorotridecanoic acid



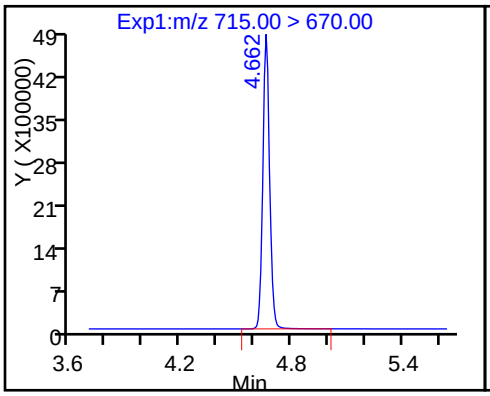
33 Perfluorotetradecanoic acid



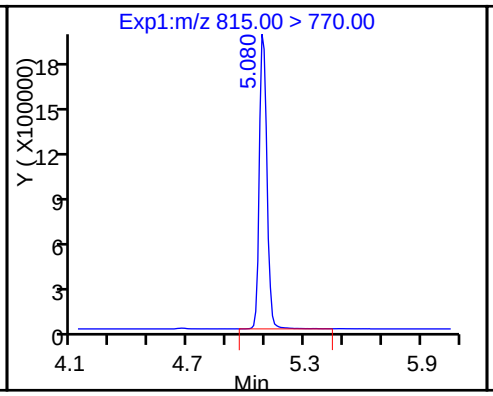
33 Perfluorotetradecanoic acid



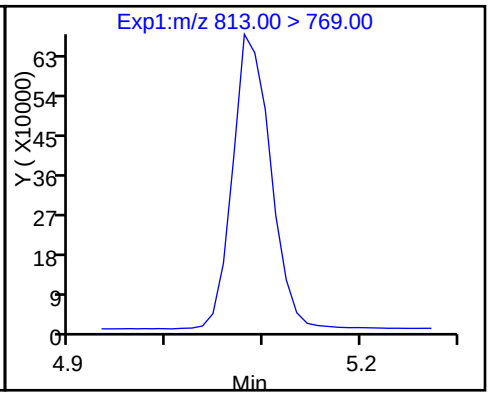
D 32 13C2-PFTeDA



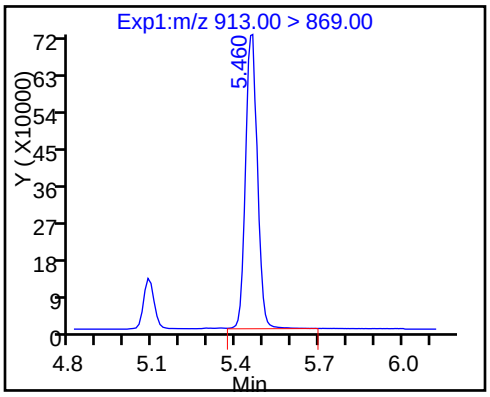
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-142688/3-A

Matrix: Water Lab File ID: 27DEC2016A_035.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 12/17/2016 13:28

Sample wt/vol: 250.00(mL) Date Analyzed: 12/27/2016 21:05

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 144104 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0420		0.0025	0.0020	0.00075
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0447		0.0025	0.0020	0.00092
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0408		0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	105		25-150
STL00994	18O2 PFHxS	105		25-150
STL00991	13C4 PFOS	106		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_035.d
Lims ID: LCSD 320-142688/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 27-Dec-2016 21:05:12 ALS Bottle#: 25 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-142688/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 29-Dec-2016 09:43:13 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: chandrasenas Date: 29-Dec-2016 09:38:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		18930903	54.4		109	861410	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.542	0.0	1.000	7175699	22.2		111	49908	
D 4 13C5-PFPeA										
267.90 > 223.00	1.820	1.820	0.0		15166673	57.0		114	964088	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.820	1.820	0.0	1.000	6420292	21.4		107	65760	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.858	0.0	1.000	10910685	22.3		126		
298.90 > 99.00	1.849	1.858	-0.009	0.995	4658787		2.34(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.105	2.110	-0.005		13136829	53.6		107	707281	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.105	2.110	-0.005	1.000	4981496	20.4		102	118565	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.377	2.432	-0.055	1.000	7004149	19.7		108		
D 11 13C4-PFHpA										
367.00 > 322.00	2.437	2.439	-0.002		12024492	53.1		106	838770	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.437	2.439	-0.002	1.000	5083291	21.6		108	41742	
D 10 18O2 PFHxS										
403.00 > 84.00	2.460	2.462	-0.002		16310531	49.9		105	682651	
D 14 13C4 PFOA										
417.00 > 372.00	2.798	2.799	-0.001		12080575	52.4		105	645719	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.798	2.799	-0.001	1.000	5092983	21.0		105	51514	
413.00 > 169.00	2.798	2.799	-0.001	1.000	3223841		1.58(0.90-1.10)		136173	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.806	2.807	-0.001	1.000	6154297	21.1		111		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.066	3.067	-0.001	1.000	5366989	20.4		110	35155	
499.00 > 99.00	3.175	3.067	0.108	1.035	1181803		4.54(0.90-1.10)		87731	
D 17 13C4 PFOS										
503.00 > 80.00	3.167	3.175	-0.008		12636540	50.8		106	371782	
20 Perfluorononanoic acid										
463.00 > 419.00	3.175	3.175	0.0	1.000	3588907	20.3		102	51201	
D 19 13C5 PFNA										
468.00 > 423.00	3.167	3.175	-0.008		9264884	52.1		104	435307	
D 21 13C8 FOSA										
506.00 > 78.00	3.490	3.482	0.008		6356558	16.5		33.1	268946	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.490	3.491	-0.001	1.000	2429256	20.5		102	190279	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.532	3.533	-0.001	1.000	3257440	20.5		102	102867	
D 23 13C2 PFDA										
515.00 > 470.00	3.532	3.533	-0.001		8420511	53.5		107	354291	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.843	3.853	-0.010	1.000	3067226	19.9		103		
D 27 13C2 PFUnA										
565.00 > 520.00	3.860	3.862	-0.002		5961683	50.8		102	427604	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.860	3.870	-0.010	1.000	2312481	20.3		101	63494	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.155	4.164	-0.009	1.000	1962195	19.5		97.7	38945	
D 30 13C2 PFDoA										
615.00 > 570.00	4.155	4.164	-0.009		5468617	49.3		98.6	200500	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.426	4.429	-0.003	1.000	1923579	19.4		97.0	41142	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.670	4.673	-0.003	1.000	4291619	24.8		124	49601	
713.00 > 169.00	4.662	4.673	-0.011	0.998	702212		6.11(0.00-0.00)		139676	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.670	4.673	-0.003		12450612	54.8		110	1143219	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.090	5.092	-0.002		5481027	44.0		88.0	186098	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.314	5.103	0.211	1.000	4985	-0.5520		-2.8	1.4	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.459	5.467	-0.008	1.000	2298339	20.4		102	3672	

Report Date: 29-Dec-2016 09:43:39 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b\27DEC2016A_035.d

Injection Date: 27-Dec-2016 21:05:12 Instrument ID: A8_N

Lims ID: LCSD 320-142688/3-A

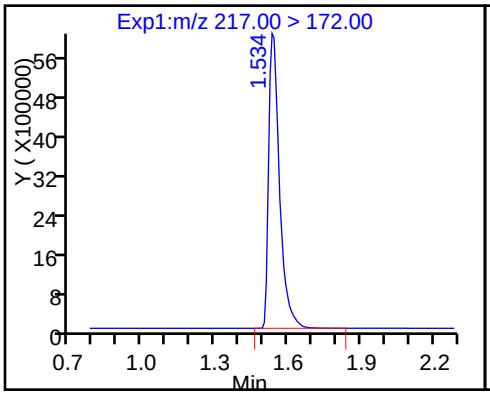
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 25 Worklist Smp#: 35

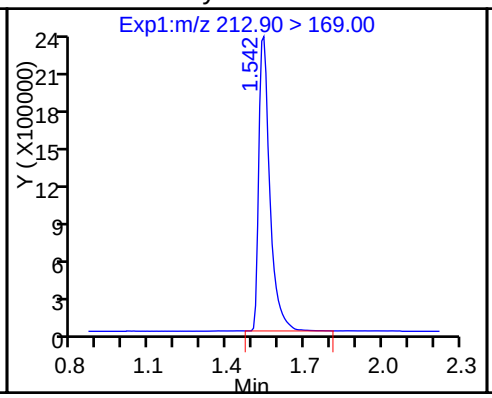
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

