



**Groundwater Investigation Sample Results,
Level 2 Laboratory Report, Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Figure, SDG 1700381**

*Naval Research Laboratory – Chesapeake Bay
Detachment
Chesapeake Beach, Maryland*

February 2019

April 04, 2017

Vista Work Order No. 1700381

Ms. Tiffany Hill
CH2M Hill
1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330

Dear Ms. Hill,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on March 28, 2017. This sample set was analyzed on a rush turn-around time, under your Project Name 'NRL-CBD PFAS'.

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

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

Sincerely,



Martha Maier
Laboratory Director



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

Vista Work Order No. 1700381

Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

Modified EPA Method 537

The samples were centrifuged prior to extraction.

The aqueous samples were extracted and analyzed for PFBS, PFOA and PFOS using Modified EPA Method 537.

Holding Times

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

Quality Control

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

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

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

TABLE OF CONTENTS

Case Narrative.....	1
Table of Contents.....	3
Sample Inventory.....	4
Analytical Results.....	5
Qualifiers.....	12
Certifications.....	13
Sample Receipt.....	16

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1700381-01	CBD-AOA-MW12-0317	27-Mar-17 09:45	28-Mar-17 09:34	HDPE Bottle, 125 mL HDPE Bottle, 125 mL
1700381-02	CBD-EB01-032717	27-Mar-17 10:25	28-Mar-17 09:34	HDPE Bottle, 125 mL HDPE Bottle, 125 mL
1700381-03	CBD-AOA-MW13-0317	27-Mar-17 12:05	28-Mar-17 09:34	HDPE Bottle, 125 mL HDPE Bottle, 125 mL
1700381-04	CBD-FB01-032717	27-Mar-17 11:05	28-Mar-17 09:34	HDPE Bottle, 125 mL HDPE Bottle, 125 mL

ANALYTICAL RESULTS

Sample ID: Method Blank						Modified EPA Method 537			
Matrix: Aqueous Sample Size: 0.125 L		QC Batch: B7C0150 Date Extracted: 28-Mar-2017 13:43		Lab Sample: B7C0150-BLK1 Date Analyzed: 29-Mar-17 12:51 Column: BEH C18					
Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.79	4.00	8.00		IS 13C3-PFBS	103	60 - 150	
PFOA	ND	0.651	2.00	8.00		IS 13C2-PFOA	83.6	60 - 150	
PFOS	ND	0.807	0.900	8.00		IS 13C8-PFOS	79.3	60 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Sample ID: OPR

Modified EPA Method 537

Matrix: Aqueous Sample Size: 0.125 L	QC Batch: B7C0150 Date Extracted: 28-Mar-2017 13:43	Lab Sample: B7C0150-BS1 Date Analyzed: 29-Mar-17 11:53 Column: BEH C18					
Analyte	Amt Found (ng/L)	Spike Amt	%R	Limits	Labeled Standard	%R	LCL-UCL
PFBS	85.8	80.0	107	60 - 130	IS 13C3-PFBS	106	60 - 150
PFOA	79.4	80.0	99.2	70 - 130	IS 13C2-PFOA	82.5	60 - 150
PFOS	75.5	80.0	94.4	70 - 130	IS 13C8-PFOS	80.9	60 - 150

LCL-UCL - Lower control limit - upper control limit

Sample ID: CBD-AOA-MW12-0317**Modified EPA Method 537**

Client Data		Sample Data			Laboratory Data				
Name:	CH2M Hill	Matrix:	Groundwater		Lab Sample:	1700381-01	Date Received:	28-Mar-2017 9:34	
Project:	NRL-CBD PFAS	Sample Size:	0.123 L		QC Batch:	B7C0150	Date Extracted:	28-Mar-2017 13:43	
Date Collected:	27-Mar-2017 9:45				Date Analyzed:	29-Mar-17 13:16 Column: BEH C18			
Location:									

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.82	4.07	8.15		IS 13C3-PFBS	87.0	60 - 150	
PFOA	ND	0.663	2.03	8.15		IS 13C2-PFOA	73.5	60 - 150	
PFOS	ND	0.822	0.915	8.15		IS 13C8-PFOS	80.8	60 - 150	

DL - Detection limit
 RL - Reporting limit

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

Sample ID: CBD-EB01-032717**Modified EPA Method 537**

Client Data		Sample Data			Laboratory Data				
Name:	CH2M Hill	Matrix:	Groundwater		Lab Sample:	1700381-02	Date Received:	28-Mar-2017 9:34	
Project:	NRL-CBD PFAS	Sample Size:	0.121 L		QC Batch:	B7C0150	Date Extracted:	28-Mar-2017 13:43	
Date Collected:	27-Mar-2017 10:25				Date Analyzed:	29-Mar-17 13:28 Column: BEH C18			
Location:									

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.84	4.13	8.23		IS 13C3-PFBS	90.3	60 - 150	
PFOA	ND	0.670	2.07	8.23		IS 13C2-PFOA	80.9	60 - 150	
PFOS	1.20	0.830	0.930	8.23	J	IS 13C8-PFOS	85.0	60 - 150	

DL - Detection limit
 RL - Reporting limit

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

Sample ID: CBD-AOA-MW13-0317**Modified EPA Method 537**

Client Data		Sample Data			Laboratory Data				
Name:	CH2M Hill	Matrix:	Groundwater		Lab Sample:	1700381-03	Date Received:	28-Mar-2017 9:34	
Project:	NRL-CBD PFAS	Sample Size:	0.126 L		QC Batch:	B7C0150	Date Extracted:	28-Mar-2017 13:43	
Date Collected:	27-Mar-2017 12:05				Date Analyzed:	29-Mar-17 13:41 Column: BEH C18			
Location:									

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.77	3.97	7.93		IS 13C3-PFBS	78.1	60 - 150	
PFOA	ND	0.645	1.98	7.93		IS 13C2-PFOA	79.7	60 - 150	
PFOS	ND	0.800	0.893	7.93		IS 13C8-PFOS	91.1	60 - 150	

DL - Detection limit
 RL - Reporting limit

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

Sample ID: CBD-FB01-032717**Modified EPA Method 537**

Client Data		Sample Data			Laboratory Data				
Name:	CH2M Hill	Matrix:	Groundwater		Lab Sample:	1700381-04	Date Received:	28-Mar-2017 9:34	
Project:	NRL-CBD PFAS	Sample Size:	0.120 L		QC Batch:	B7C0150	Date Extracted:	28-Mar-2017 13:43	
Date Collected:	27-Mar-2017 11:05				Date Analyzed:	29-Mar-17 13:54 Column: BEH C18			
Location:									

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.86	4.17	8.32		IS 13C3-PFBS	83.8	60 - 150	
PFOA	ND	0.677	2.08	8.32		IS 13C2-PFOA	75.5	60 - 150	
PFOS	ND	0.840	0.938	8.32		IS 13C8-PFOS	79.2	60 - 150	

DL - Detection limit
 RL - Reporting limit

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

DATA QUALIFIERS & ABBREVIATIONS

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

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

CERTIFICATIONS

Accrediting Authority	Certificate Number
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2014022
Nevada Division of Environmental Protection	CA004132015-1
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-004
Pennsylvania Department of Environmental Protection	012
South Carolina Department of Health	87002001
Texas Commission on Environmental Quality	T104704189-15-6
Virginia Department of General Services	7923
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

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

NELAP Accredited Test Methods

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

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

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

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

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

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



CHAIN OF CUSTODY

For Laboratory Use Only
 Laboratory Project ID: 1700381 Temp: 0.2 °C
 Storage ID: WR-2 Storage Secured: Yes No

Project ID: NRL-CBD PFAS P.O.#: 10006-7-106051 Sampler: Lisa Carter
 (name)

TAT Standard: 21 days
 (check one): Rush (surcharge may apply)
 14 days 7 days Specify: _____

Invoice to: Name Tiffany Hill Company CH2M Address _____ City _____ State _____ Ph# 541-768-3109 Fax# _____

Relinquished by (printed name and signature) Lisa Carter Date 3-27-17 Time 1700 Received by (printed name and signature) B. Benedict Date 03/28/17 Time 0959

SHIP TO: Vista Analytical Laboratory
 1104 Windfield Way
 El Dorado Hills, CA 95762
 (916) 673-1520 * Fax (916) 673-0106
 ATTN: Martha Maier

Add Analysis(es) Requested			Container(s)														Comments	
Quantity	Type	Matrix	2378-TCDD	2378-TCDD/TCDF	PCDD/PCDF	2378-TCDD	2378-TCDD/TCDF	PCDD/PCDF	2378-TCDD	2378-TCDD/TCDF	PCDD/PCDF	TOTALS	COPLANAR PCB's	209 CONGENERS	PBDE	PAH		WHO-29

Sample ID	Date	Time	Location/Sample Description	Quantity	Type	Matrix	2378-TCDD	2378-TCDD/TCDF	PCDD/PCDF	2378-TCDD	2378-TCDD/TCDF	PCDD/PCDF	2378-TCDD	2378-TCDD/TCDF	PCDD/PCDF	TOTALS	COPLANAR PCB's	209 CONGENERS	PBDE	PAH	WHO-29	Mod. EPA 537	Comments	
<u>CBD-ADA-MW12-0317</u>	<u>3-27-17</u>	<u>0945</u>	<u>ADA-MW12</u>	<u>2</u>	<u>Poly</u>	<u>GW</u>																		
<u>CBD-EB01-032717</u>	<u>3-27-17</u>	<u>1025</u>	<u>Equip blank</u>	<u>2</u>	<u>Poly</u>	<u>GW</u>																		<u>QC Equipment</u>
<u>CBD-ADA-MW13-0317</u>	<u>3-27-17</u>	<u>1205</u>	<u>ADA-MW13</u>	<u>2</u>	<u>Poly</u>	<u>GW</u>																		
<u>CBD-FB01-032717</u>	<u>3-27-17</u>	<u>1105</u>	<u>Field Blank</u>	<u>2</u>	<u>Poly</u>	<u>GW</u>																		<u>QC Field Blank</u>

Special Instructions/Comments: _____

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
 Company: CH2M
 Address: 1100 NE Circle Blvd Suite 300
 City: Corvallis State: OR Zip: 97330
 Phone: 541-768-3109 Fax: _____
 Email: Tiffany.Hill@CH2M.COM

SAMPLE LOG-IN CHECKLIST



Vista Project #: 1700381 TAT 7

Samples Arrival:	Date/Time <u>03/28/17 0934</u>	Initials: <u>ASB</u>	Location: <u>WR-2</u> Shelf/Rack: <u>NA</u>
Logged In:	Date/Time <u>03/28/17 1020</u>	Initials: <u>ASB</u>	Location: <u>WR-2</u> Shelf/Rack: <u>A-4</u>
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> On Trac
	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered	<input type="checkbox"/> Other
Preservation:	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C: <u>0.9</u> (uncorrected)	Time: <u>0959</u>	Thermometer ID: DT-3	
Temp °C: <u>0.2</u> (corrected)	Probe used: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

	YES	NO	NA
Adequate Sample Volume Received? <u>A/B</u>	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill Trk # <u>7860 3906 4624</u>	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Preservation Documented:	<input type="checkbox"/> Na ₂ S ₂ O ₃	<input type="checkbox"/> Trizma	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
Shipping Container	<input type="checkbox"/> Vista	<input checked="" type="checkbox"/> Client	<input checked="" type="checkbox"/> Retain <input type="checkbox"/> Return <input type="checkbox"/> Dispose

Comments:

April 04, 2017

Vista Work Order No. 1700381

Ms. Tiffany Hill
CH2M Hill
1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330

Dear Ms. Hill,

Enclosed are the amended results for the sample set received at Vista Analytical Laboratory on March 28, 2017. This sample set was analyzed on a rush turn-around time, under your Project Name 'NRL-CBD PFAS'.

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

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

Sincerely,



Martha Maier
Laboratory Director



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

Vista Work Order No. 1700381

Case Narrative

Sample Condition on Receipt:

Four groundwater samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. This report was amended to include the chromatograms for the PFBS recovery standard, which were omitted from the original report.

Analytical Notes:

Modified EPA Method 537

The samples were centrifuged prior to extraction.

The aqueous samples were extracted and analyzed for PFBS, PFOA and PFOS using Modified EPA Method 537.