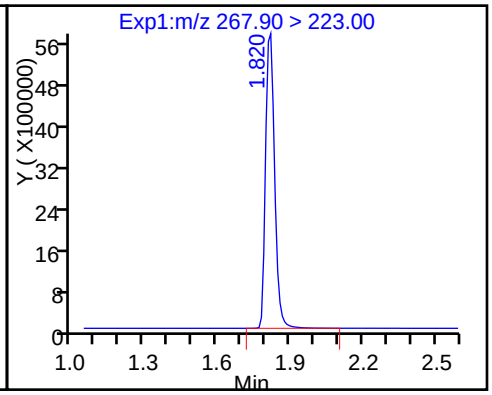
D 2 13C4 PFBA



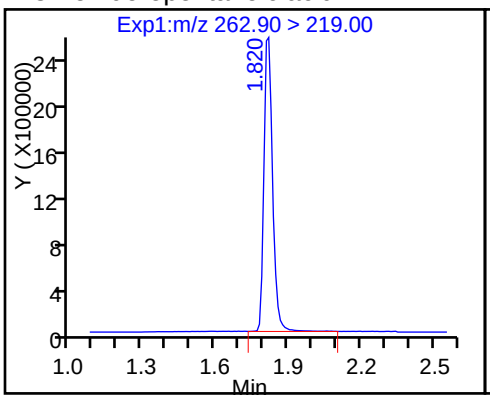
1 Perfluorobutyric acid



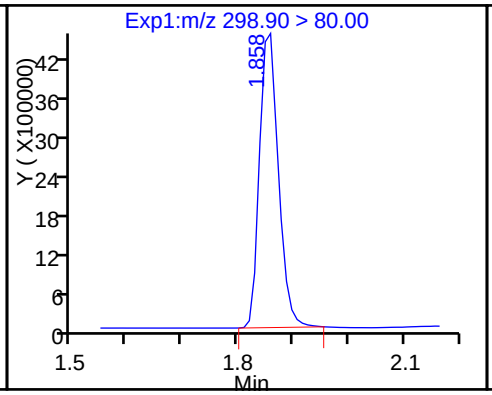
D 4 13C5-PFPeA



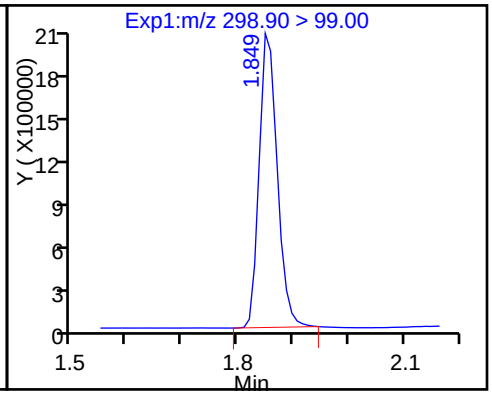
3 Perfluoropentanoic acid



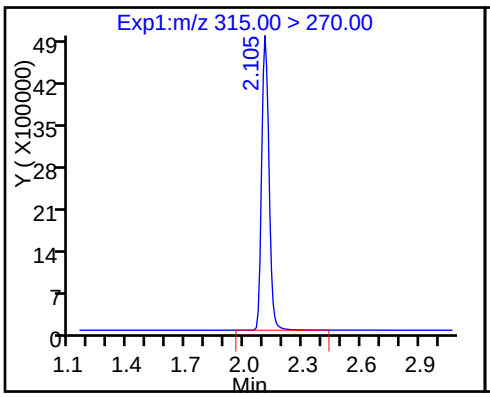
5 Perfluorobutanesulfonic acid



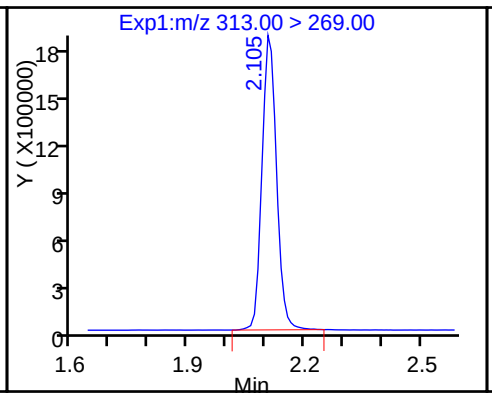
5 Perfluorobutanesulfonic acid



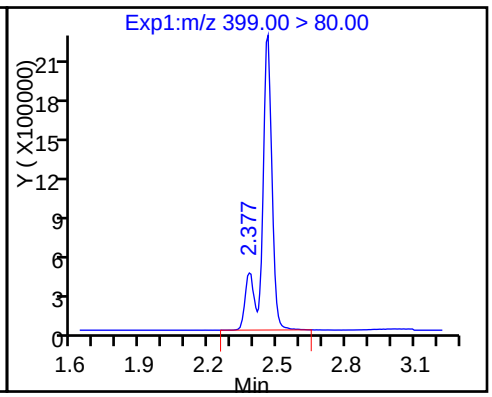
D 6 13C2 PFHxA



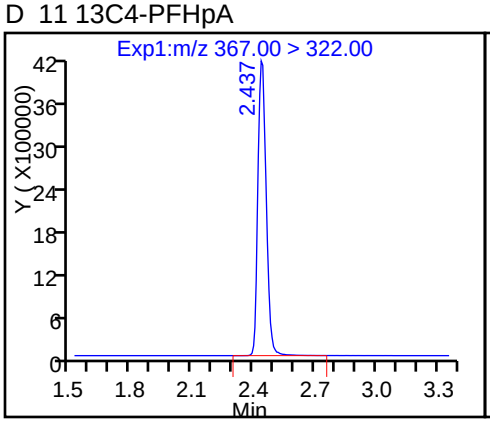
7 Perfluorohexanoic acid



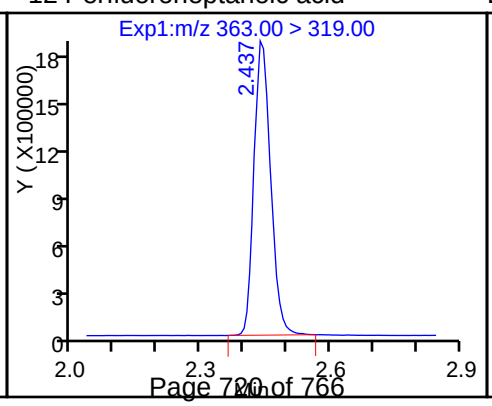
9 Perfluorohexanesulfonic acid



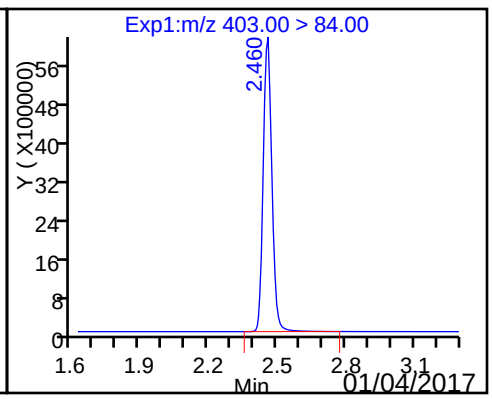
D 11 13C4-PFHpA



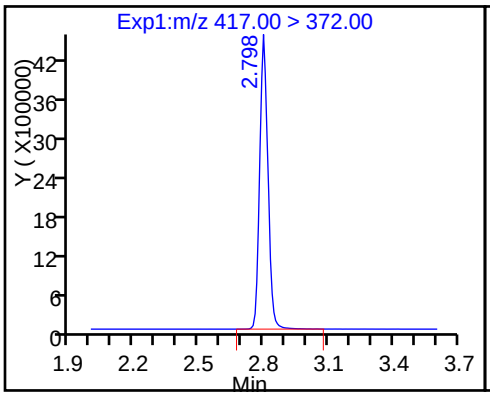
12 Perfluoroheptanoic acid



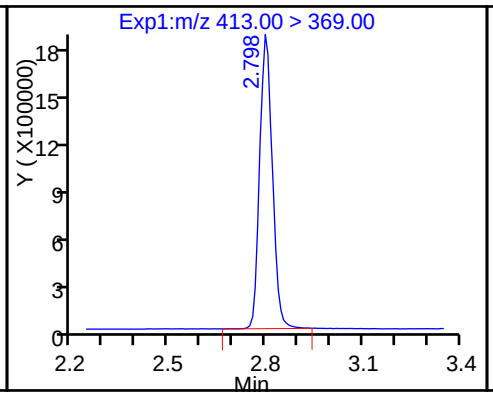
D 10 18O2 PFHxS



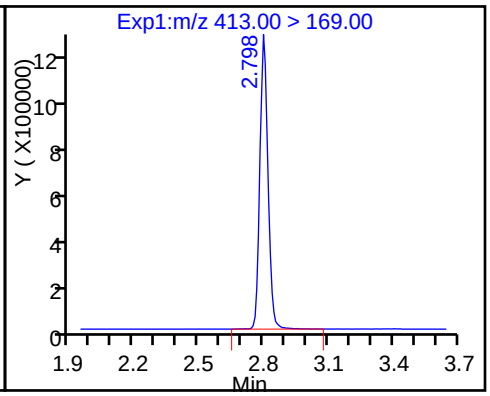
D 14 13C4 PFOA



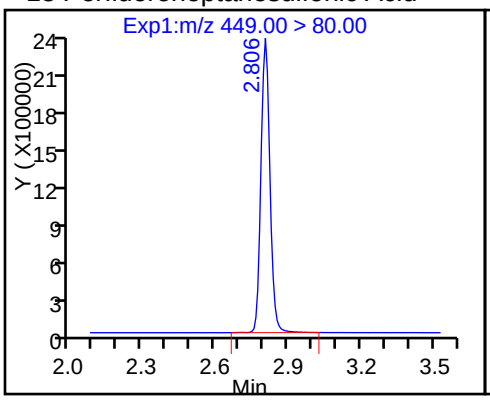
15 Perfluorooctanoic acid



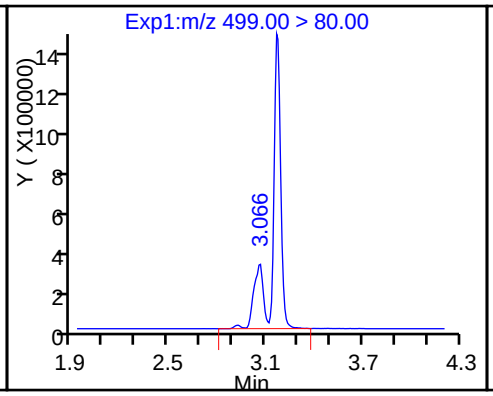
15 Perfluorooctanoic acid



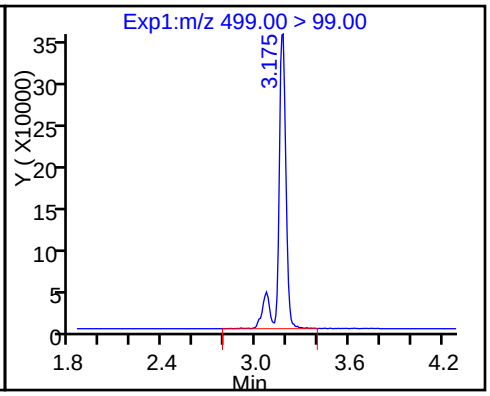
13 Perfluoroheptanesulfonic Acid



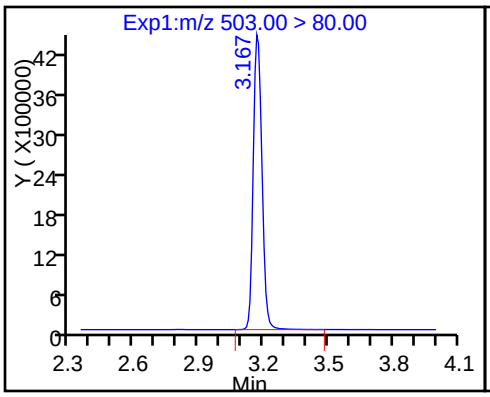
18 Perfluorooctane sulfonic acid



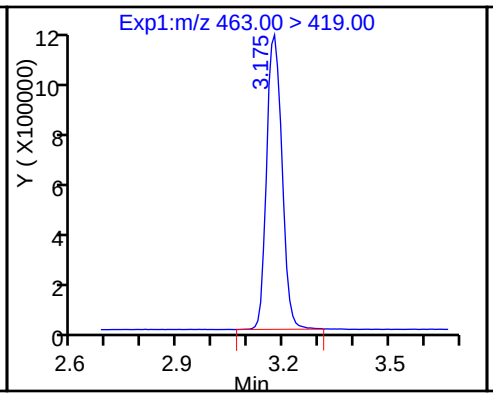
18 Perfluorooctane sulfonic acid



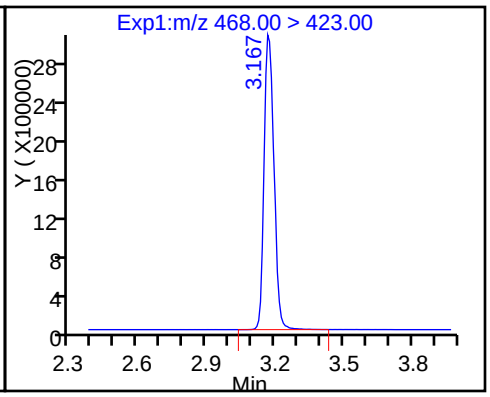
D 17 13C4 PFOS



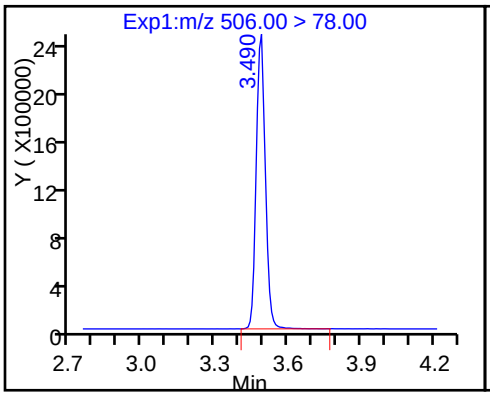
20 Perfluorononanoic acid



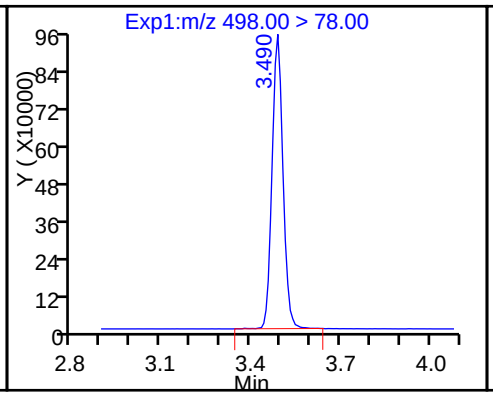
D 19 13C5 PFNA



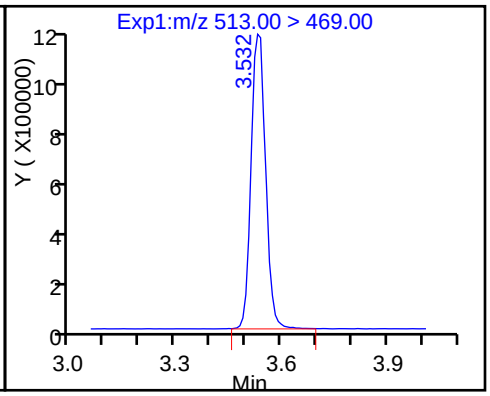
D 21 13C8 FOSA



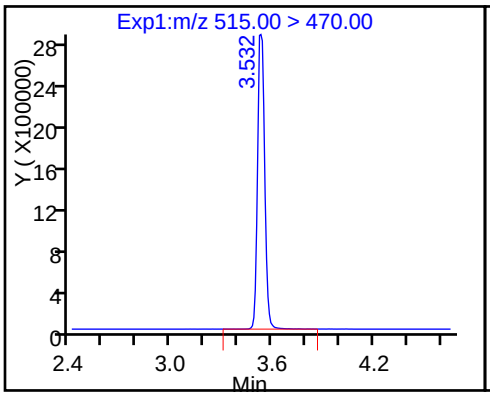
22 Perfluorooctane Sulfonamide



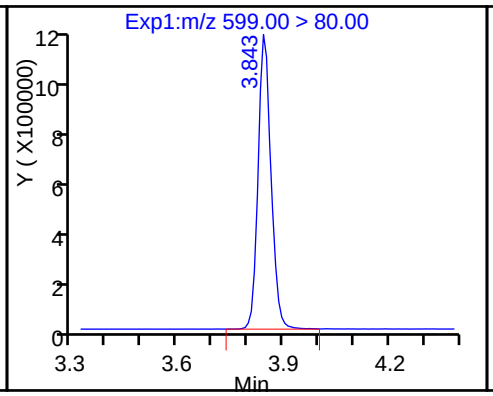
24 Perfluorodecanoic acid



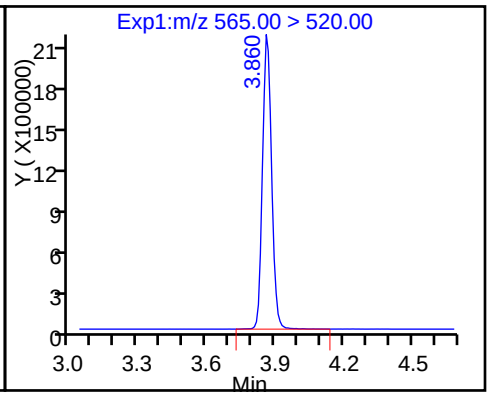
D 23 13C2 PFDA



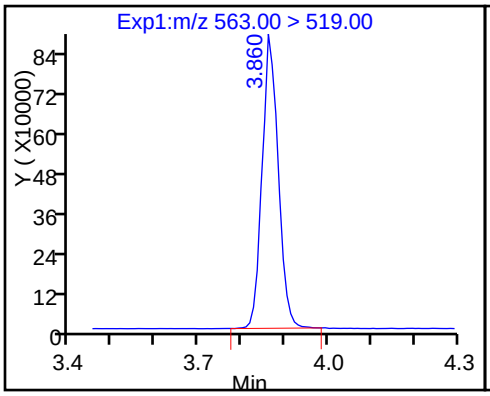
26 Perfluorodecane Sulfonic acid



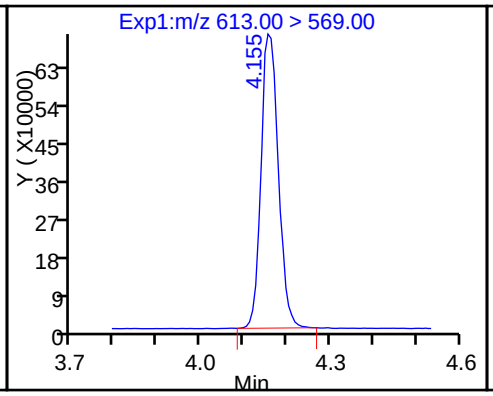
D 27 13C2 PFUnA



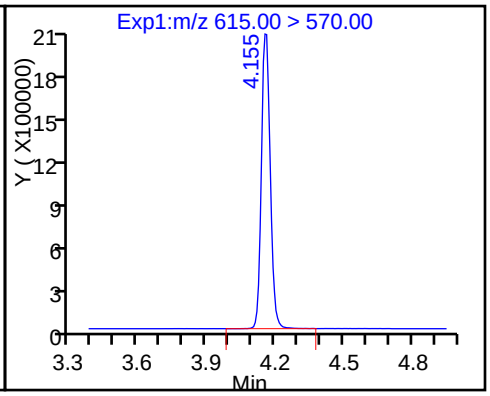
28 Perfluoroundecanoic acid



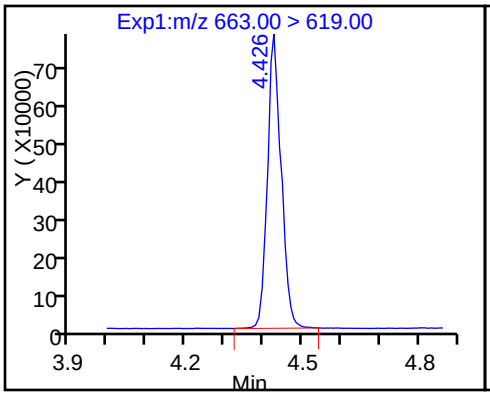
29 Perfluorododecanoic acid



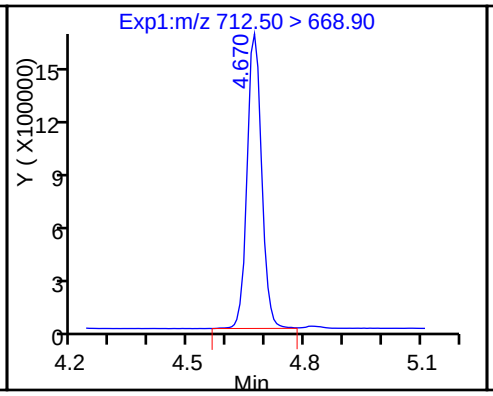
D 30 13C2 PFDoA



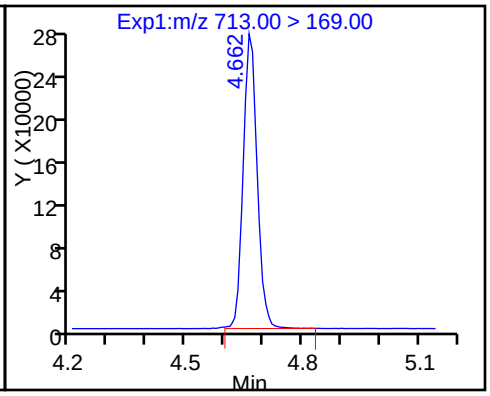
31 Perfluorotridecanoic acid



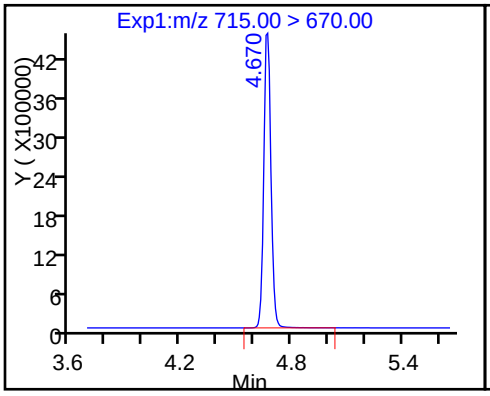
33 Perfluorotetradecanoic acid



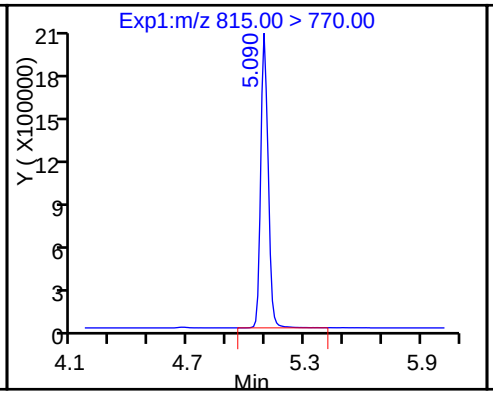
33 Perfluorotetradecanoic acid



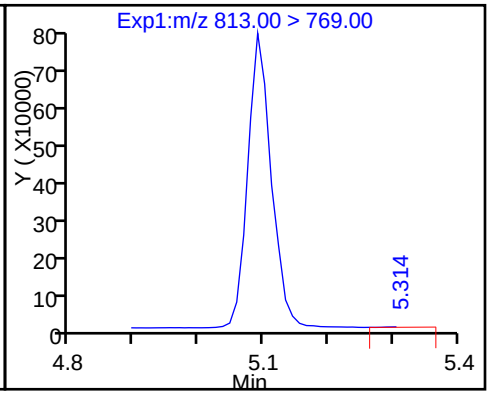
D 32 13C2-PFTeDA



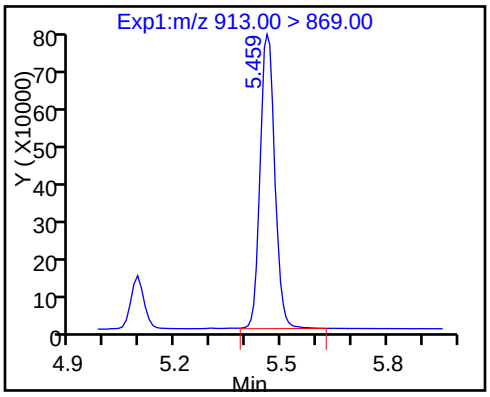
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Start Date: 12/15/2016 12:06