Holding Times

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

Quality Control

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

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

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

TABLE OF CONTENTS

Case Narrative.....	1
Table of Contents.....	3
Sample Inventory.....	4
Analytical Results.....	5
Qualifiers.....	12
Certifications.....	13
Sample Receipt.....	16
Extraction Information.....	18
Sample Data - Modified EPA Method 537.....	22
Continuing Calibration.....	53
Initial Calibration.....	73

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1700381-01	CBD-AOA-MW12-0317	27-Mar-17 09:45	28-Mar-17 09:34	HDPE Bottle, 125 mL HDPE Bottle, 125 mL
1700381-02	CBD-EB01-032717	27-Mar-17 10:25	28-Mar-17 09:34	HDPE Bottle, 125 mL HDPE Bottle, 125 mL
1700381-03	CBD-AOA-MW13-0317	27-Mar-17 12:05	28-Mar-17 09:34	HDPE Bottle, 125 mL HDPE Bottle, 125 mL
1700381-04	CBD-FB01-032717	27-Mar-17 11:05	28-Mar-17 09:34	HDPE Bottle, 125 mL HDPE Bottle, 125 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

Modified EPA Method 537

Matrix: Sample Size:	Aqueous 0.125 L	QC Batch: Date Extracted:	B7C0150 28-Mar-2017 13:43	Lab Sample: Date Analyzed:	B7C0150-BLK1 29-Mar-17 12:51	Column: BEH C18			
Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.79	4.00	8.00		IS 13C3-PFBS	103	60 - 150	
PFOA	ND	0.651	2.00	8.00		IS 13C2-PFOA	83.6	60 - 150	
PFOS	ND	0.807	0.900	8.00		IS 13C8-PFOS	79.3	60 - 150	

DL - Detection limit
RL - Reporting limit

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

Sample ID: OPR

Modified EPA Method 537

Matrix: Sample Size:	Aqueous 0.125 L	QC Batch: Date Extracted:	B7C0150 28-Mar-2017 13:43	Lab Sample: Date Analyzed:	B7C0150-BS1 29-Mar-17 11:53	Column: BEH C18	
Analyte	Amt Found (ng/L)	Spike Amt	%R	Limits	Labeled Standard	%R	LCL-UCL
PFBS	85.8	80.0	107	60 - 130	13C3-PFBS	106	60 - 150
PFOA	79.4	80.0	99.2	70 - 130	13C2-PFOA	82.5	60 - 150
PFOS	75.5	80.0	94.4	70 - 130	13C8-PFOS	80.9	60 - 150

LCL-UCL - Lower control limit - upper control limit

Sample ID: CBD-AOA-MW12-0317

Modified EPA Method 537

Client Data		Sample Data		Laboratory Data					
Name:	CH2M Hill	Matrix:	Groundwater	Lab Sample:	1700381-01	Date Received:	28-Mar-2017 9:34		
Project:	NRL-CBD PFAS	Sample Size:	0.123 L	QC Batch:	B7C0150	Date Extracted:	28-Mar-2017 13:43		
Date Collected:	27-Mar-2017 9:45			Date Analyzed:	29-Mar-17 13:16	Column:	BEH C18		
Location:									
Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.82	4.07	8.15		IS 13C3-PFBS	87.0	60 - 150	
PFOA	ND	0.663	2.03	8.15		IS 13C2-PFOA	73.5	60 - 150	
PFOS	ND	0.822	0.915	8.15		IS 13C8-PFOS	80.8	60 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Sample ID: CBD-EB01-032717

Modified EPA Method 537

Client Data		Sample Data		Laboratory Data					
Name:	CH2M Hill	Matrix:	Groundwater	Lab Sample:	1700381-02				
Project:	NRL-CBD PFAS	Sample Size:	0.121 L	QC Batch:	B7C0150				
Date Collected:	27-Mar-2017 10:25			Date Analyzed:	29-Mar-17 13:28 Column: BEH C18				
Location:									
Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.84	4.13	8.23		IS 13C3-PFBS	90.3	60 - 150	
PFOA	ND	0.670	2.07	8.23		IS 13C2-PFOA	80.9	60 - 150	
PFOS	1.20	0.830	0.930	8.23	J	IS 13C8-PFOS	85.0	60 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Sample ID: CBD-AOA-MW13-0317

Modified EPA Method 537

Client Data
 Name: Cu 2M u ill
 N61ect: v wL-CBD N AS
 Date C6llected: 27-Mar-2017 12:05
 Location:

Sample Data
 Matrix: Hr6ondGater
 Sample Size: 0H2. L

Laboratory Data
 Lab Sample: 1700381-03
 QC Batch: B7C0150
 Date Analyzed: 29-Mar-17 13:41 C6lomm: BEu C18
 Date weeciRed: 28-Mar-2017 9:34
 Date Extracted: 28-Mar-2017 13:43

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
NJ BS	v D	1F77	3197	7193		IS 13C3-NJ BS	78H	.0 - 150	
NJ OA	v D	0E45	1198	7193		IS 13C2-NJ OA	79F7	.0 - 150	
NJ OS	v D	01800	01893	7193		IS 13C8-NJ OS	91H	.0 - 150	

LCL-UCL - L6Ger c6ntr6l limit - opper c6ntr6l limit

resolts reported t6 DLF

wL - w6p6rting limit

When reported, NJ BS, NJ u xS, NJ OA and NJ OS include b6th linear and branched is6mersF

Only the linear is6mer is reported f6r all 6ther analytesF

DL - Detection limit

Sample ID: CBD-FB01-032717

Modified EPA Method 537

Client Data		Sample Data		Laboratory Data					
Name:	Cu 2M u ill	Matrix:	Hr6ondGater	Lab Sample:	1700381-04	Date weeiRed:	28-Mar-2017 9:34		
Netect:	v wL-CBD N AS	Sample Size:	0H20 L	QC Batch:	B7C0150	Date Extracted:	28-Mar-2017 13:43		
Date C6llected:	27-Mar-2017 11:05			Date Analyzed:	29-Mar-17 13:54	C6lomn:	BEu C18		
Location:									
Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
NJ BS	v D	1R.	4H7	8E2		IS 13C3-NJ BS	83R	.0 - 150	
NJ OA	v D	0E77	2I08	8E2		IS 13C2-NJ OA	75E	.0 - 150	
NJ OS	v D	0R40	0P38	8E2		IS 13C8-NJ OS	79E	.0 - 150	

LCL-UCL - L6Ger c6ntr6l limit - opper c6ntr6l limit

resolts reported t6 DLF

When reported, NJ BS, NJ u xS, NJ OA and NJ OS include b6th linear and branched is6mersF

Only the linear is6mer is reported f6r all 6ther analytesF

DL - Detection limit

wL - w6p6rting limit

DATA QUALIFIERS & ABBREVIATIONS

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

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

CERTIFICATIONS

Accrediting Authority	Certificate Number
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2014022
Nevada Division of Environmental Protection	CA004132015-1
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-004
Pennsylvania Department of Environmental Protection	012
South Carolina Department of Health	87002001
Texas Commission on Environmental Quality	T104704189-15-6
Virginia Department of General Services	7923
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

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

NELAP Accredited Test Methods

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

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

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

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

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

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

SAMPLE LOG-IN CHECKLIST



Vista Project #: 1700381 TAT 7

Samples Arrival:	Date/Time <u>03/28/17 0934</u>	Initials: <u>ASB</u>	Location: <u>WR-2</u> Shelf/Rack: <u>NA</u>
Logged In:	Date/Time <u>03/28/17 1020</u>	Initials: <u>ASB</u>	Location: <u>WR-2</u> Shelf/Rack: <u>A-4</u>
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> On Trac
	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered	<input type="checkbox"/> Other
Preservation:	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C: <u>0.9</u> (uncorrected)	Time: <u>0959</u>	Thermometer ID: DT-3	
Temp °C: <u>0.2</u> (corrected)	Probe used: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

	YES	NO	NA
Adequate Sample Volume Received? <u>A/B</u>	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill Trk # <u>7860 3906 4624</u>	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Preservation Documented:	<input type="checkbox"/> Na ₂ S ₂ O ₃	<input type="checkbox"/> Trizma	<input checked="" type="checkbox"/> NA
Shipping Container	Vista	<input checked="" type="checkbox"/> Client	<input checked="" type="checkbox"/> Return
		Retain	Dispose

Comments:

EXTRACTION INFORMATION

Process Sheet
Workorder: 1700381



Prep Expiration: 2017-Apr-10
 Client: CH2M Hill

Workorder Due: 04-Apr-17 00:00

TAT: 7

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

Prep Batch: B7C0150

Prep Data Entered: 3/29/17 AC
Date and Initials

Version: PFOA, PFOS, PFBS

Initial Sequence: _____

LabSampleID	Recon	ClientSampleID	Date Received	Location	Comments
1700381-01	<input checked="" type="checkbox"/>	CBD-AOA-MW12-0317	28-Mar-17 09:34	WR-2 A-4	
1700381-02	<input checked="" type="checkbox"/>	CBD-EB01-032717	28-Mar-17 09:34	WR-2 A-4	
1700381-03	<input checked="" type="checkbox"/>	CBD-AOA-MW13-0317	28-Mar-17 09:34	WR-2 A-4	
1700381-04	<input checked="" type="checkbox"/>	CBD-FB01-032717	28-Mar-17 09:34	WR-2 A-4	

Vista PM: Martha Maier

Vial Box ID: Harvey Potter

Sample Reconciled By: [Signature] 3/28/17
 Page 1 of 1

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PEAS DOD (LOO as mR

B7C0150

Chemist: ESchneider

Prep Date/Time: 28-Mar-17 13:43

Prepared using: LCMS - SPE Extraction-LCMS

C	VISTA Sample ID	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE	RS CHEM/WIT DATE
<input type="checkbox"/>	B7C0150-BLK1	N/A	N/A	(0.125) ✓	ES 3/28/17	AC 3/28/17	ES 3/28/17
<input type="checkbox"/>	B7C0150-BS1	↓	↓	↓	↓	↓	↓
<input type="checkbox"/>	1700381-01(A)	149.86	27.11	0.12275 ✓	↓	↓	↓
<input type="checkbox"/>	1700381-02(A)	148.54	27.05	0.12149 ✓	↓	↓	↓
<input type="checkbox"/>	1700381-03(A)	153.06	26.96	0.1261 ✓	↓	↓	↓
<input type="checkbox"/>	1700381-04(A)	147.07	26.92	0.12015 ✓	↓	↓	↓

(A) Samples centrifuged to remove particulate matter AC 3/28/17

IS Name 161970, 10 µL (V1)	NS Name 17C1521, 10 µL (V3)	RS Name 17A1201, 10 µL (V2)	SPE Chem: <u>Stenta X Av 33µm 200mg/6mL</u> Ele SOLV: <u>0.5% NH₄H in MeOH/H₂O</u> Final Volume(s) <u> </u> / <u>mL</u>	Check Out: Chemist/Date: <u>AK 3/29/17</u> Check In: Chemist/Date: <u>N/A</u> Balance ID: <u>HRNS-8</u>
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SAMPLE DATA – MODIFIED EPA METHOD 537

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-7.qld

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 Printed: Tuesday, April 04, 2017 14:22:28 Pacific Daylight Time

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 Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03
 ID: B7C0150-BLK1 Method Blank 0.125, Description: Method Blank, Name: 170329G1_7, Date: 29-Mar-2017, Time: 12:51:10

#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	PFBS	299 > 79.7	2.833e0	5.965e3		0.125	2.95		
2	PFOA	413 > 368.7	8.658e1	1.848e4		0.125	4.23		
3	PFOA	499 > 79.9		6.236e3		0.125			
4	13C3-PFBS	302.0 > 98.8	5.965e3	1.158e4	0.501	0.125	2.94	103	103
5	13C2-PFOA	414.9 > 369.7	1.848e4	6.863e3	3.221	0.125	4.23	83.6	83.6
6	13C8-PFOA	507.0 > 79.9	6.236e3	7.281e3	1.080	0.125	4.62	79.3	79.3
7	13C3-PFHxS	401.9 > 79.9	1.158e4	1.158e4	1.000	0.125	3.94	100	100
8	13C8-PFOA	421.3 > 376	6.863e3	6.863e3	1.000	0.125	4.23	100	100
9	13C4-PFOA	503.0 > 79.9	7.281e3	7.281e3	1.000	0.125	4.62	100	100

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-7.qld

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ID: B7C0150-BLK1 Method Blank 0.125, Description: Method Blank, Name: 170329G1_7, Date: 29-Mar-2017, Time: 12:51:10

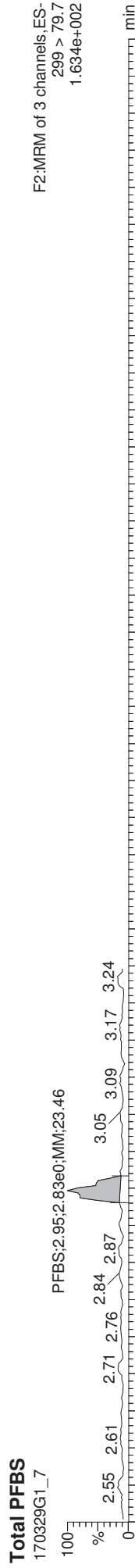
#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	18 Total PFBS	299 > 79.7		4.836e3		0.125			
2	20 Total PFOA	413 > 368.7		1.848e4		0.125			
3	21 Total PFOS	499 > 79.9		6.236e3		0.125			

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-7.qld

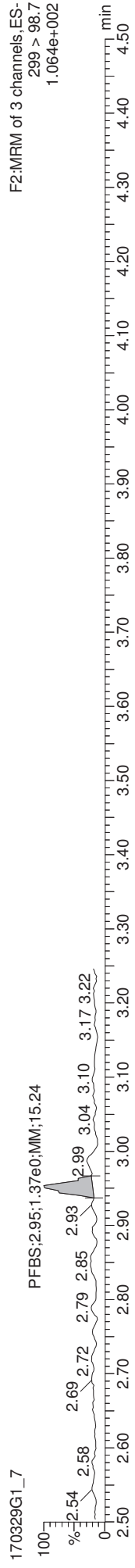
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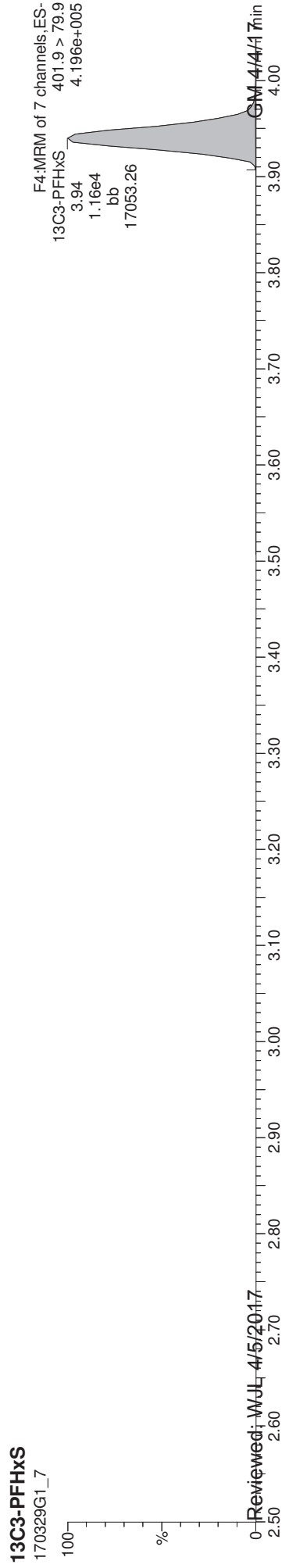
F2:MIRM of 3 channels,ES-299 > 79.7
1.634e+002



F2:MIRM of 3 channels,ES-299 > 98.7
1.064e+002



F2:MIRM of 3 channels,ES-302.0 > 98.8
2.246e+005



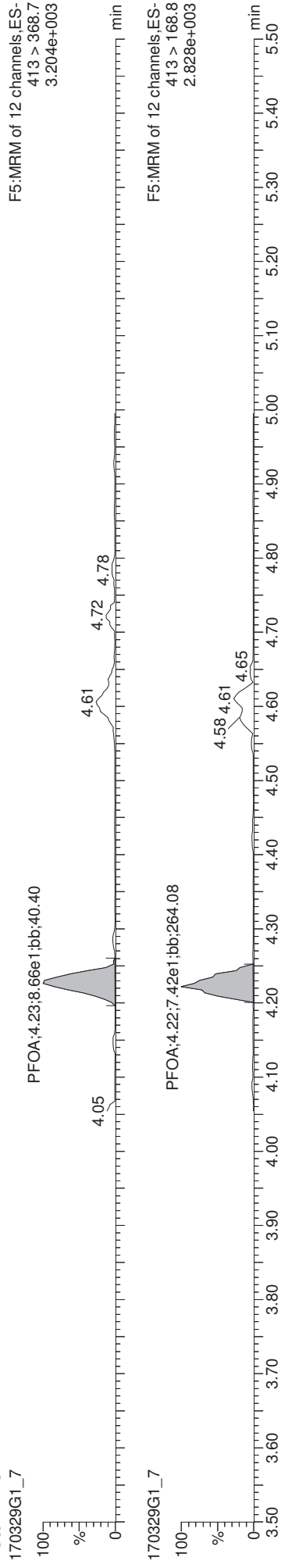
F4:MIRM of 7 channels,ES-401.9 > 79.9
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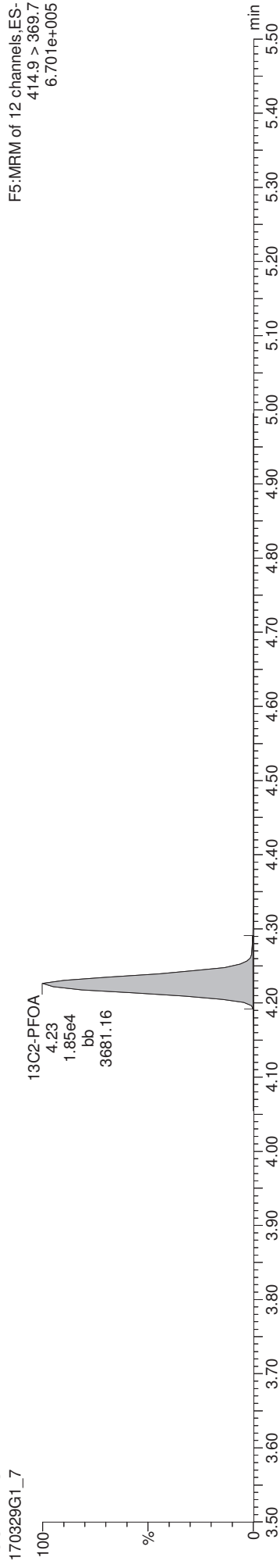
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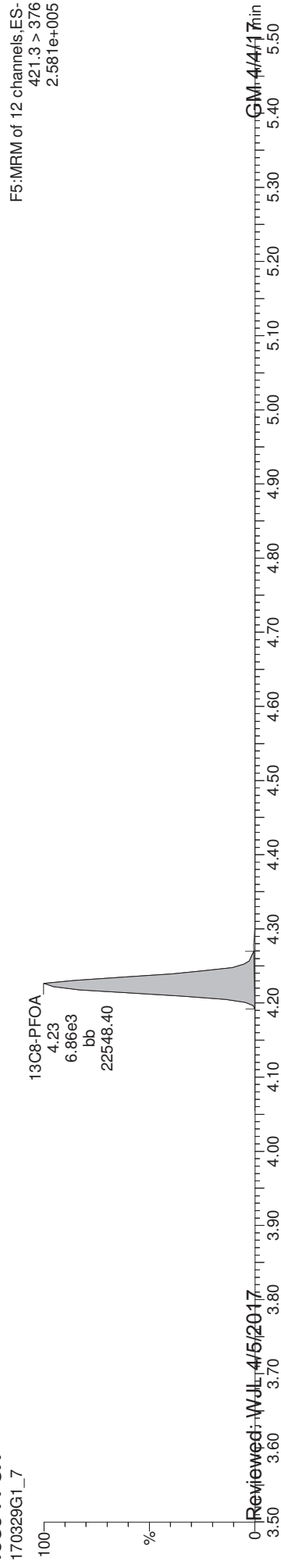
Total PFOA



13C2-PFOA



13C8-PFOA

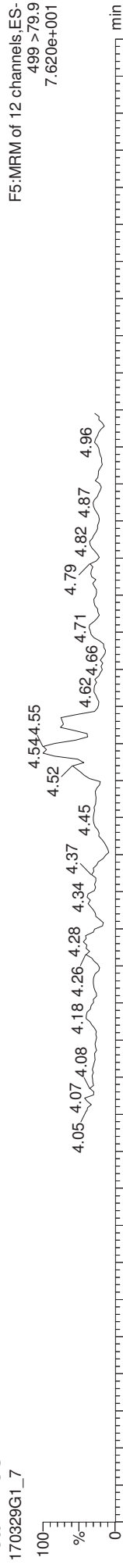


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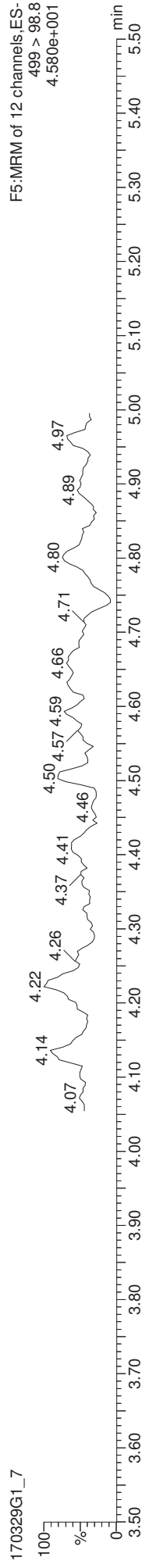
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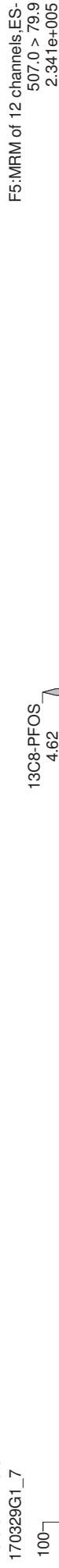
Total PFOS



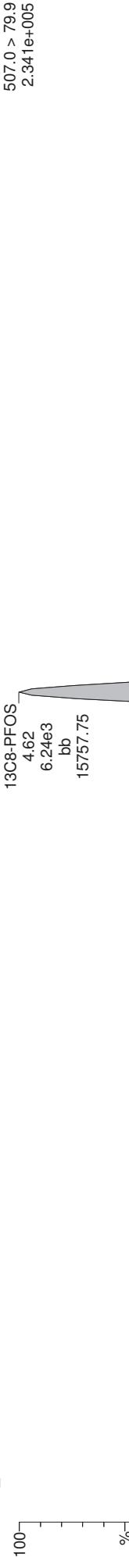
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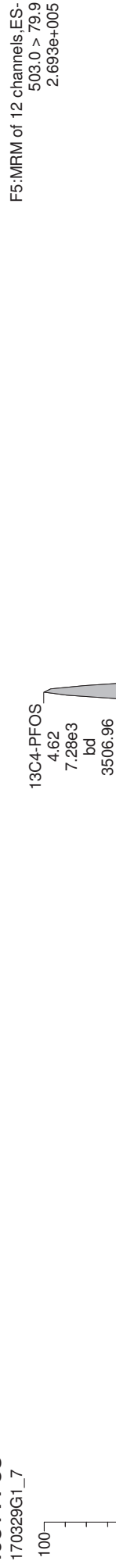
13C8-PFOS



170329G1_7



13C4-PFOS



170329G1_7

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-4.qld

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 Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

ID: B7C0150-BS1 OPR 0.125, Description: OPR, Name: 170329G1_4, Date: 29-Mar-2017, Time: 11:53:37

#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	PFBS	299 > 79.7	1.060e4	5.426e3		0.125	2.95	85.8	107
2	PFOA	413 > 368.7	1.251e4	1.780e4		0.125	4.23	79.4	99.2
3	PFOS	499 > 79.9	1.958e3	4.758e3		0.125	4.62	75.5	94.4
4	13C3-PFBS	302.0 > 98.8	5.426e3	1.025e4	0.501	0.125	2.95	106	106
5	10 13C2-PFOA	414.9 > 369.7	1.780e4	6.695e3	3.221	0.125	4.23	82.5	82.5
6	12 13C8-PFOS	507.0 > 79.9	4.758e3	5.444e3	1.080	0.125	4.62	80.9	80.9
7	14 13C3-PFHxS	401.9 > 79.9	1.025e4	1.025e4	1.000	0.125	3.94	100	100
8	15 13C8-PFOA	421.3 > 376	6.695e3	6.695e3	1.000	0.125	4.23	100	100
9	17 13C4-PFOS	503.0 > 79.9	5.444e3	5.444e3	1.000	0.125	4.62	100	100