Analysis Batch Number: 142379 End Date: 12/15/2016 19:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-142379/1 CCB		12/15/2016 12:06	1		Acquity 2.1(mm)
RB 320-142379/2 CCB		12/15/2016 12:14	1		Acquity 2.1(mm)
RB 320-142379/3 CCB		12/15/2016 12:21	1		Acquity 2.1(mm)
IC 320-142379/4		12/15/2016 12:29	1	15DEC2016B_004.d	Acquity 2.1(mm)
IC 320-142379/5		12/15/2016 12:36	1	15DEC2016B_005.d	Acquity 2.1(mm)
IC 320-142379/6		12/15/2016 12:44	1	15DEC2016B_006.d	Acquity 2.1(mm)
IC 320-142379/7		12/15/2016 12:51	1	15DEC2016B_007.d	Acquity 2.1(mm)
IC 320-142379/8		12/15/2016 12:59	1	15DEC2016B_008.d	Acquity 2.1(mm)
IC 320-142379/9		12/15/2016 13:06	1	15DEC2016B_009.d	Acquity 2.1(mm)
ICB 320-142379/10		12/15/2016 13:14	1		Acquity 2.1(mm)
ICV 320-142379/11		12/15/2016 13:21	1	15DEC2016B_011.d	Acquity 2.1(mm)
IC 320-142379/13		12/15/2016 13:41	1	15DEC2016BB_013.d	Acquity 2.1(mm)
IC 320-142379/14		12/15/2016 13:48	1	15DEC2016B_014.d	Acquity 2.1(mm)
IC 320-142379/15		12/15/2016 13:56	1	15DEC2016B_015.d	Acquity 2.1(mm)
IC 320-142379/16		12/15/2016 14:03	1	15DEC2016B_016.d	Acquity 2.1(mm)
IC 320-142379/17		12/15/2016 14:11	1	15DEC2016B_017.d	Acquity 2.1(mm)
IC 320-142379/18		12/15/2016 14:18	1	15DEC2016B_018.d	Acquity 2.1(mm)
ICB 320-142379/19		12/15/2016 14:26	1		Acquity 2.1(mm)
ICV 320-142379/20		12/15/2016 14:33	1		Acquity 2.1(mm)
RB 320-142379/21 CCB		12/15/2016 14:41	1		Acquity 2.1(mm)
CCV 320-142379/24		12/15/2016 15:46	1		Acquity 2.1(mm)
RB 320-142379/25 CCB		12/15/2016 15:54	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:01	1		Acquity 2.1(mm)
CCV 320-142379/27		12/15/2016 16:09	1		Acquity 2.1(mm)
RB 320-142379/28 CCB		12/15/2016 16:16	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:24	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:31	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:39	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:46	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:54	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 17:01	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 17:09	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 17:16	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 17:24	1		Acquity 2.1(mm)
RB 320-142379/44 CCB		12/15/2016 19:47	1		Acquity 2.1(mm)
CCV 320-142379/42		12/15/2016 19:54	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Start Date: 12/27/2016 16:57

Analysis Batch Number: 144104 End Date: 12/28/2016 00:35

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-144104/2		12/27/2016 16:57	1		Acquity 2.1(mm)
CCV 320-144104/3 CCVL		12/27/2016 17:05	1	27DEC2016A_003.d	Acquity 2.1(mm)
RB 320-144104/4 CCB		12/27/2016 17:12	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 18:05	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 18:12	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 18:20	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 18:27	1		Acquity 2.1(mm)
RB 320-144104/15 CCB		12/27/2016 18:35	1		Acquity 2.1(mm)
CCV 320-144104/16		12/27/2016 18:42	1		Acquity 2.1(mm)
RB 320-144104/17 CCB		12/27/2016 18:50	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 18:57	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 19:05	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 19:12	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 19:20	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 19:27	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 19:35	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 19:42	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 19:50	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 19:57	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 20:05	1		Acquity 2.1(mm)
RB 320-144104/28 CCB		12/27/2016 20:12	1		Acquity 2.1(mm)
CCV 320-144104/29		12/27/2016 20:20	1	27DEC2016A_029.d	Acquity 2.1(mm)
RB 320-144104/30 CCB		12/27/2016 20:27	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 20:35	1		Acquity 2.1(mm)
ZZZZZ		12/27/2016 20:42	1		Acquity 2.1(mm)
MB 320-142688/1-A		12/27/2016 20:50	1	27DEC2016A_033.d	Acquity 2.1(mm)
LCS 320-142688/2-A		12/27/2016 20:57	1	27DEC2016A_034.d	Acquity 2.1(mm)
LCSD 320-142688/3-A		12/27/2016 21:05	1	27DEC2016A_035.d	Acquity 2.1(mm)
320-24060-1		12/27/2016 21:12	1	27DEC2016A_036.d	Acquity 2.1(mm)
320-24060-2		12/27/2016 21:20	1	27DEC2016A_037.d	Acquity 2.1(mm)
320-24060-3		12/27/2016 21:27	1	27DEC2016A_038.d	Acquity 2.1(mm)
320-24060-4		12/27/2016 21:35	1	27DEC2016A_039.d	Acquity 2.1(mm)
320-24060-5		12/27/2016 21:42	1	27DEC2016A_040.d	Acquity 2.1(mm)
RB 320-144104/41 CCB		12/27/2016 21:50	1		Acquity 2.1(mm)
CCV 320-144104/42		12/27/2016 21:57	1	27DEC2016A_042.d	Acquity 2.1(mm)
RB 320-144104/43 CCB		12/27/2016 22:05	1		Acquity 2.1(mm)
320-24060-6		12/27/2016 22:12	1	27DEC2016A_044.d	Acquity 2.1(mm)
320-24060-7		12/27/2016 22:20	1	27DEC2016A_045.d	Acquity 2.1(mm)
320-24060-8		12/27/2016 22:27	1	27DEC2016A_046.d	Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Start Date: 12/27/2016 16:57

Analysis Batch Number: 144104 End Date: 12/28/2016 00:35

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
320-24060-9		12/27/2016 22:35	1	27DEC2016A_047.d	Acquity 2.1(mm)
320-24060-10		12/27/2016 22:42	1	27DEC2016A_048.d	Acquity 2.1(mm)
320-24060-11		12/27/2016 22:50	1	27DEC2016A_049.d	Acquity 2.1(mm)
320-24060-12		12/27/2016 22:57	1	27DEC2016A_050.d	Acquity 2.1(mm)
320-24060-13		12/27/2016 23:05	1	27DEC2016A_051.d	Acquity 2.1(mm)
320-24060-14		12/27/2016 23:12	1	27DEC2016A_052.d	Acquity 2.1(mm)
320-24060-15		12/27/2016 23:20	1	27DEC2016A_053.d	Acquity 2.1(mm)
RB 320-144104/54 CCB		12/27/2016 23:27	1		Acquity 2.1(mm)
CCV 320-144104/55		12/27/2016 23:35	1	27DEC2016A_055.d	Acquity 2.1(mm)
RB 320-144104/56 CCB		12/27/2016 23:42	1		Acquity 2.1(mm)
320-24060-16		12/27/2016 23:50	1	27DEC2016A_057.d	Acquity 2.1(mm)
320-24060-17		12/27/2016 23:57	1	27DEC2016A_058.d	Acquity 2.1(mm)
320-24060-18		12/28/2016 00:05	1	27DEC2016A_059.d	Acquity 2.1(mm)
320-24060-19		12/28/2016 00:12	1	27DEC2016A_060.d	Acquity 2.1(mm)
320-24060-20		12/28/2016 00:20	1	27DEC2016A_061.d	Acquity 2.1(mm)
RB 320-144104/62 CCB		12/28/2016 00:27	1		Acquity 2.1(mm)
CCV 320-144104/63		12/28/2016 00:35	1	27DEC2016A_063.d	Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Start Date: 12/29/2016 07:47

Analysis Batch Number: 144278 End Date: 12/29/2016 09:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-144278/1 CCB		12/29/2016 07:47	1		Acquity 2.1(mm)
RB 320-144278/2 CCB		12/29/2016 07:55	1		Acquity 2.1(mm)
RB 320-144278/3 CCB		12/29/2016 08:02	1		Acquity 2.1(mm)
RB 320-144278/4 CCB		12/29/2016 08:10	1		Acquity 2.1(mm)
CCV 320-144278/5 CCVL		12/29/2016 08:17	1	29DEC2016A_005.d	Acquity 2.1(mm)
CCV 320-144278/6 CCVL		12/29/2016 08:25	1		Acquity 2.1(mm)
CCV 320-144278/7		12/29/2016 08:32	1		Acquity 2.1(mm)
RB 320-144278/8 CCB		12/29/2016 08:40	1		Acquity 2.1(mm)
CCV 320-144278/10		12/29/2016 08:55	1		Acquity 2.1(mm)
RB 320-144278/11 CCB		12/29/2016 09:02	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Instrument ID: A8_N Start Date: 12/29/2016 13:27