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-4.qld

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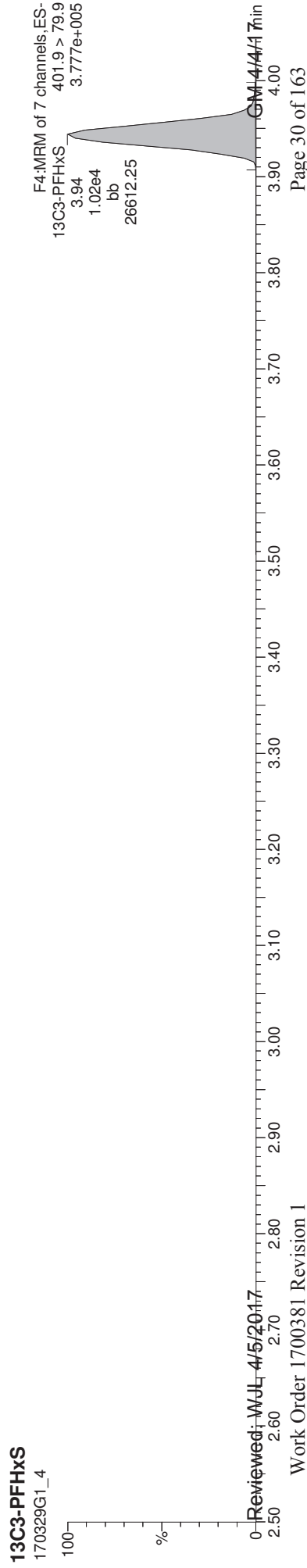
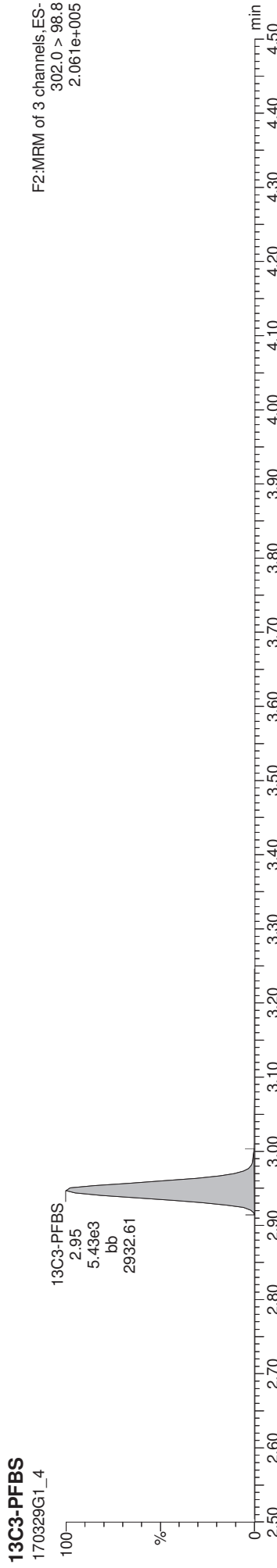
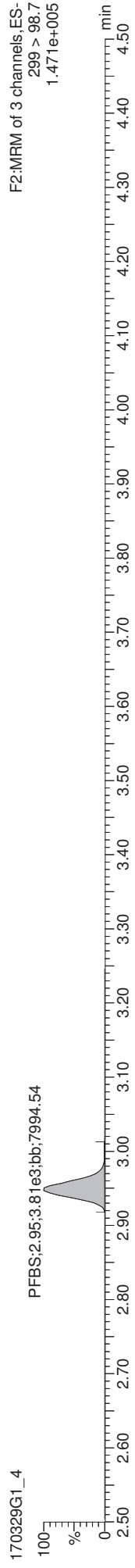
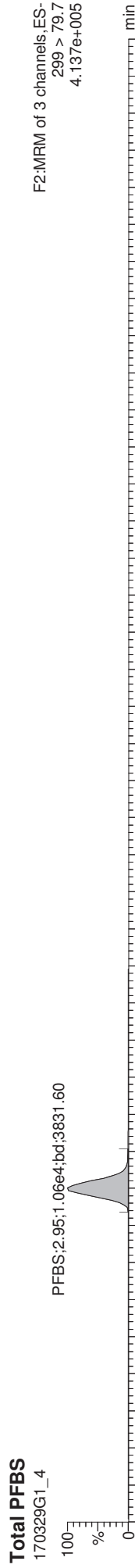
#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	18 Total PFBS	299 > 79.7		4.640e3		0.125		85.8	
2	20 Total PFOA	413 > 368.7		1.780e4		0.125		79.4	
3	21 Total PFOS	499 > 79.9		4.758e3		0.125		75.5	

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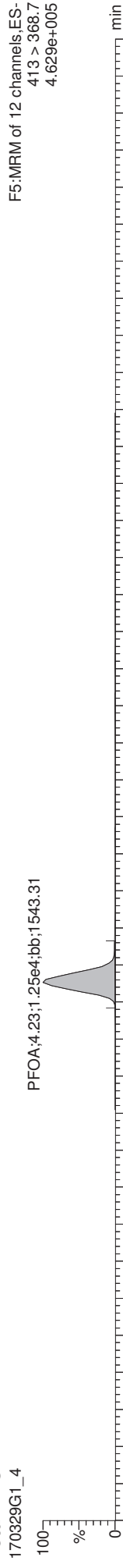


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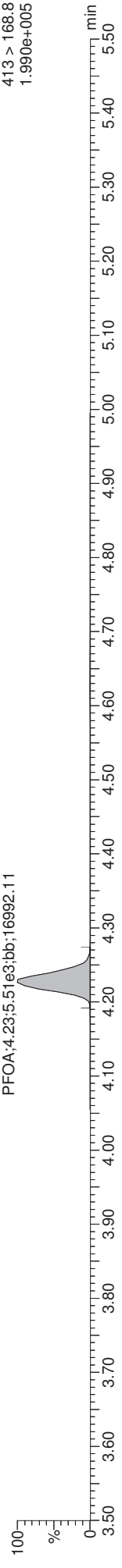
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Printed: Tuesday, April 04, 2017 14:10:56 Pacific Daylight Time

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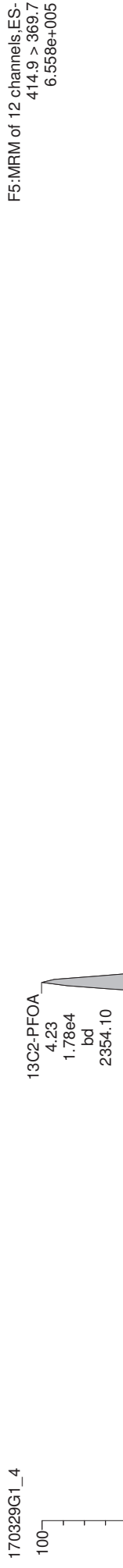
Total PFOA



13C2-PFOA



13C8-PFOA



13C8-PFOA

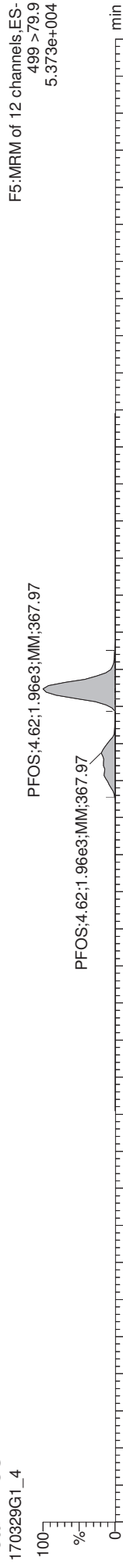


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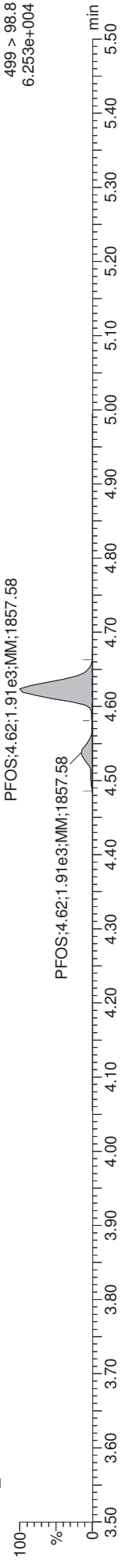
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Printed: Tuesday, April 04, 2017 14:10:56 Pacific Daylight Time

ID: B7C0150-BS1 OPR 0.125, Description: OPR, Name: 170329G1_4, Date: 29-Mar-2017, Time: 11:53:37, Instrument: , Lab: , User:

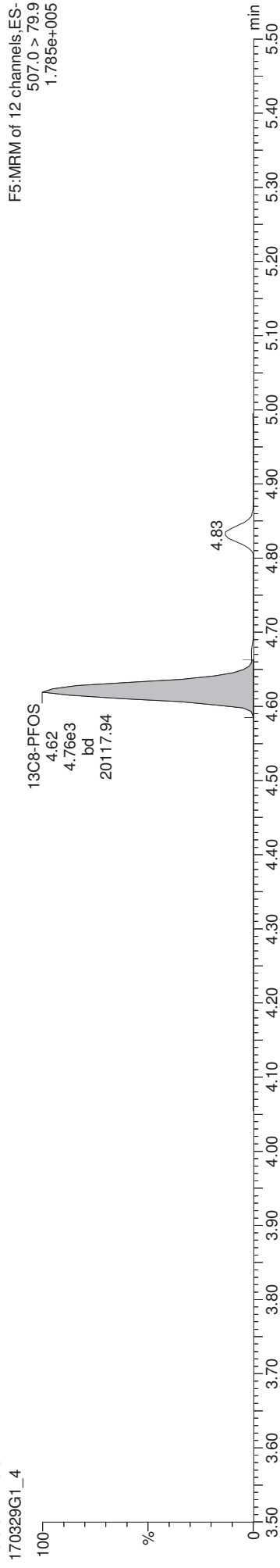
Total PFOS



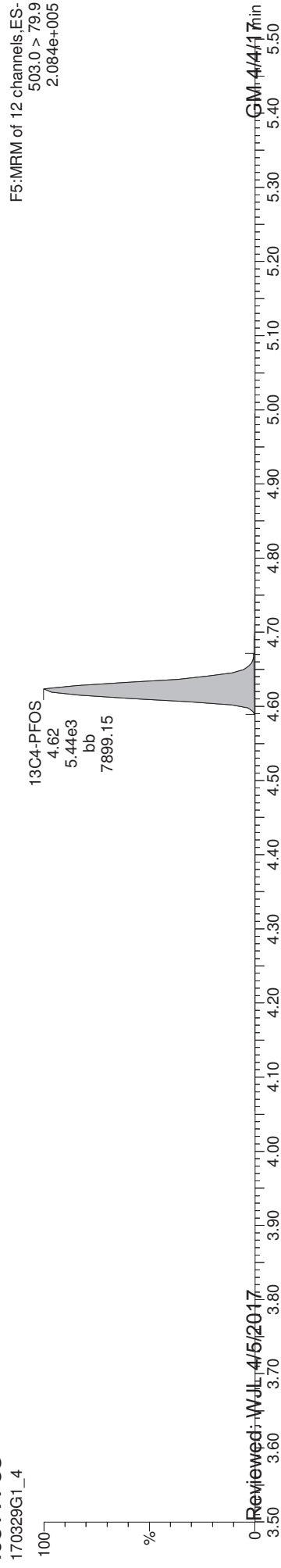
13C8-PFOS



13C4-PFOS



13C4-PFOS



Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-9.qld

Last Altered: Tuesday, April 04, 2017 15:48:22 Pacific Daylight Time
 Printed: Tuesday, April 04, 2017 15:48:50 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51
 Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03
 ID: 1700381-01 CBD-AOA-MW12-0317 0.12275, Description: CBD-AOA-MW12-0317_9, Date: 29-Mar-2017, Time: 13:16:12

#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	PFBS	299 > 79.7		6.449e3		0.123			
2	PFOA	413 > 368.7	1.997e2	2.500e4		0.123	4.23		
3	PFOS	499 > 79.9		8.593e3		0.123			
4	13C3-PFBS	302.0 > 98.8	6.449e3	1.479e4	0.501	0.123	2.94	88.6	87.0
5	13C2-PFOA	414.9 > 369.7	2.500e4	1.056e4	3.221	0.123	4.22	74.9	73.5
6	13C8-PFOA	507.0 > 79.9	8.593e3	9.855e3	1.080	0.123	4.62	82.2	80.8
7	13C3-PFHxS	401.9 > 79.9	1.479e4	1.479e4	1.000	0.123	3.94	102	100
8	13C8-PFOA	421.3 > 376	1.056e4	1.056e4	1.000	0.123	4.22	102	100
9	13C4-PFOS	503.0 > 79.9	9.855e3	9.855e3	1.000	0.123	4.62	102	100

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-9.qld

Last Altered: Tuesday, April 04, 2017 15:48:22 Pacific Daylight Time
Printed: Tuesday, April 04, 2017 15:48:56 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51

Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

ID: 1700381-01 CBD-AOA-MW12-0317 0.12275, Description: CBD-AOA-MW12-0317, Name: 170329G1_9, Date: 29-Mar-2017, Time: 13:16:12

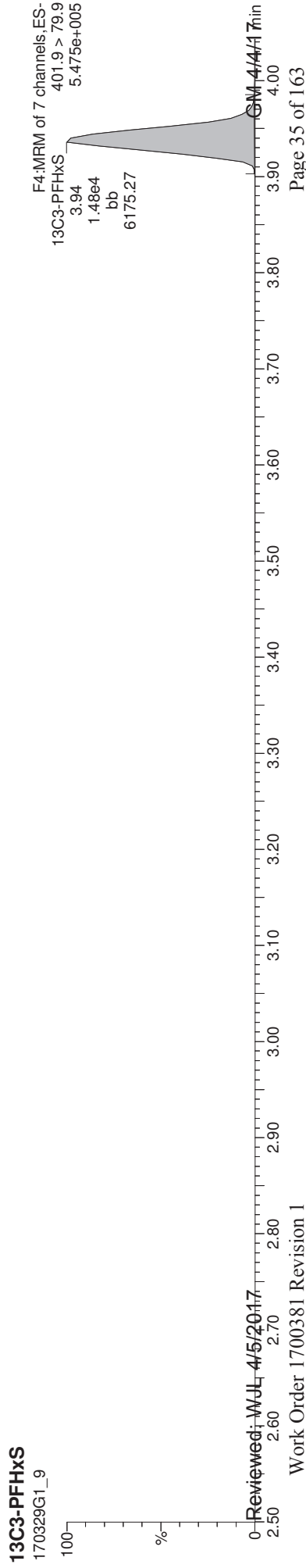
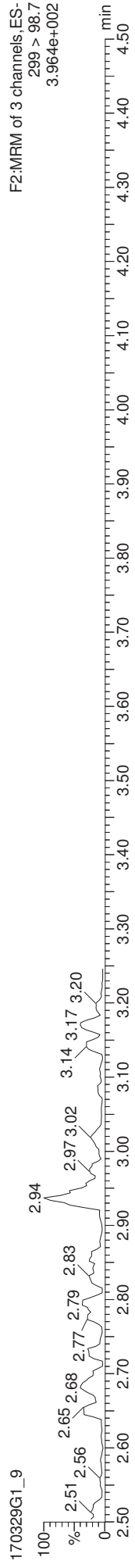
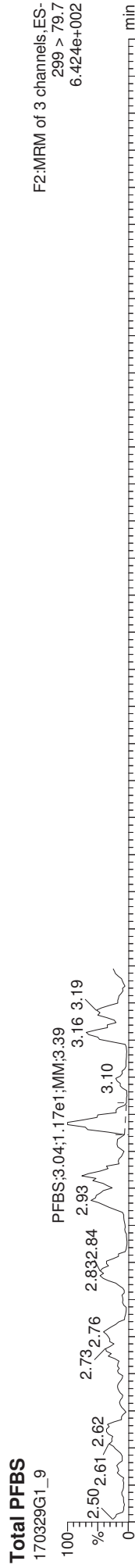
#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	18 Total PFBS	299 > 79.7		6.599e3		0.123			
2	20 Total PFOA	413 > 368.7		2.500e4		0.123			
3	21 Total PFOS	499 > 79.9		8.593e3		0.123			

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-9.qld

Last Altered: Tuesday, April 04, 2017 15:48:22 Pacific Daylight Time
Printed: Tuesday, April 04, 2017 15:48:50 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

ID: 1700381-01 CBD-AOA-MW12-0317 0.12275, Description: CBD-AOA-MW12-0317, Name: 170329G1_9, Date: 29-Mar-2017, Time: 13:16:12, Instrument: , Lab: , User:

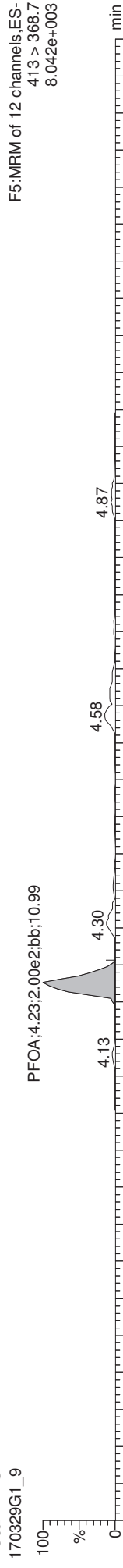


Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-9.qld

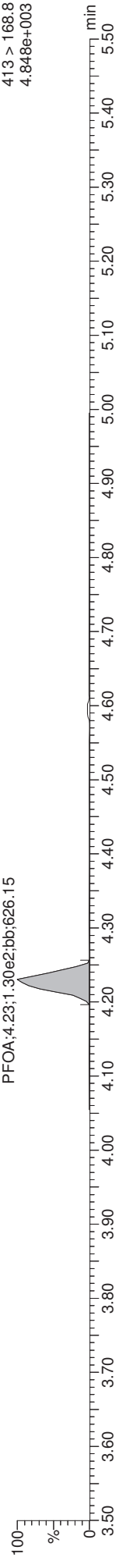
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Printed: Tuesday, April 04, 2017 15:48:50 Pacific Daylight Time

ID: 1700381-01 CBD-AOA-MW12-0317 0.12275, Description: CBD-AOA-MW12-0317, Name: 170329G1_9, Date: 29-Mar-2017, Time: 13:16:12, Instrument: , Lab: , User:

Total PFOA



13C2-PFOA



13C8-PFOA



13C8-PFOA



Reviewed: WJL 4/5/2017

GM-4/4/17 min

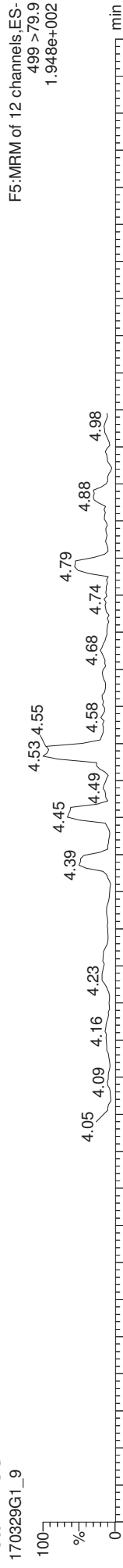
Work Order 1700381 Revision 1

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-9.qld

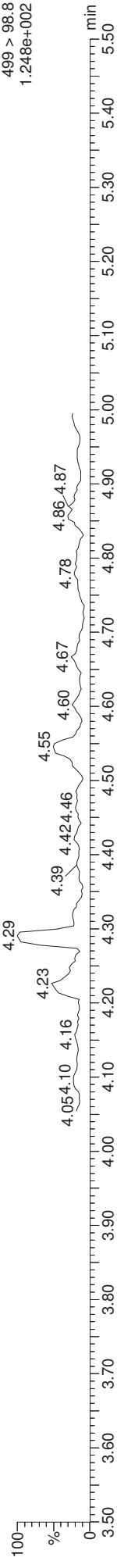
Last Altered: Tuesday, April 04, 2017 15:48:22 Pacific Daylight Time
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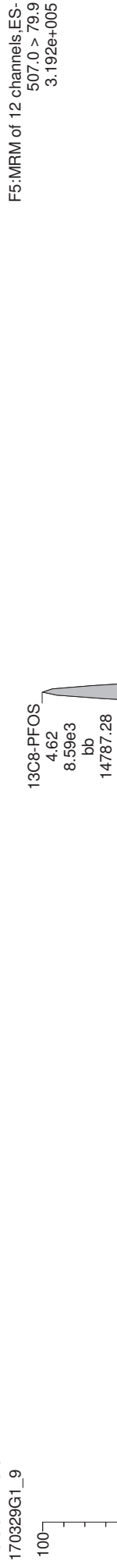
Total PFOS



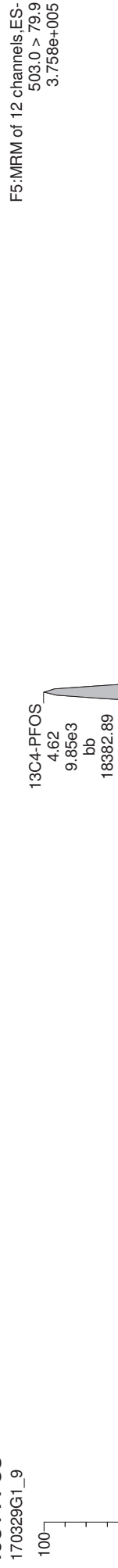
170329G1_9



13C8-PFOS



13C4-PFOS



Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-10.qld

Last Altered: Tuesday, April 04, 2017 15:50:31 Pacific Daylight Time
 Printed: Tuesday, April 04, 2017 15:50:38 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51

Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

ID: 1700381-02 CBD-EB01-032717 0.12149, Description: CBD-EB01-032717, Name: 170329G1_10, Date: 29-Mar-2017, Time: 13:28:47

#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	PFBS	299 > 79.7		6.132e3		0.121			
2	PFOA	413 > 368.7	1.963e2	2.432e4		0.121	4.23		
3	PFOS	499 > 79.9	2.974e0	8.342e3		0.121	4.61	1.20	
4	13C3-PFBS	302.0 > 98.8	6.132e3	1.355e4	0.501	0.121	2.94	92.9	90.3
5	10 13C2-PFOA	414.9 > 369.7	2.432e4	9.330e3	3.221	0.121	4.22	83.2	80.9
6	12 13C8-PFOS	507.0 > 79.9	8.342e3	9.086e3	1.080	0.121	4.62	87.5	85.0
7	14 13C3-PFHxS	401.9 > 79.9	1.355e4	1.355e4	1.000	0.121	3.94	103	100
8	15 13C8-PFOA	421.3 > 376	9.330e3	9.330e3	1.000	0.121	4.22	103	100
9	17 13C4-PFOS	503.0 > 79.9	9.086e3	9.086e3	1.000	0.121	4.62	103	100

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-10.qld
Last Altered: Tuesday, April 04, 2017 15:50:31 Pacific Daylight Time
Printed: Tuesday, April 04, 2017 15:50:46 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03
ID: 1700381-02 CBD-EB01-032717 0.12149, Description: CBD-EB01-032717, Name: 170329G1_10, Date: 29-Mar-2017, Time: 13:28:47