Analysis Batch Number: 144419 End Date: 12/29/2016 16:19

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-144419/1		12/29/2016 13:27	1	29DEC2016C_001.d	Acquity 2.1(mm)
RB 320-144419/2 CCB		12/29/2016 13:34	1		Acquity 2.1(mm)
320-24060-5 DL		12/29/2016 13:42	100	29DEC2016C_003.d	Acquity 2.1(mm)
320-24060-10 DL		12/29/2016 13:49	50	29DEC2016C_004.d	Acquity 2.1(mm)
320-24060-7 DL		12/29/2016 13:57	20	29DEC2016C_005.d	Acquity 2.1(mm)
320-24060-12 DL		12/29/2016 14:04	20	29DEC2016C_006.d	Acquity 2.1(mm)
320-24060-20 DL		12/29/2016 14:12	20	29DEC2016C_007.d	Acquity 2.1(mm)
320-24060-1 DL		12/29/2016 14:19	10	29DEC2016C_008.d	Acquity 2.1(mm)
320-24060-2 DL		12/29/2016 14:27	10	29DEC2016C_009.d	Acquity 2.1(mm)
320-24060-3 DL		12/29/2016 14:34	10	29DEC2016C_010.d	Acquity 2.1(mm)
320-24060-4 DL		12/29/2016 14:42	10	29DEC2016C_011.d	Acquity 2.1(mm)
320-24060-11 DL		12/29/2016 14:49	10	29DEC2016C_012.d	Acquity 2.1(mm)
CCV 320-144419/13		12/29/2016 14:57	1	29DEC2016C_013.d	Acquity 2.1(mm)
RB 320-144419/14 CCB		12/29/2016 15:04	1		Acquity 2.1(mm)
320-24060-13 DL		12/29/2016 15:12	10	29DEC2016C_015.d	Acquity 2.1(mm)
320-24060-14 DL		12/29/2016 15:19	10	29DEC2016C_016.d	Acquity 2.1(mm)
320-24060-16 DL		12/29/2016 15:27	10	29DEC2016C_017.d	Acquity 2.1(mm)
320-24060-17 DL		12/29/2016 15:34	10	29DEC2016C_018.d	Acquity 2.1(mm)
320-24060-18 DL		12/29/2016 15:42	10	29DEC2016C_019.d	Acquity 2.1(mm)
320-24060-19 DL		12/29/2016 15:49	10	29DEC2016C_020.d	Acquity 2.1(mm)
ZZZZZ		12/29/2016 15:57	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 16:04	1		Acquity 2.1(mm)
RB 320-144419/23 CCB		12/29/2016 16:12	1		Acquity 2.1(mm)
CCV 320-144419/24		12/29/2016 16:19	1	29DEC2016C_024.d	Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Batch Number: 142688 Batch Start Date: 12/17/16 13:28 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 12/19/16 13:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00073
MB 320-142688/1		3535, 537 (Modified)				250.00 mL	0.5 mL	25 uL	
LCS 320-142688/2		3535, 537 (Modified)				250.00 mL	0.5 mL	25 uL	20 uL
LCSD 320-142688/3		3535, 537 (Modified)				250.00 mL	0.5 mL	25 uL	20 uL
320-24060-A-1	DPT-16-22-GW-31-35	3535, 537 (Modified)	T	278.88 g	26.82 g	252.1 mL	0.5 mL	25 uL	
320-24060-A-2	DPT-16-22-GW-31-35-DUP	3535, 537 (Modified)	T	253.47 g	26.48 g	227 mL	0.5 mL	25 uL	
320-24060-A-3	DPT-16-22-GW-19-23	3535, 537 (Modified)	T	281.57 g	26.87 g	254.7 mL	0.5 mL	25 uL	
320-24060-A-4	DPT-16-33-GW-31-35	3535, 537 (Modified)	T	279.36 g	25.91 g	253.5 mL	0.5 mL	25 uL	
320-24060-A-5	DPT-16-33-GW-19-23	3535, 537 (Modified)	T	280.81 g	26.13 g	254.7 mL	0.5 mL	25 uL	
320-24060-A-6	SW-16-01-SW	3535, 537 (Modified)	T	283.50 g	26.11 g	257.4 mL	0.5 mL	25 uL	
320-24060-A-7	DPT-16-14-GW-31-35	3535, 537 (Modified)	T	274.85 g	25.89 g	249 mL	0.5 mL	25 uL	
320-24060-A-8	SW-16-02-SW	3535, 537 (Modified)	T	279.15 g	26.76 g	252.4 mL	0.5 mL	25 uL	
320-24060-A-9	SW-16-02-SW-DUP	3535, 537 (Modified)	T	274.04 g	26.80 g	247.2 mL	0.5 mL	25 uL	
320-24060-A-10	DPT-16-14-GW-19-23	3535, 537 (Modified)	T	282.76 g	26.47 g	256.3 mL	0.5 mL	25 uL	
320-24060-A-11	DPT-16-12-GW-31-35	3535, 537 (Modified)	T	276.81 g	26.42 g	250.4 mL	0.5 mL	25 uL	
320-24060-A-12	DPT-16-12-GW-19-23	3535, 537 (Modified)	T	284.83 g	26.04 g	258.8 mL	0.5 mL	25 uL	
320-24060-A-13	DPT-16-16-GW-31-35	3535, 537 (Modified)	T	270.22 g	26.06 g	244.2 mL	0.5 mL	25 uL	
320-24060-A-14	DPT-16-16-GW-19-23	3535, 537 (Modified)	T	288.74 g	25.96 g	262.8 mL	0.5 mL	25 uL	
320-24060-A-15	DPT-16-25-GW-31-35	3535, 537 (Modified)	T	260.37 g	26.60 g	233.8 mL	0.5 mL	25 uL	
320-24060-A-16	DPT-16-25-GW-19-23	3535, 537 (Modified)	T	282.54 g	27.09 g	255.5 mL	0.5 mL	25 uL	
320-24060-A-17	DPT-16-24-GW-21-25	3535, 537 (Modified)	T	275.49 g	26.60 g	248.9 mL	0.5 mL	25 uL	
320-24060-A-18	DPT-16-24-GW-31-35	3535, 537 (Modified)	T	286.93 g	26.42 g	260.5 mL	0.5 mL	25 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24060-1

SDG No.:

Batch Number: 142688 Batch Start Date: 12/17/16 13:28 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 12/19/16 13:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00073
320-24060-A-19	DPT-16-28-GW-31-35	3535, 537 (Modified)	T	271.14 g	27.18 g	244 mL	0.5 mL	25 uL	
320-24060-A-20	DPT-16-28-GW-19-23	3535, 537 (Modified)	T	277.42 g	26.88 g	250.5 mL	0.5 mL	25 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N NaOH/H2O: 794893
H2O ID	12/17/16
Hexane ID	0000135581
Manifold ID	1, 7
Methanol ID	798085
Pipette ID	MD05306
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Solvent Lot #	800649
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 150mg
Solid Phase Extraction Disk ID	016636277A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 24312; 24060 Work List ID(s): 38255

Extraction Batch: 142636; 142444; 142688 Analysis Batch(es): 144104

Delivery Rank 4 Due Date: 12/23/16 ; 12/19/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 142379	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• $RF_{average}$ criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓		
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?	✓	✓	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM#	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

**Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.*

1st Level (Analyst): [signature] Date: 12/29/16

2nd Level Reviewer: MKWolf Date: 12/30/2016

NCMs: 74145; 74147; 74157; 73213; 74155; 74159

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 27DEC2016A_PFC Worklist Number: 38255
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38255.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 144104	LC PFC ICAL Raw Batch: 144105	LC PFAS ICAL Raw Batch: 144106
# 1 RB	# 1 RB	# 1 RB	# 1 RB
# 2 CCV L5	# 2 CCV L5	# 2 CCV L5	# 2 CCV L5
# 3 CCV L2	# 3 CCV L2	# 3 CCV L2	# 3 CCV L2
# 4 RB	# 4 RB	# 4 RB	# 4 RB
# 5 MB 320-142455/1-A	ICV 142379	# 5 MB 320-142455/1-A	
# 6 LCS 320-142455/2-A	Tune 93213	# 6 LCS 320-142455/2-A	
# 7 320-24212-A-1-A		# 7 320-24212-A-1-A	# 7 320-24212-A-1-A
# 8 320-24212-A-1-B MS		# 8 320-24212-A-1-B MS	# 8 320-24212-A-1-B MS
# 9 320-24212-A-1-C MSD		# 9 320-24212-A-1-C MSD	# 9 320-24212-A-1-C MSD
#10 480-111038-I-2-A		#10 480-111038-I-2-A	#10 480-111038-I-2-A
#11 MB 320-142636/1-A	#11 MB 320-142636/1-A		
#12 LCS 320-142636/2-A	#12 LCS 320-142636/2-A	MS/MSD high targets NCM 74145	
#13 320-24312-F-2-A	#13 320-24312-F-2-A 100x, 10x		PFOS
#14 320-24312-F-2-B MS	#14 320-24312-F-2-B MS 100x, 10x		
#15 RB	#15 RB	#15 RB Eflag	#15 RB
#16 CCV L4	#16 CCV L4	#16 CCV L4 NCM	#16 CCV L4
#17 RB	#17 RB	#17 RB 74147	#17 RB
#18 320-24312-F-2-C MSD	#18 320-24312-F-2-C MSD 100x, 10x	IDA low 74157	
#19 320-24312-D-3-A	#19 320-24312-D-3-A 100x		
#20 320-24312-D-4-A	#20 320-24312-D-4-A 100x		
#21 320-24312-D-5-A	#21 320-24312-D-5-A 100x		
#22 MB 320-142444/1-A	#22 MB 320-142444/1-A RI PFOS		
#23 LCS 320-142444/2-A	#23 LCS 320-142444/2-A	PM said all are DIL 1	
#24 320-24312-C-7-A	#24 320-24312-C-7-A 50x PFOS		
#25 320-24312-C-8-A	#25 320-24312-C-8-A 10x		
#26 320-24312-C-8-B MS	#26 320-24312-C-8-B MS	High targets	
#27 320-24312-C-8-C MSD	#27 320-24312-C-8-C MSD		
#28 RB	#28 RB	#28 RB	#28 RB
#29 CCV L5	#29 CCV L5	#29 CCV L5	#29 CCV L5
#30 RB	#30 RB	#30 RB	#30 RB
#31 320-24312-C-9-A	#31 320-24312-C-9-A 10x		
#32 320-24312-C-10-A	#32 320-24312-C-10-A 10x		
#33 MB 320-142688/1-A	#33 MB 320-142688/1-A		
#34 LCS 320-142688/2-A	#34 LCS 320-142688/2-A		
#35 LCSD 320-142688/3-A	#35 LCSD 320-142688/3-A		
#36 320-24060-A-1-A	#36 320-24060-A-1-A 10x		
#37 320-24060-A-2-A	#37 320-24060-A-2-A 10x		
#38 320-24060-A-3-A	#38 320-24060-A-3-A 10x	Eflag NCM 74155	
#39 320-24060-A-4-A	#39 320-24060-A-4-A 10x	IDA low 74159	
#40 320-24060-A-5-A	#40 320-24060-A-5-A 100x		
#41 RB	#41 RB	#41 RB	#41 RB
#42 CCV L4	#42 CCV L4	#42 CCV L4	#42 CCV L4
#43 RB	#43 RB	#43 RB	#43 RB
#44 320-24060-A-6-A	#44 320-24060-A-6-A		
#45 320-24060-A-7-A	#45 320-24060-A-7-A 20x		
#46 320-24060-A-8-A	#46 320-24060-A-8-A RA		
#47 320-24060-A-9-A	#47 320-24060-A-9-A		
#48 320-24060-A-10-A	#48 320-24060-A-10-A 50x		
#49 320-24060-A-11-A	#49 320-24060-A-11-A 10x		
#50 320-24060-A-12-A	#50 320-24060-A-12-A 20x		
#51 320-24060-A-13-A	#51 320-24060-A-13-A 10x		
#52 320-24060-A-14-A	#52 320-24060-A-14-A 10x, RA		
#53 320-24060-A-15-A	#53 320-24060-A-15-A		
#54 RB	#54 RB	#54 RB	#54 RB
#55 CCV L5	#55 CCV L5	#55 CCV L5	#55 CCV L5

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 144104	LC PFC ICAL Raw Batch: 144105	LC PFAS ICAL Raw Batch: 144106
#56 RB	#56 RB	#56 RB	#56 RB
#57 320-24060-A-16-A	#57 320-24060-A-16-A 10x all		
#58 320-24060-A-17-A	#58 320-24060-A-17-A 10x PFOS		
#59 320-24060-A-18-A	#59 320-24060-A-18-A 10x		
#60 320-24060-A-19-A	#60 320-24060-A-19-A 10x		
#61 320-24060-A-20-A	#61 320-24060-A-20-A 20x		
#62 RB	#62 RB	#62 RB	#62 RB
#63 CCV L4	#63 CCV L4	#63 CCV L4	#63 CCV L4

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

DL 12/29/16

Batch Number: 320-142688

Method Code: 320-3535_PFC-320

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Batch End: 12/19/2016 1:25:00PM

AB 12/27/16

Solid-Phase Extraction (SPE)