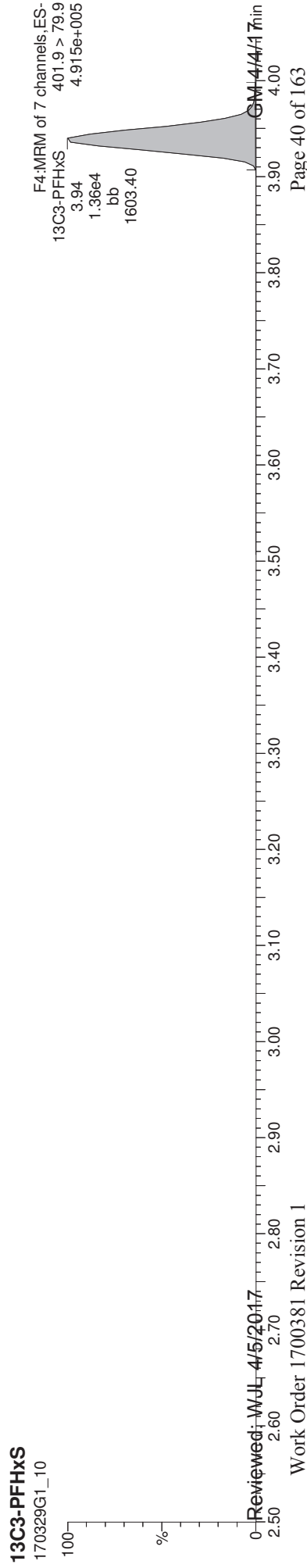
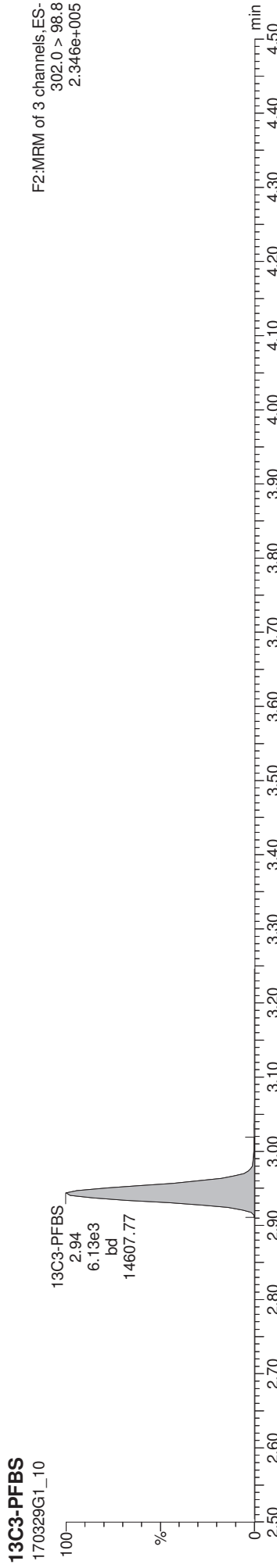
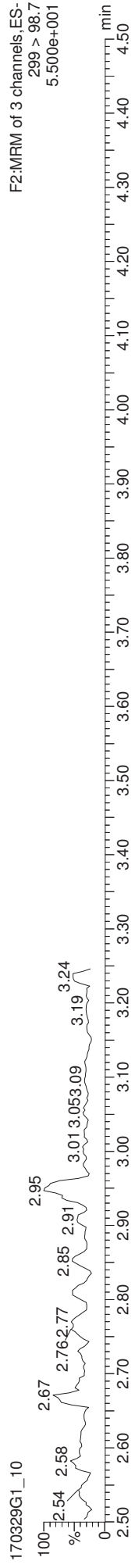
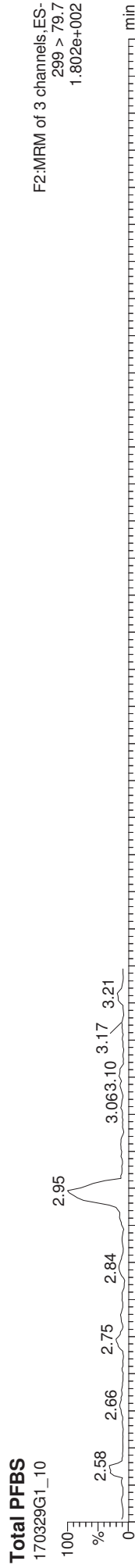
#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	18 Total PFBS	299 > 79.7		5.599e3		0.121			
2	20 Total PFOA	413 > 368.7		2.432e4		0.121			
3	21 Total PFOS	499 > 79.9		8.342e3		0.121		1.20	

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-10.qld

Last Altered: Tuesday, April 04, 2017 15:50:31 Pacific Daylight Time
Printed: Tuesday, April 04, 2017 15:50:38 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

ID: 1700381-02 CBD-EB01-032717 0.12149, Description: CBD-EB01-032717, Name: 170329G1_10, Date: 29-Mar-2017, Time: 13:28:47, Instrument: , Lab: , User:

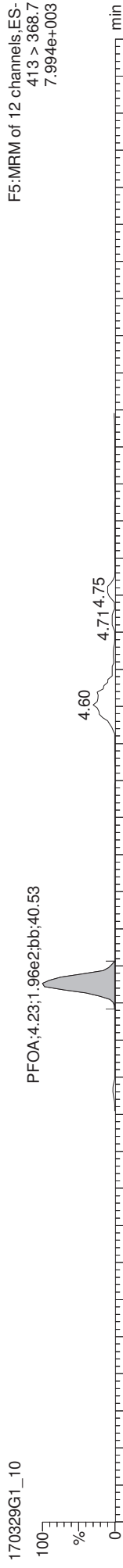


Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-10.qld

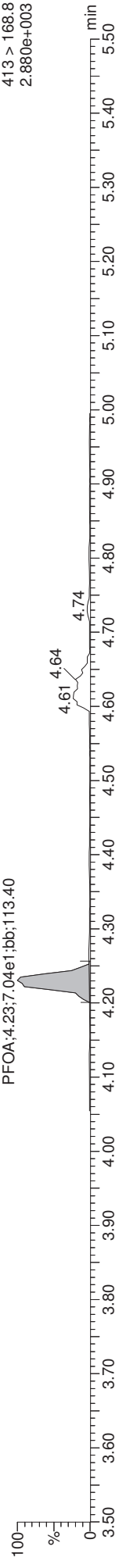
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Printed: Tuesday, April 04, 2017 15:50:38 Pacific Daylight Time

ID: 1700381-02 CBD-EB01-032717 0.12149, Description: CBD-EB01-032717, Name: 170329G1_10, Date: 29-Mar-2017, Time: 13:28:47, Instrument: , Lab: , User:

Total PFOA



13C2-PFOA



13C8-PFOA



Quantify Sample Report

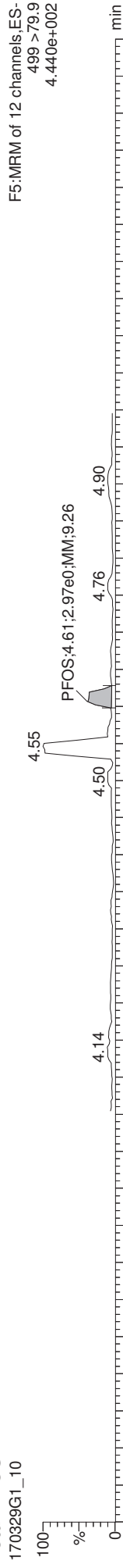
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-10.qld

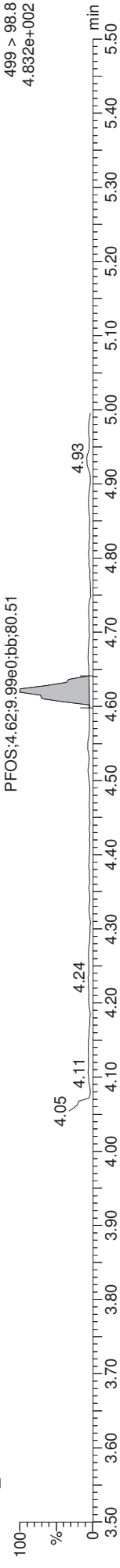
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Printed: Tuesday, April 04, 2017 15:50:38 Pacific Daylight Time

ID: 1700381-02 CBD-EB01-032717 0.12149, Description: CBD-EB01-032717, Name: 170329G1_10, Date: 29-Mar-2017, Time: 13:28:47, Instrument: , Lab: , User:

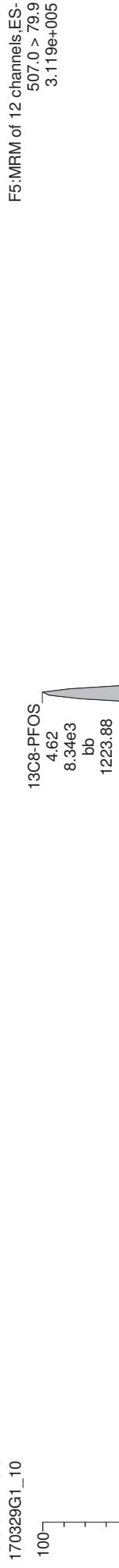
Total PFOS



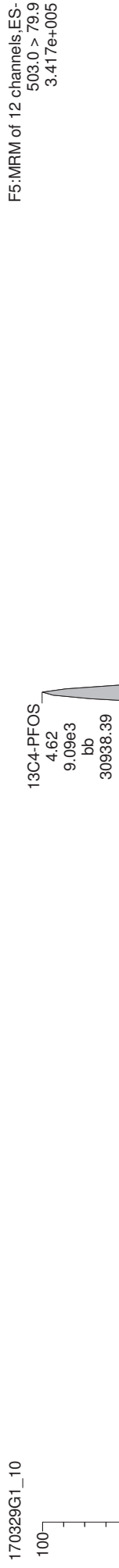
170329G1_10



13C8-PFOS



13C4-PFOS



Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-11.qld

Last Altered: Tuesday, April 04, 2017 15:57:15 Pacific Daylight Time
 Printed: Tuesday, April 04, 2017 15:57:26 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51

Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

ID: 1700381-03 CBD-AOA-MW13-0317 0.1261, Description: CBD-AOA-MW13-0317, Name: 170329G1_11, Date: 29-Mar-2017, Time: 13:41:26

#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	PFBS	299 > 79.7		5.591e3		0.126			
2	PFOA	413 > 368.7	1.322e2	2.514e4		0.126	4.23		
3	PFOS	499 > 79.9		8.499e3		0.126			
4	13C3-PFBS	302.0 > 98.8	5.591e3	1.428e4	0.501	0.126	2.94	77.5	78.1
5	13C2-PFOA	414.9 > 369.7	2.514e4	9.796e3	3.221	0.126	4.23	79.0	79.7
6	13C8-PFOS	507.0 > 79.9	8.499e3	8.634e3	1.080	0.126	4.62	90.4	91.1
7	13C3-PFHxS	401.9 > 79.9	1.428e4	1.428e4	1.000	0.126	3.94	99.1	100
8	13C8-PFOA	421.3 > 376	9.796e3	9.796e3	1.000	0.126	4.23	99.1	100
9	13C4-PFOS	503.0 > 79.9	8.634e3	8.634e3	1.000	0.126	4.62	99.1	100

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-11.qld
Last Altered: Tuesday, April 04, 2017 15:57:15 Pacific Daylight Time
Printed: Tuesday, April 04, 2017 15:57:35 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03
ID: 1700381-03 CBD-AOA-MW13-0317 0.1261, Description: CBD-AOA-MW13-0317, Name: 170329G1_11, Date: 29-Mar-2017, Time: 13:41:26

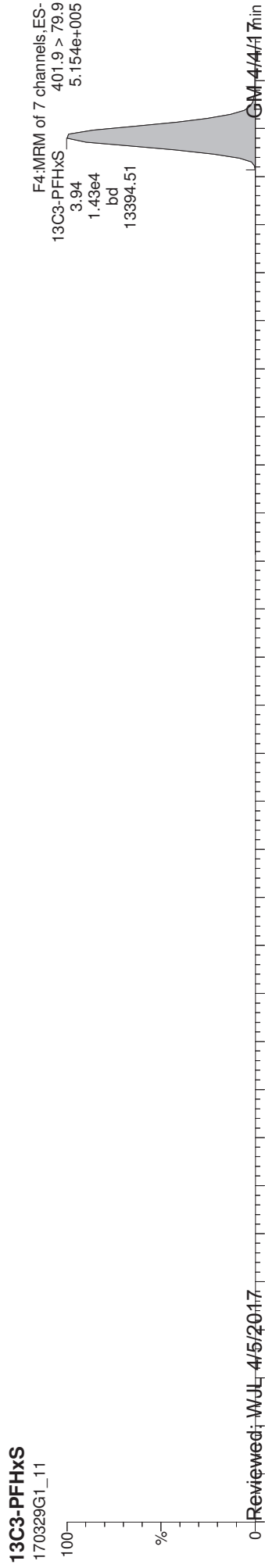
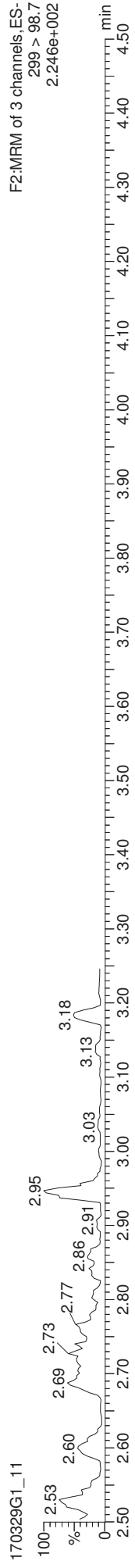
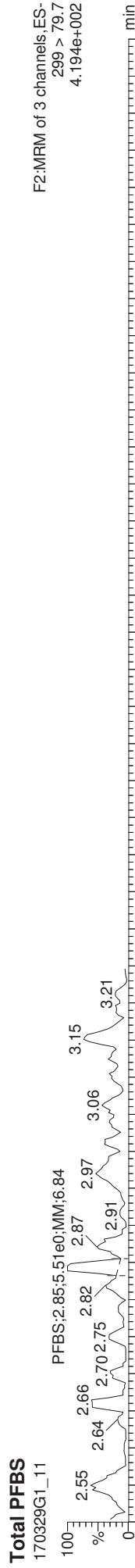
#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	18 Total PFBS	299 > 79.7		5.261e3		0.126			
2	20 Total PFOA	413 > 368.7		2.514e4		0.126			
3	21 Total PFOS	499 > 79.9		8.499e3		0.126			