Due 12/28

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB-320-142688/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		MB 320-142688/1-A
				0.5 mL								
2	LCS-320-142688/2 N/A	N/A		250.00 mL				N/A	N/A	N/A		LCS 320-142688/2-A
				0.5 mL								
3	LCSD-320-142688/3 N/A	N/A		250.00 mL				N/A	N/A	N/A		LCSD 320-142688/3-A
				0.5 mL								
4	320-24060-A-1 (PFC_IDA_DOD5)	N/A (320-24060-1)	278.88 g	252.1 mL				12/23/16	16_Days	4	10X PFBS PFOS	320-24060-A-1-A
			26.82 g	0.5 mL								
5	320-24060-A-2 (PFC_IDA_DOD5)	N/A (320-24060-1)	253.47 g	227 mL				12/23/16	16_Days	4	10x PFBS PFOS	320-24060-A-2-A
			26.48 g	0.5 mL								
6	320-24060-A-3 (PFC_IDA_DOD5)	N/A (320-24060-1)	281.57 g	254.7 mL				12/23/16	16_Days	4	10x PFOS	320-24060-A-3-A
			26.87 g	0.5 mL								
7	320-24060-A-4 (PFC_IDA_DOD5)	N/A (320-24060-1)	279.36 g	253.5 mL				12/23/16	16_Days	4	10X PFOA PFOS	320-24060-A-4-A
			25.91 g	0.5 mL								
8	320-24060-A-5 (PFC_IDA_DOD5)	N/A (320-24060-1)	280.81 g	254.7 mL				12/23/16	16_Days	4	100X PFBS PFOA PFOS	320-24060-A-5-A
			26.13 g	0.5 mL								
9	320-24060-A-6 (PFC_IDA_DOD5)	N/A (320-24060-1)	283.50 g	257.4 mL				12/23/16	16_Days	4		320-24060-A-6-A
			26.11 g	0.5 mL								
10	320-24060-A-7 (PFC_IDA_DOD5)	N/A (320-24060-1)	274.85 g	249 mL				12/23/16	16_Days	4	20X PFOA PFOS	320-24060-A-7-A
			25.89 g	0.5 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Analyst: Reed, Jonathan E

Method Code: 320-3535_PFC-320

Batch Open: 12/17/2016 1:28:00PM

Batch End: 12/19/2016 1:25:00PM

11	320-24060-A-8 (PFC_IDA_DOD5)	N/A (320-24060-1)	279.15 g	252.4 mL				12/23/16	16_Days	4	RA PFOS	
			26.76 g	0.5 mL								
12	320-24060-A-9 (PFC_IDA_DOD5)	N/A (320-24060-1)	274.04 g	247.2 mL				12/23/16	16_Days	4		
			26.80 g	0.5 mL								
13	320-24060-A-10 (PFC_IDA_DOD5)	N/A (320-24060-1)	282.76 g	256.3 mL				12/23/16	16_Days	4	50x all	
			26.47 g	0.5 mL								
14	320-24060-A-11 (PFC_IDA_DOD5)	N/A (320-24060-1)	276.81 g	250.4 mL				12/23/16	16_Days	4	10x PFOS	
			26.42 g	0.5 mL								
15	320-24060-A-12 (PFC_IDA_DOD5)	N/A (320-24060-1)	284.83 g	258.8 mL				12/23/16	16_Days	4	20x all	
			26.04 g	0.5 mL								
16	320-24060-A-13 (PFC_IDA_DOD5)	N/A (320-24060-1)	270.22 g	244.2 mL				12/23/16	16_Days	4	10x PFOA/PFOS	
			26.06 g	0.5 mL								
17	320-24060-A-14 (PFC_IDA_DOD5)	N/A (320-24060-1)	288.74 g	262.8 mL				12/23/16	16_Days	4	10x PFOS RA PFOA	
			25.96 g	0.5 mL								
18	320-24060-A-15 (PFC_IDA_DOD5)	N/A (320-24060-1)	260.37 g	233.8 mL				12/23/16	16_Days	4		
			26.60 g	0.5 mL								
19	320-24060-A-16 (PFC_IDA_DOD5)	N/A (320-24060-1)	282.54 g	255.5 mL				12/23/16	16_Days	4	10x all	
			27.09 g	0.5 mL								
20	320-24060-A-17 (PFC_IDA_DOD5)	N/A (320-24060-1)	275.49 g	248.9 mL				12/23/16	16_Days	4	10x PFOS	
			26.60 g	0.5 mL								
21	320-24060-A-18 (PFC_IDA_DOD5)	N/A (320-24060-1)	286.93 g	260.5 mL				12/23/16	16_Days	4	10x PFOS	
			26.42 g	0.5 mL								
22	320-24060-A-19 (PFC_IDA_DOD5)	N/A (320-24060-1)	271.14 g	244 mL				12/23/16	16_Days	4	10x PFOA PFOS	
			27.18 g	0.5 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Analyst: Reed, Jonathan E

Method Code: 320-3535_PFC-320

Batch Open: 12/17/2016 1:28:00PM

Batch End:

23	320-24060-A-20 (PFC_IDA_DOD5)	N/A (320-24060-1)	277.42 g 26.88 g	250.5 mL 0.5 mL				12/23/16	16_Days	4	20x PFOA PFOS

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Method Code: 320-3535_PFC-320

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Batch End:

Batch Notes

Manifold ID	1, 7
Methanol ID	798085
Hexane ID	0000135581
Sodium Hydroxide ID	NA
First Start time	NA
First End time	NA
SPE Cartridge Type	WAX 150mg
Solid Phase Extraction Disk ID	016636277A
Balance ID	QA-070
H2O ID	12/17/16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	800649
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
SOP Number	WS-LC-0025

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment 0.1N NaOH/H2O: 794893

Comments

01/04/2017

Printed : 12/17/2016

TestAmerica Sacramento

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Method Code: 320-3535_PFC-320

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-142688/1	LCMPFCSU_00046	25 uL	0.5 mL	JER 12-17-16	ERW 12/17/16
LCS 320-142688/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-142688/2	LCPFCSP_00073	20 uL	0.5 mL		
LCSD 320-142688/3	LCMPFCSU_00046	25 uL	0.5 mL		
LCSD 320-142688/3	LCPFCSP_00073	20 uL	0.5 mL		
320-24060-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-5	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-6	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-7	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-8	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-9	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-10	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-11	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-12	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-13	LCMPFCSU_00046	25 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Method Code: 320-3535_PFC-320

Batch End:

320-24060-A-14	LCMPFCSU_00046	25 uL	0.5 mL	JER 12-17-16	ERV 12/17/16
320-24060-A-15	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-16	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-17	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-18	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-19	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-20	LCMPFCSU_00046	25 uL	0.5 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 142688 Test: PFC-IDA-DOD5 (L)

Earliest Holding Time: 12/19/16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	NA	NA
Method/sample/login/QAS checked and correct	✓	✓

Worksheet Tab	1st Level Reviewer	2nd Level Reviewer
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓

Reagents Tab	1st Level Reviewer	2nd Level Reviewer
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓

Batch Information	1st Level Reviewer	2nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

pm 12/19/16

1st Level Reviewer: NSH Date: 12-19-16

2nd Level Reviewer: VPM Date: 12/19/16

Comments:

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142636

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

DL AB 12/29/16

Batch Open: 12/16/2016 6:11:00PM

Batch End: 12/17/2016 4:35:00PM

AB 12/27/16

Solid-Phase Extraction (SPE)

Due 12/28

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-142636/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		MB 320-142636/1-A
				0.5 mL								
2	LCS~320-142636/2 N/A	N/A		250.00 mL				N/A	N/A	N/A		LCS 320-142636/2-A
				0.5 mL								
3	320-24312-F-2 (PFC_IDA_DOD5)	N/A (320-24312-1)	303.53 g	275.7 mL				12/23/16	8_Days	4	100X PFOS 10X	320-24312-F-2-A
			27.85 g	0.5 mL								
4	320-24312-F-2~MS (PFC_IDA_DOD5)	N/A (320-24312-1)	299.48 g	271.7 mL				12/23/16	8_Days	4	100X PFOS 10X PFOA	320-24312-F-2-B MS
			27.82 g	0.5 mL								
5	320-24312-F-2~MSD (PFC_IDA_DOD5)	N/A (320-24312-1)	299.39 g	271.4 mL				12/23/16	8_Days	4	100X PFOS 10X PFOA	320-24312-F-2-C MSD
			27.97 g	0.5 mL								
6	320-24312-D-3 (PFC_IDA_DOD5)	N/A (320-24312-1)	299.78 g	271.7 mL				12/23/16	8_Days	4	100X PFOS	320-24312-D-3-A
			28.09 g	0.5 mL								
7	320-24312-D-4 (PFC_IDA_DOD5)	N/A (320-24312-1)	299.59 g	271.7 mL				12/23/16	8_Days	4	100X PFOS	320-24312-D-4-A
			27.87 g	0.5 mL								
8	320-24312-D-5 (PFC_IDA_DOD5)	N/A (320-24312-1)	286.82 g	258.3 mL				12/23/16	8_Days	4	100X PFOS	320-24312-D-5-A
			28.53 g	0.5 mL								

01/04/2017

Printed : 12/17/2016

TestAmerica Sacramento

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142636

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 12/16/2016 6:11:00PM

Batch End:

Batch Notes

Manifold ID	5
Methanol ID	807182
Hexane ID	0000135581
Sodium Hypochlorite ID	NA
First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	002836112A
H2O ID	12/15/16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	800649
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	WPM
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl ID	NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142636

Analyst: Reed, Jonathan E

Batch Open: 12/16/2016 6:11:00PM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142636

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 12/16/2016 6:11:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-142636/1	LCMPFCSU_00046	25 uL	0.5 mL	12/16/16	VPM 12/16/16
LCS 320-142636/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-142636/2	LCPFCSP_00073	20 uL	0.5 mL		
320-24312-F-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-24312-F-2 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-24312-F-2 MS	LCPFCSP_00073	20 uL	0.5 mL		
320-24312-F-2 MSD	LCMPFCSU_00046	25 uL	0.5 mL		
320-24312-F-2 MSD	LCPFCSP_00073	20 uL	0.5 mL		
320-24312-D-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-24312-D-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-24312-D-5	LCMPFCSU_00046	25 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142636

Analyst: Reed, Jonathan E

Batch Open: 12/16/2016 6:11:00PM

Method Code: 320-3535_IVWT-320

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 142636 Test: PFC_IDA-DOD5 (L)

Earliest Holding Time: 12/27/16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	NA	NA
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	✓
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: _____ Date: 12/27/16

2nd Level Reviewer: VDM Date: 12/27/16

Comments: _____

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142444

Method Code: 320-Shake_Bath_14D-320

Analyst: Reed, Jonathan E

Batch Open: 12/15/2016 5:07:00PM

Batch End: 12-20-16 6:56 p.m

AB 12/27/16

Due 12/28 BL 12/29/16

Shake Extraction with Ultrasonic Bath Extraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-142444/1 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A	RI	MB 320-142444/1-A
2	LCS~320-142444/2 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A		LCS 320-142444/2-A
3	320-24312-C-7 (PFC_IDA_DOD5)	N/A (320-24312-1)	5.00 g	1.00 mL	12/19/16	8_Days	4	50x	320-24312-C-7-A
4	320-24312-C-8 (PFC_IDA_DOD5)	N/A (320-24312-1)	5.08 g	1.00 mL	12/19/16	8_Days	4	10x	320-24312-C-8-A
5	320-24312-C-8~MS (PFC_IDA_DOD5)	N/A (320-24312-1)	5.08 g	1.00 mL	12/19/16	8_Days	4		320-24312-C-8-B MS
6	320-24312-C-8~MSD (PFC_IDA_DOD5)	N/A (320-24312-1)	5.03 g	1.00 mL	12/19/16	8_Days	4	↓	320-24312-C-8-C MSD
7	320-24312-C-9 (PFC_IDA_DOD5)	N/A (320-24312-1)	5.03 g	1.00 mL	12/19/16	8_Days	4	10x	320-24312-C-9-A
8	320-24312-C-10 (PFC_IDA_DOD5)	N/A (320-24312-1)	5.00 g	1.00 mL	12/19/16	8_Days	4	10x	320-24312-C-10-A

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142444

Analyst: Reed, Jonathan E

Batch Open: 12/15/2016 5:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Batch Notes

Balance ID	QA-070
Blank Sand Lot #	156690
Filter ID	NA
Millipore Water Dispense Date	12/15/16
Analyst ID - Reagent Drop Witness	
SPE Cartridge ID	016736308A
SPE Cartridge Type	WAX 150mg
Hexane ID	0000146278
Methanol ID	807182
Ammonium Hydroxide/MeOH ID	800649
Sodium Hydroxide ID	794893
Methanolic Potassium Hydroxide ID	682341
Manifold ID	6
Interference check solution ID	NA
Acetic Acid ID	429065
Batch Comment	

Comments

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142444

Method Code: 320-Shake_Bath_14D-320

Analyst: Reed, Jonathan E

Batch Open: 12/15/2016 5:07:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-142444/1	LCMPFCSU_00046	50 uL	1.00 mL	12/15/16	JPM 12/15/16
LCS 320-142444/2	LCMPFCSU_00046	50 uL	1.00 mL		
LCS 320-142444/2	LCPFCSP_00073	40 uL	1.00 mL		
320-24312-C-7	LCMPFCSU_00046	50 uL	1.00 mL		
320-24312-C-8	LCMPFCSU_00046	50 uL	1.00 mL		
320-24312-C-8 MS	LCMPFCSU_00046	50 uL	1.00 mL		
320-24312-C-8 MS	LCPFCSP_00073	40 uL	1.00 mL		
320-24312-C-8 MSD	LCMPFCSU_00046	50 uL	1.00 mL		
320-24312-C-8 MSD	LCPFCSP_00073	40 uL	1.00 mL		
320-24312-C-9	LCMPFCSU_00046	50 uL	1.00 mL		
320-24312-C-10	LCMPFCSU_00046	50 uL	1.00 mL		

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142444

Analyst: Reed, Jonathan E

Batch Open: 12/15/2016 5:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 12444 Test: ~~PFC-5~~ PFC-S

Earliest Holding Time: 12/27/16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	NA	NA
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: NSH Date: 12-20-16

2nd Level Reviewer: VPM Date: 12/20/16

Comments:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 24060 Work List ID(s): 38331

Extraction Batch: 142688 Analysis Batch(es): 144419, 144278 (CCVL)

Delivery Rank 4 Due Date: 12/23/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 142379	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• $RF_{average}$ criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓	✓	
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?			✓
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM# 74282	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

**Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.*

1st Level (Analyst): [signature] Date: 1/3/17

2nd Level Reviewer: [signature] Date: 1/3/2017

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

DL 12/29/16

Batch Number: 320-142688

Method Code: 320-3535_PFC-320

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Batch End: 12/19/2016 1:25:00PM

AB 12/27/16

Due 12/28

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-142688/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		MB 320-142688/1-A
				0.5 mL								
2	LCS~320-142688/2 N/A	N/A		250.00 mL				N/A	N/A	N/A		LCS 320-142688/2-A
				0.5 mL								
3	LCSD~320-142688/3 N/A	N/A		250.00 mL				N/A	N/A	N/A		LCSD 320-142688/3-A
				0.5 mL								
	320-24060-A-1 (PFC_IDA_DOD5)	N/A (320-24060-1)	278.88 g	252.1 mL				12/23/16	16_Days	4	10X PFBS PFOS	320-24060-A-1-A
			26.82 g	0.5 mL								
	320-24060-A-2 (PFC_IDA_DOD5)	N/A (320-24060-1)	253.47 g	227 mL				12/23/16	16_Days	4	10x PFBS PFOS	320-24060-A-2-A
			26.48 g	0.5 mL								
6	320-24060-A-3 (PFC_IDA_DOD5)	N/A (320-24060-1)	281.57 g	254.7 mL				12/23/16	16_Days	4	10x PFOS	320-24060-A-3-A
			26.87 g	0.5 mL								
7	320-24060-A-4 (PFC_IDA_DOD5)	N/A (320-24060-1)	279.36 g	253.5 mL				12/23/16	16_Days	4	10X PFOA PFOS	320-24060-A-4-A
			25.91 g	0.5 mL								
8	320-24060-A-5 (PFC_IDA_DOD5)	N/A (320-24060-1)	280.81 g	254.7 mL				12/23/16	16_Days	4	100X PFBS PFOA PFOS	320-24060-A-5-A
			26.13 g	0.5 mL								
9	320-24060-A-6 (PFC_IDA_DOD5)	N/A (320-24060-1)	283.50 g	257.4 mL				12/23/16	16_Days	4		320-24060-A-6-A
			26.11 g	0.5 mL								
10	320-24060-A-7 (PFC_IDA_DOD5)	N/A (320-24060-1)	274.85 g	249 mL				12/23/16	16_Days	4	20X PFOA PFOS	320-24060-A-7-A
			25.89 g	0.5 mL								

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01/04/2017

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Method Code: 320-3535_PFC-320

Batch End: 12/19/2016 1:25:00PM

11	320-24060-A-8 (PFC_IDA_DOD5)	N/A (320-24060-1)	279.15 g / 26.76 g	252.4 mL / 0.5 mL				12/23/16	16_Days	4	RA PFOS	
12	320-24060-A-9 (PFC_IDA_DOD5)	N/A (320-24060-1)	274.04 g / 26.80 g	247.2 mL / 0.5 mL				12/23/16	16_Days	4		
13	320-24060-A-10 (PFC_IDA_DOD5)	N/A (320-24060-1)	282.76 g / 26.47 g	256.3 mL / 0.5 mL				12/23/16	16_Days	4	5Dx all	
14	320-24060-A-11 (PFC_IDA_DOD5)	N/A (320-24060-1)	276.81 g / 26.42 g	250.4 mL / 0.5 mL				12/23/16	16_Days	4	10x PFOS	
15	320-24060-A-12 (PFC_IDA_DOD5)	N/A (320-24060-1)	284.83 g / 26.04 g	258.8 mL / 0.5 mL				12/23/16	16_Days	4	20x all	
16	320-24060-A-13 (PFC_IDA_DOD5)	N/A (320-24060-1)	270.22 g / 26.06 g	244.2 mL / 0.5 mL				12/23/16	16_Days	4	10x PFOA/PFOS	
17	320-24060-A-14 (PFC_IDA_DOD5)	N/A (320-24060-1)	288.74 g / 25.96 g	262.8 mL / 0.5 mL				12/23/16	16_Days	4	10x PFOS RA PFOA	
18	320-24060-A-15 (PFC_IDA_DOD5)	N/A (320-24060-1)	260.37 g / 26.60 g	233.8 mL / 0.5 mL				12/23/16	16_Days	4		
19	320-24060-A-16 (PFC_IDA_DOD5)	N/A (320-24060-1)	282.54 g / 27.09 g	255.5 mL / 0.5 mL				12/23/16	16_Days	4	10x all	
20	320-24060-A-17 (PFC_IDA_DOD5)	N/A (320-24060-1)	275.49 g / 26.60 g	248.9 mL / 0.5 mL				12/23/16	16_Days	4	10x PFOS	
21	320-24060-A-18 (PFC_IDA_DOD5)	N/A (320-24060-1)	286.93 g / 26.42 g	260.5 mL / 0.5 mL				12/23/16	16_Days	4	10x PFOS	
22	320-24060-A-19 (PFC_IDA_DOD5)	N/A (320-24060-1)	271.14 g / 27.18 g	244 mL / 0.5 mL				12/23/16	16_Days	4	10x PFOA PFOS	

01/04/2017

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Method Code: 320-3535_PFC-320

Batch End:

23	320-24060-A-20 (PFC_IDA_DOD5)	N/A (320-24060-1)	277.42 g 26.88 g	250.5 mL 0.5 mL				12/23/16	16_Days	4	20x PFOA PFOS

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Method Code: 320-3535_PFC-320

Batch End:

Batch Notes

Manifold ID	1, 7
Methanol ID	798085
Hexane ID	0000135581
Sodium Hydroxide ID	NA
First Start time	NA
First End time	NA
SPE Cartridge Type	WAX 150mg
Solid Phase Extraction Disk ID	016636277A
Balance ID	QA-070
H2O ID	12/17/16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	800649
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
SOP Number	WS-LC-0025

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment 0.1N NaOH/H2O: 794893

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Method Code: 320-3535_PFC-320

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-142688/1	LCMPFCSU_00046	25 uL	0.5 mL	JER 12-17-16	ERW 12/17/16
LCS 320-142688/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-142688/2	LCPFCSP_00073	20 uL	0.5 mL		
LCSD 320-142688/3	LCMPFCSU_00046	25 uL	0.5 mL		
LCSD 320-142688/3	LCPFCSP_00073	20 uL	0.5 mL		
320-24060-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-5	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-6	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-7	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-8	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-9	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-10	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-11	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-12	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-13	LCMPFCSU_00046	25 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142688

Analyst: Reed, Jonathan E

Batch Open: 12/17/2016 1:28:00PM

Method Code: 320-3535_PFC-320

Batch End:

320-24060-A-14	LCMPFCSU_00046	25 uL	0.5 mL	JER 12-17-16	ERW 12/17/16
320-24060-A-15	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-16	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-17	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-18	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-19	LCMPFCSU_00046	25 uL	0.5 mL		
320-24060-A-20	LCMPFCSU_00046	25 uL	0.5 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 142688 Test: PFC-IDA-DOD5 (L)

Earliest Holding Time: 12/19/16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	NA NSH 12-19-16	NA VPM 12/19/16
Method/sample/login/QAS checked and correct	✓	✓

Worksheet Tab	1st Level Reviewer	2nd Level Reviewer
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	✓
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓

Reagents Tab	1st Level Reviewer	2nd Level Reviewer
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓

Batch Information	1st Level Reviewer	2nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: NSH Date: 12-19-16

2nd Level Reviewer: VPM Date: 12/19/16

Comments: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC_IDA_DODS **Job #** 24060

Analyst (Print Name) Shyhara Chandrasena **Analyst Initials** SBC

Date 12/29/16

Sample#	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
5	500	40	400	10x
5	500	100	1000	100x
10		40	2000	50x
12		50	1000	20x
20		50	1000	20x
7		50	1000	20x
1		40	400	10x
2				
3				
4				
11				
13				
14				
16				
17				
18				
19				

Comments:

C:\Users\phomsophat\AppData\Local\Microsoft\Windows\Temporary Internet Files\OLK708B\QA-747_SampleDilutionRecord.doc
10/20/16 RBH

Shipping and Receiving Documents

Chain of Custody Record

Temperature on Receipt 3.9 °C

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM Technical Services Inc	Kurt VanGelder	12/6/16	295758
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
3101 Wilson Blvd	7034770931		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Arlington / VA / 22201	Amy Shaf	Jill. K	
Project Name and Location (State)	**Carrier/Waybill Number**		
32007449 / 60444465	FEDEX		
Contract/Purchase Order/Quote No.			
Former Bayroad Rd Annex			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Other	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Other	Analysis: PFOA	PFOS	Special Instructions/ Conditions of Receipt
DPT-16-22-GW-31-35	12/5	0945		✓				2							✓	✓	
DPT-16-22-GW-31-35-DUP	12/5/16	0945		✓				2							✓	✓	
DPT-16-22-GW-19-23	12/5/16	0955		✓				2							✓	✓	
DPT-16-33-GW-31-35	12/5/16	1055		✓				2							✓	✓	
DPT-16-33-GW-19-23	12/5/16	1110		✓				2							✓	✓	
GW-16-01-SW	12/5/16	1130		✓				2							✓	✓	
DPT-16-14-GW-31-35	12/5/16	1200		✓				2							✓	✓	
SW-16-02-SW	12/5/16	1215		✓				2							✓	✓	
SW-16-02-SW-DUP	12/5/16	1215		✓				2							✓	✓	
DPT-16-14-GW-19-23	12/5/16	1245		✓				2							✓	✓	
DPT-16-12-GW-31-35	12/5/16	1335		✓				2							✓	✓	
DPT-16-12-GW-19-23	12/5/16	1350		✓				2							✓	✓	

320-24060 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☑ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
	12/6/15	1300	Troy A. Turpen TAS 3.9°C	12/7/16	10:38
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

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

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM Technical Services	Kurt VanGelder	12/6/16	295759
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
3101 Wilson Blvd	703 477 0931		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Arlington / VA / 22201	Amy Shah	Jill K	
Project Name and Location (State)	**Carrier/Waybill Number**		
Former Bayhead Rd Annex	FEDEX		
Contract/Purchase Order/Quote No.			
32007449 / 60444465			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Other	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Other	Analysis: PFCA	PFOS	PFAS	Special Instructions/ Conditions of Receipt
DPT-16-16-GW-31-35	12/5/16	1440		✓				2							✓	✓	✓	
DPT-16-16-GW-19-23	12/5/16	1450		✓				2							✓	✓	✓	
DPT-16-25-GW-31-35	12/6/16	0935		✓				2							✓	✓	✓	
DPT-16-25-GW-19-23	12/6/16	0945		✓				2							✓	✓	✓	
DPT-16-24-GW-21-25	12/6/16	1040		✓				2							✓	✓	✓	
DPT-16-24-GW-31-35	12/6/16	1050		✓				2							✓	✓	✓	
DPT-16-28-GW-31-35	12/6/16	1135		✓				2							✓	✓	✓	
DPT-16-28-GW-19-23	12/6/16	1145		✓				2							✓	✓	✓	

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☑ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
	12/6/16	1300	Tracy G. Turpen TAS 3.9°C	12/7/16	1030
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

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

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01/04/2017

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc. Job Number: 320-24060-1

Login Number: 24060 **List Source: TestAmerica Sacramento**
List Number: 1
Creator: Nelson, Kym D

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

"DPT-16-12-GW-19-23","537","12/27/16","22:57","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.41","","TRG","No","Y","E","Y","0.00089","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","","","

"","","","

"","","","

"DPT-16-22-GW-31-35-DUP","537","12/29/16","14:27","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","0.17","","TRG","No","Y","D","Y","0.0082","0.022","0.028","UG_L","UG_L","","","0","","","","0","","","","

"DPT-16-25-GW-19-23","537","12/29/16","15:27","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","0.57","","TRG","Yes","Y","D","Y","0.0073","0.020","0.024","UG_L","UG_L","","","0","","","","0","","","","

"DPT-16-33-GW-19-23","537","12/27/16","21:42","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.82","","TRG","No","Y","E","Y","0.00090","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","

"SW-16-02-SW-DUP","537","12/27/16","22:35","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.041","","TRG","Yes","Y","M","Y","0.00076","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","

Resolution Consultants
250 Apollo Drive
Chelmsford, MA 01824

978.905.2100 tel
978.905.2101 fax

Data Validation Report

Project:	Former Bay Head Road Annex- Annapolis, MD	
Laboratory:	TestAmerica-West Sacramento, CA	
Job Number:	320-24060-1	
Analyses/Method:	Perfluorinated Compounds (PFCs) in Water, Soils, Sediments and Tissues by Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS)/ Revision 1.4 (August 2015)	
Validation Level:	Limited	
Resolution Consultants Project Number:	60444465-DM.DE	
Prepared by:	Paula DiMattei/Resolution Consultants	Completed on: 1/5/2017
Reviewed by:	Robert Kennedy/Resolution Consultants	Completed on: 1/6/2017
File Name: J24060-1_PFC memo.docx		

SUMMARY

The samples listed below were collected by Resolution Consultants from the Former Bay Head Road Annex site in Annapolis, MD on December 5-6, 2016.

Sample ID	Matrix/Sample Type
DPT-16-12-GW-19-23	Groundwater
DPT-16-12-GW-31-35	Groundwater
DPT-16-14-GW-19-23	Groundwater
DPT-16-14-GW-31-35	Groundwater
DPT-16-16-GW-19-23	Groundwater
DPT-16-16-GW-31-35	Groundwater
DPT-16-22-GW-19-23	Groundwater
DPT-16-22-GW-31-35	Groundwater
DPT-16-22-GW-31-35-DUP	Field duplicate of DPT-16-22-GW-31-35
DPT-16-24-GW-21-25	Groundwater
DPT-16-24-GW-31-35	Groundwater
DPT-16-25-GW-19-23	Groundwater
DPT-16-25-GW-31-35	Groundwater
DPT-16-28-GW-19-23	Groundwater
DPT-16-28-GW-31-35	Groundwater
DPT-16-33-GW-19-23	Groundwater
DPT-16-33-GW-31-35	Groundwater
SW-16-01-SW	Surface Water
SW-16-02-SW	Surface Water

Sample ID	Matrix/Sample Type
SW-16-02-SW-DUP	Field Duplicate of SW-16-02-SW

Data validation activities were conducted with reference to:

- TestAmerica-West Sacramento SOP: Perfluorinated Compounds (PFCs) in Water, Soils, Sediments and Tissues by Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS)/Revision 1.4 (August 2015);
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (September 2016);
- USEPA Contract Laboratory Program National Functional Guidelines for High Resolution Superfund Methods Data Review (April 2016)
- Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (DoD, July 2013); and
- the project-specific Sampling and Analysis Plan.

In the absence of method-specific information, laboratory quality control (QC) limits, project-specific requirements and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following review elements (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times/sample preservation
✓	Initial calibration/initial and continuing calibration verification
✓	Laboratory method blanks/equipment blanks
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓	Field duplicate results
✓	Labeled compound results
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. An "NA" indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Qualification of the data was not required.

RESULTS

Data Completeness (chain-of-custody (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. All samples were extracted 4-5 days beyond the 7-day extraction holding time that is stipulated in the SAP. Professional judgment was used to take no actions due to the stability of the target compounds in aqueous samples and since the samples were extracted within the laboratory's current holding time criterion of 14-days from sample collection. The data are not adversely impacted.

Initial Calibration/Initial and Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD) or correlation coefficient (r) or coefficient of determination (r^2) method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met; and
- the continuing calibration verification standard (CCV) frequency and method percent difference or percent drift (%D) criteria were met.

All QC acceptance criteria were met.

Laboratory Method Blanks/Equipment Blanks

Laboratory method blanks and equipment blanks are evaluated as to whether there are contaminants detected above the detection limit (DL). Target compounds were not detected in the laboratory method blank associated with the samples in this data set. An equipment blank was not submitted with the samples in this data set.

MS/MSD Results

MS/MSD analyses were not performed on a sample from this data set. The data were not qualified on this basis.

LCS/LCSD Results

The LCS/LCSD percent recoveries (%Rs) and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Field Duplicate Results

Field duplicate RPDs are reviewed for conformance with the RESCON QC acceptance limit of $\leq$ 30% [if results are greater than five times the limit of quantitation (LOQ)] and $\leq$ 2x the LOQ [if results are less than five times the LOQ] for aqueous and solid matrices. All field duplicate precision criteria were met.

Labeled Compound Results

The labeled compound results were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met or qualification of the data was not required.

Sample Results/Reporting Issues

If applicable, compounds detected at concentrations less than the LOQ but greater than the DL are qualified by the laboratory as estimated (J). This "J" qualifier is retained during data validation.

QUALIFICATION ACTIONS

Qualification of the data was not required on the basis of this review.

INSTALLATION_ID	SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	SAMPLE_NAME	SAMPLE_MATRIX_DESC	COLLECT_DATE	ANALYTICAL_METHOD_GRP_DESC	SDG
DAVID_TAYLOR_RC	SITE 00003	DPT-16-12	Direct Push/Geoprobe	1474500	496420	DPT-16-12-GW-19-23	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-12	Direct Push/Geoprobe	1474500	496420	DPT-16-12-GW-31-35	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-14	Direct Push/Geoprobe	1474440	496462	DPT-16-14-GW-19-23	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-14	Direct Push/Geoprobe	1474440	496462	DPT-16-14-GW-31-35	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-16	Direct Push/Geoprobe	1474620	496330	DPT-16-16-GW-19-23	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-16	Direct Push/Geoprobe	1474620	496330	DPT-16-16-GW-31-35	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-22	Direct Push/Geoprobe	1474330	496480	DPT-16-22-GW-19-23	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-22	Direct Push/Geoprobe	1474330	496480	DPT-16-22-GW-31-35	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-22	Direct Push/Geoprobe	1474330	496480	DPT-16-22-GW-31-35-DUP	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-24	Direct Push/Geoprobe	1474490	496250	DPT-16-24-GW-21-25	Ground water	12/6/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-24	Direct Push/Geoprobe	1474490	496250	DPT-16-24-GW-31-35	Ground water	12/6/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-25	Direct Push/Geoprobe	1474430	496276	DPT-16-25-GW-19-23	Ground water	12/6/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-25	Direct Push/Geoprobe	1474430	496276	DPT-16-25-GW-31-35	Ground water	12/6/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-28	Direct Push/Geoprobe	1474550	496381	DPT-16-28-GW-19-23	Ground water	12/6/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-28	Direct Push/Geoprobe	1474550	496381	DPT-16-28-GW-31-35	Ground water	12/6/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-33	Direct Push/Geoprobe	1474410	496427	DPT-16-33-GW-19-23	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-33	Direct Push/Geoprobe	1474410	496427	DPT-16-33-GW-31-35	Ground water	12/5/2016	Perfluoroalkyl Compounds	320-24060-1