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-11.qld

Last Altered: Tuesday, April 04, 2017 15:57:15 Pacific Daylight Time
Printed: Tuesday, April 04, 2017 15:57:26 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

ID: 1700381-03 CBD-AOA-MW13-0317 0.1261, Description: CBD-AOA-MW13-0317, Name: 170329G1_11, Date: 29-Mar-2017, Time: 13:41:26, Instrument: , Lab: , User:

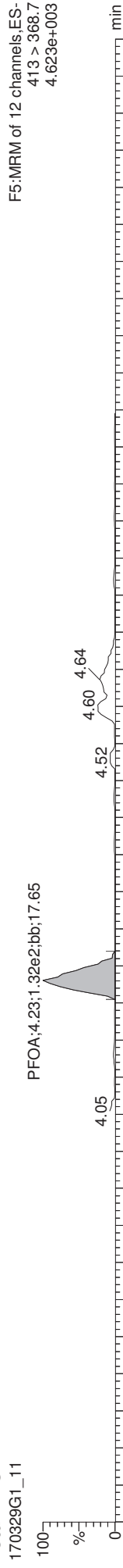


Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-11.qld

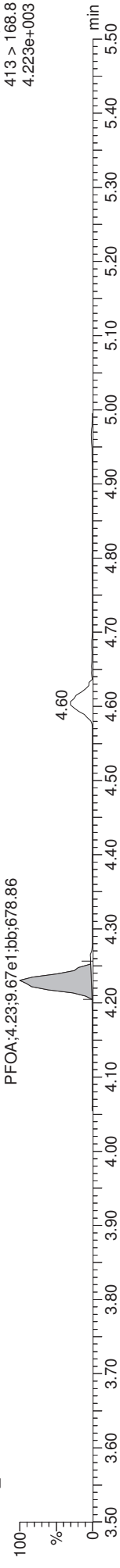
Last Altered: Tuesday, April 04, 2017 15:57:15 Pacific Daylight Time
Printed: Tuesday, April 04, 2017 15:57:26 Pacific Daylight Time

ID: 1700381-03 CBD-AOA-MW13-0317 0.1261, Description: CBD-AOA-MW13-0317, Name: 170329G1_11, Date: 29-Mar-2017, Time: 13:41:26, Instrument: , Lab: , User:

Total PFOA



170329G1_11



13C2-PFOA



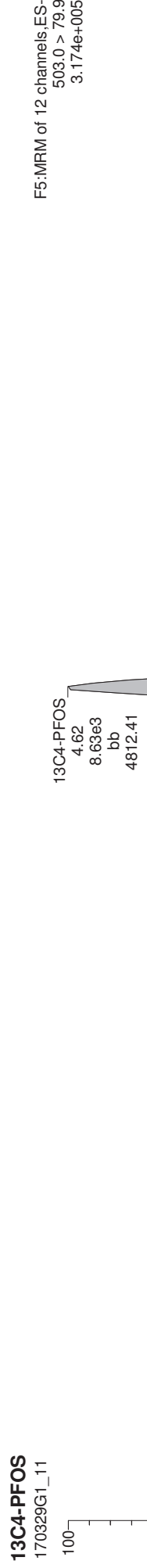
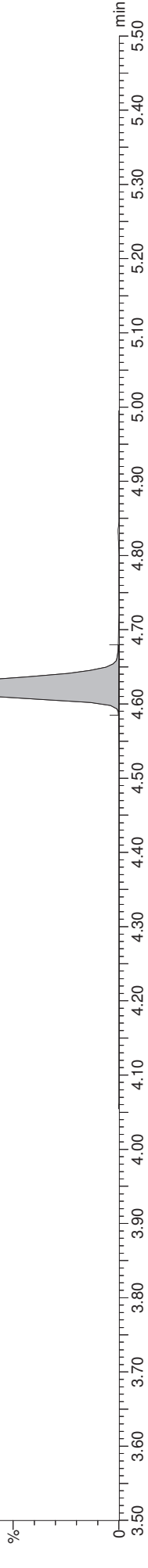
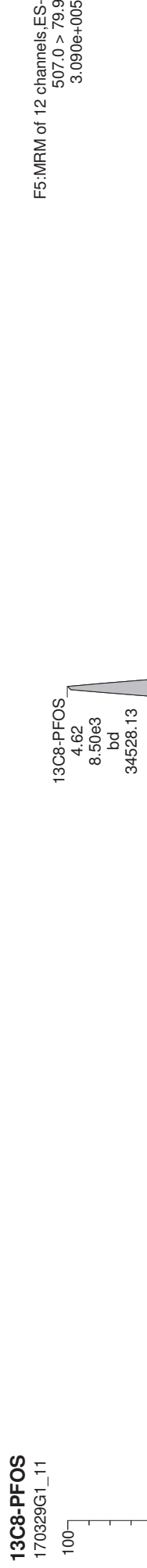
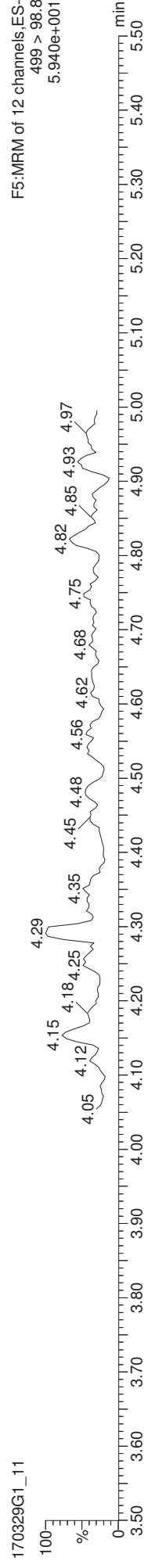
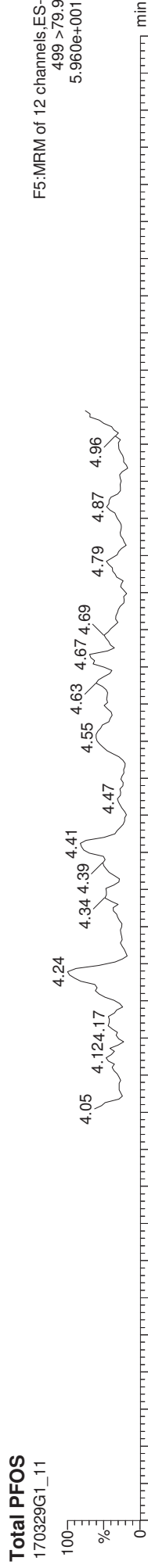
13C8-PFOA



Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-11.qld

Last Altered: Tuesday, April 04, 2017 15:57:15 Pacific Daylight Time
Printed: Tuesday, April 04, 2017 15:57:26 Pacific Daylight Time

ID: 1700381-03 CBD-AOA-MW13-0317 0.1261, Description: CBD-AOA-MW13-0317_11, Date: 29-Mar-2017, Time: 13:41:26, Instrument: , Lab: , User:



Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-12.qld

Last Altered: Tuesday, April 04, 2017 15:58:50 Pacific Daylight Time
 Printed: Tuesday, April 04, 2017 15:58:57 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51
 Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03
 ID: 1700381-04 CBD-FB01-032717 0.12015, Description: CBD-FB01-032717, Name: 170329G1_12, Date: 29-Mar-2017, Time: 13:54:01

#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	PFBS	299 > 79.7		6.067e3		0.120			
2	PFOA	413 > 368.7	1.360e2	2.395e4		0.120	4.22		
3	PFOA	499 > 79.9		7.648e3		0.120			
4	13C3-PFBS	302.0 > 98.8	6.067e3	1.445e4	0.501	0.120	2.94	87.1	83.8
5	13C2-PFOA	414.9 > 369.7	2.395e4	9.848e3	3.221	0.120	4.23	78.5	75.5
6	13C8-PFOA	507.0 > 79.9	7.648e3	8.944e3	1.080	0.120	4.62	82.4	79.2
7	13C3-PFHXS	401.9 > 79.9	1.445e4	1.445e4	1.000	0.120	3.94	104	100
8	13C8-PFOA	421.3 > 376	9.848e3	9.848e3	1.000	0.120	4.22	104	100
9	13C4-PFOA	503.0 > 79.9	8.944e3	8.944e3	1.000	0.120	4.62	104	100

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-12.qld
Last Altered: Tuesday, April 04, 2017 15:58:50 Pacific Daylight Time
Printed: Tuesday, April 04, 2017 15:59:10 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03
ID: 1700381-04 CBD-FB01-032717 0.12015, Description: CBD-FB01-032717, Name: 170329G1_12, Date: 29-Mar-2017, Time: 13:54:01

#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	18 Total PFBS	299 > 79.7		6.011e3		0.120			
2	20 Total PFOA	413 > 368.7		2.395e4		0.120			
3	21 Total PFOS	499 > 79.9		7.648e3		0.120			

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-12.qld

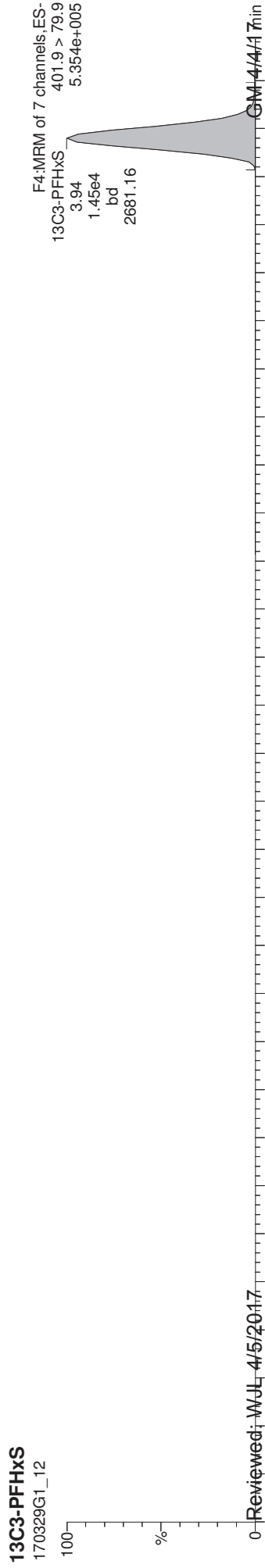
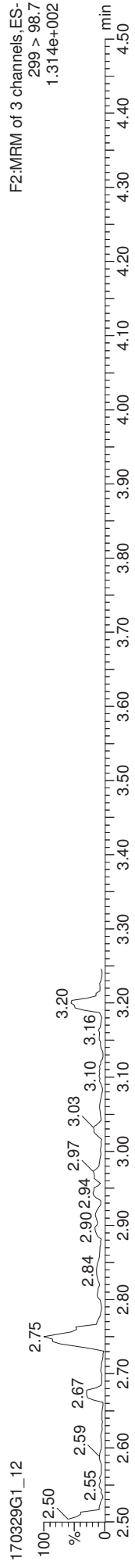
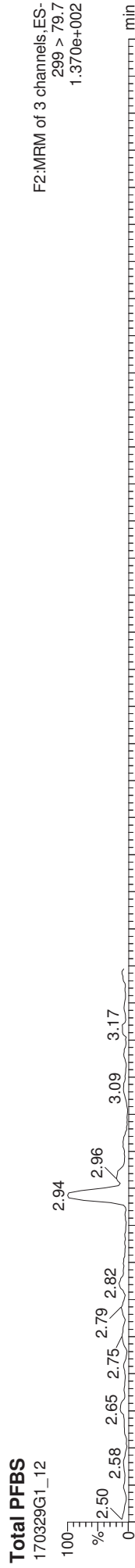
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Printed: Tuesday, April 04, 2017 15:58:57 Pacific Daylight Time

Method: Untitled 29 Mar 2017 15:40:51

Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

ID: 1700381-04 CBD-FB01-032717 0.12015, Description: CBD-FB01-032717, Name: 170329G1_12, Date: 29-Mar-2017, Time: 13:54:01, Instrument: , Lab: , User:

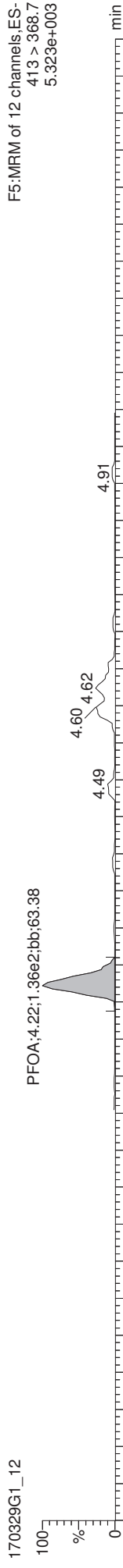


Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-12.qld

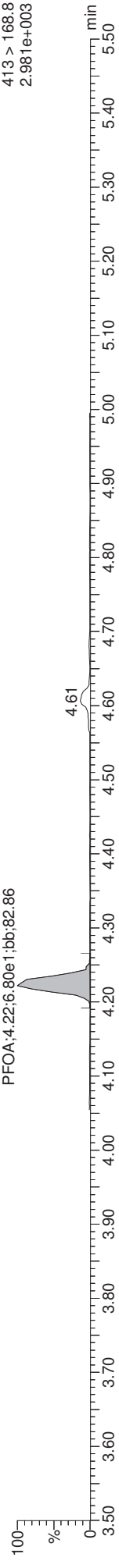
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Printed: Tuesday, April 04, 2017 15:58:57 Pacific Daylight Time

ID: 1700381-04 CBD-FB01-032717 0.12015, Description: CBD-FB01-032717, Name: 170329G1_12, Date: 29-Mar-2017, Time: 13:54:01, Instrument: , Lab: , User:

Total PFOA



13C2-PFOA



13C8-PFOA



13C8-PFOA

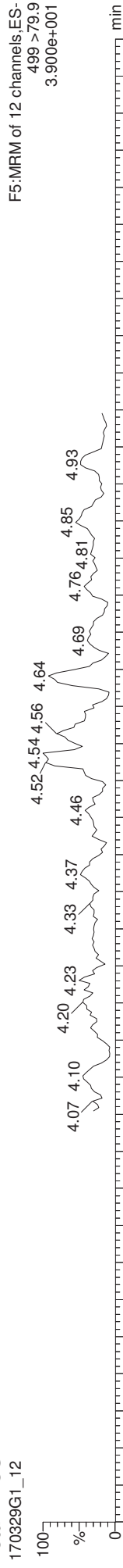


Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-12.qld

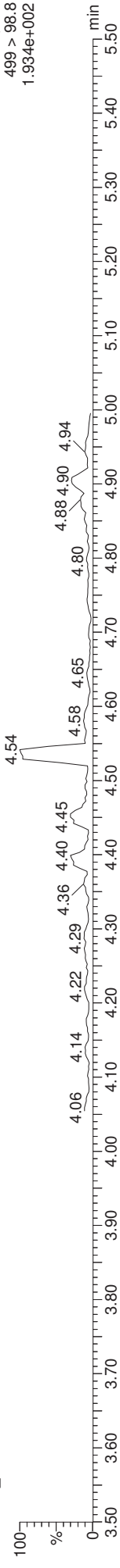
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ID: 1700381-04 CBD-FB01-032717 0.12015, Description: CBD-FB01-032717, Name: 170329G1_12, Date: 29-Mar-2017, Time: 13:54:01, Instrument: , Lab: , User:

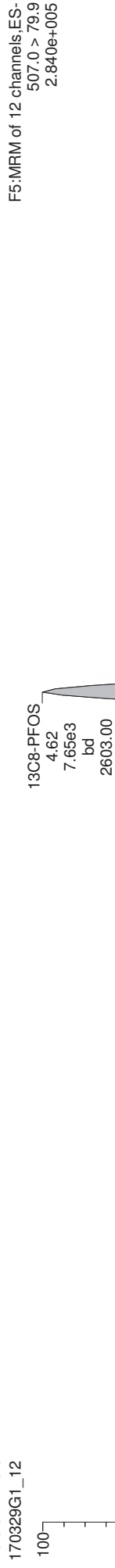
Total PFOS



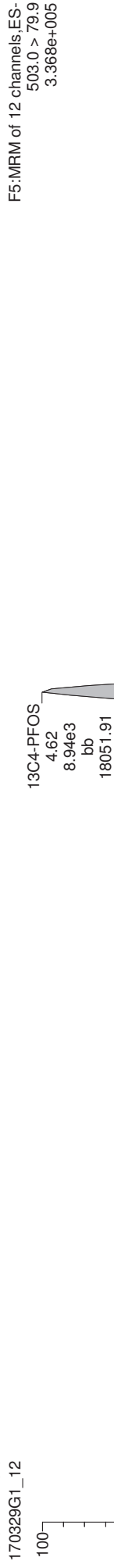
13C8-PFOS



13C4-PFOS



13C4-PFOS



CONTINUING CALIBRATION

Quantify Sample Summary Report **MassLynx 4.1 SCN815**
 Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-2.qld

Last Altered: Thursday, March 30, 2017 10:19:02 AM Pacific Daylight Time
 Printed: Thursday, March 30, 2017 10:20:39 AM Pacific Daylight Time

Method: U:\G1.PRO\MethDB\PFAS_6_2trans_LINEAR.mdb 29 Mar 2017 15:40:51
 Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03
 Name: 170329G1_2, Date: 29-Mar-2017, Time: 11:24:30, ID: ST170329G1-1 PFC CS3 17C2813, Description: PFC CS3 17C2813 A

#	Name	Trace	Response	IS Resp	RRF	WtVol	RT	Conc.	%Rec
1	1 PFBS	299 > 79.7	1.18e4	6.66e3		1.000	2.94	9.72	97.2
2	2 PFHpA	363 > 318.9	2.25e4	1.55e4		1.000	3.82	10.4	104.4
3	3 PFHxS	398.9 > 79.6	9.56e3	7.02e3		1.000	3.94	9.50	95.0
4	4 PFOA	413 > 368.7	1.92e4	2.87e4		1.000	4.22	9.47	94.7
5	5 PFNA	463 > 418.8	1.96e4	1.16e4		1.000	4.55	9.67	96.7
6	6 PFOS	499 > 79.9	3.85e3	9.37e3		1.000	4.62	9.42	94.2
7	7 13C3-PFBS	302.0 > 98.8	6.66e3	1.59e4	0.501	1.000	2.94	10.5	83.8
8	8 13C4-PFHpA	367.2 > 321.8	1.55e4	1.59e4	1.237	1.000	3.82	9.88	79.1
9	9 18O2-PFHxS	403 > 102.6	7.02e3	1.59e4	0.495	1.000	3.94	11.2	89.5
10	10 13C2-PFOA	414.9 > 369.7	2.87e4	1.04e4	3.221	1.000	4.22	10.7	85.9
11	11 13C5-PFNA	468.2 > 422.9	1.16e4	1.20e4	0.979	1.000	4.56	12.3	98.5
12	12 13C8-PFOS	507.0 > 79.9	9.37e3	8.97e3	1.080	1.000	4.62	12.1	96.7
13	13 13C5-PFHxA	318>272.9	2.37e4	2.37e4	1.000	1.000	3.32	12.5	100.0
14	14 13C3-PFHxS	401.9 > 79.9	1.59e4	1.59e4	1.000	1.000	3.94	12.5	100.0
15	15 13C8-PFOA	421.3 > 376	1.04e4	1.04e4	1.000	1.000	4.22	12.5	100.0
16	16 13C9-PFNA	472.2 > 426.9	1.20e4	1.20e4	1.000	1.000	4.55	12.5	100.0
17	17 13C4-PFOS	503.0 > 79.9	8.97e3	8.97e3	1.000	1.000	4.62	12.5	100.0

Handwritten notes:
 25-125 (with arrow pointing to row 1)
 100-150 (with arrow pointing to row 7)
 50-150 (with arrow pointing to row 10)
 100-150 (with arrow pointing to row 12)

Handwritten signature:
 Oly
 3/30/17

Handwritten signature:
 JES 3/30/17

Quantify Compound Summary Report **MassLynx 4.1 SCN815**
 Vista Analytical Laboratory VG-9

Dataset: **Untitled**

Last Altered: **Thursday, March 30, 2017 12:38:22 Pacific Daylight Time**
 Printed: **Thursday, March 30, 2017 12:38:51 Pacific Daylight Time**

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	170329G1_1	IPA	29-Mar-17	11:12:16
2	170329G1_2	ST170329G1-1 PFC CS3 17C2813	29-Mar-17	11:24:30
3	170329G1_3	IPA	29-Mar-17	11:41:24
4	170329G1_4	B7C0150-BS1 OPR 0.125	29-Mar-17	11:53:37
5	170329G1_5	B7C0136-BS1 OPR 1	29-Mar-17	12:26:20
6	170329G1_6	IPA	29-Mar-17	12:38:35
7	170329G1_7	B7C0150-BLK1 Method Blank 0.125	29-Mar-17	12:51:10
8	170329G1_8	B7C0136-BLK1 Method Blank 1	29-Mar-17	13:03:41
9	170329G1_9	1700381-01 CBD-AOA-MW12-0317 0.12275	29-Mar-17	13:16:12
10	170329G1_10	1700381-02 CBD-EB01-032717 0.12149	29-Mar-17	13:28:47
11	170329G1_11	1700381-03 CBD-AOA-MW13-0317 0.1261	29-Mar-17	13:41:26
12	170329G1_12	1700381-04 CBD-FB01-032717 0.12015	29-Mar-17	13:54:01
13	170329G1_13	1700349-01RE1@10X Sludge 2.39	29-Mar-17	14:06:35
14	170329G1_14	1700349-02RE1@10X White Stock 5	29-Mar-17	14:19:08
15	170329G1_15	1700349-03RE1@10X Kraft Stock 5	29-Mar-17	14:31:41
16	170329G1_16	1700352-01RE1@10X GP Primary 2.39	29-Mar-17	14:44:12
17	170329G1_17	1700352-02RE1@10X NP Primary 2.29	29-Mar-17	14:56:46
18	170329G1_18	1700352-03RE1@10X NP Secondary 4.22	29-Mar-17	15:09:18
19	170329G1_19	IPA	29-Mar-17	15:21:52
20	170329G1_20	ST170329G1-2 PFC CS3 17C2813	29-Mar-17	15:34:27
21	170329G1_21	IPA	29-Mar-17	15:46:57
22	170329G1_22	1700349-01RE1 Sludge 2.39	29-Mar-17	15:59:33
23	170329G1_23	1700349-02RE1 White Stock 5	29-Mar-17	16:12:06
24	170329G1_24	1700349-03RE1 Kraft Stock 5	29-Mar-17	16:24:37
25	170329G1_25	1700352-01RE1 GP Primary 2.39	29-Mar-17	16:37:10
26	170329G1_26	1700352-02RE1 NP Primary 2.29	29-Mar-17	16:49:46
27	170329G1_27	1700352-03RE1 NP Secondary 4.22	29-Mar-17	17:02:17
28	170329G1_28	IPA	29-Mar-17	17:14:50
29	170329G1_29	ST170329G1-3 PFC CS3 17C2813	29-Mar-17	17:27:23
30	170329G1_30	IPA	29-Mar-17	17:39:54

LC Calibration Standards Review Checklist Q1

Calibration ID:	ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
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Full Mass Cal. Date: 12/7/16

Run Log Present:

of Samples per Sequence Checked:

Reviewed By: ES 3/24/17 Initials/Date

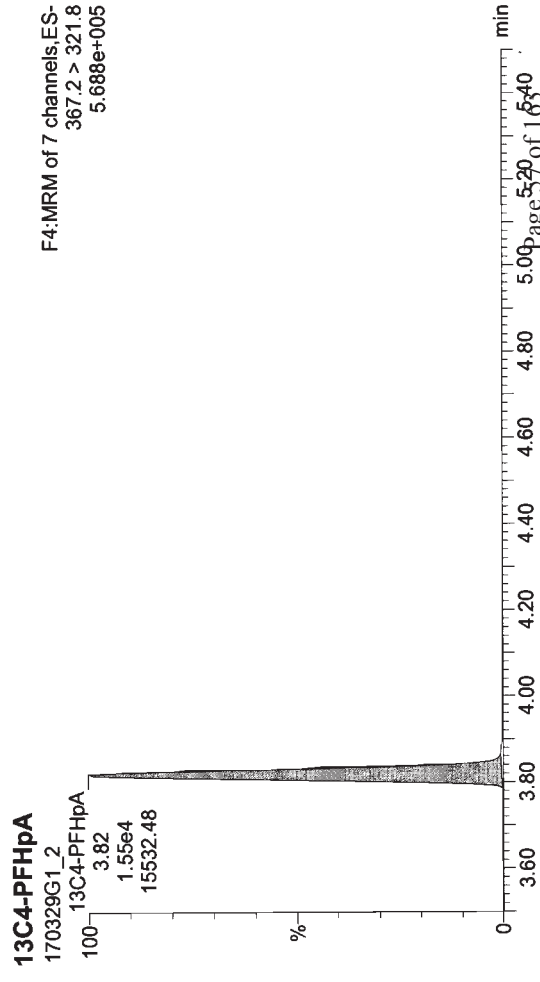
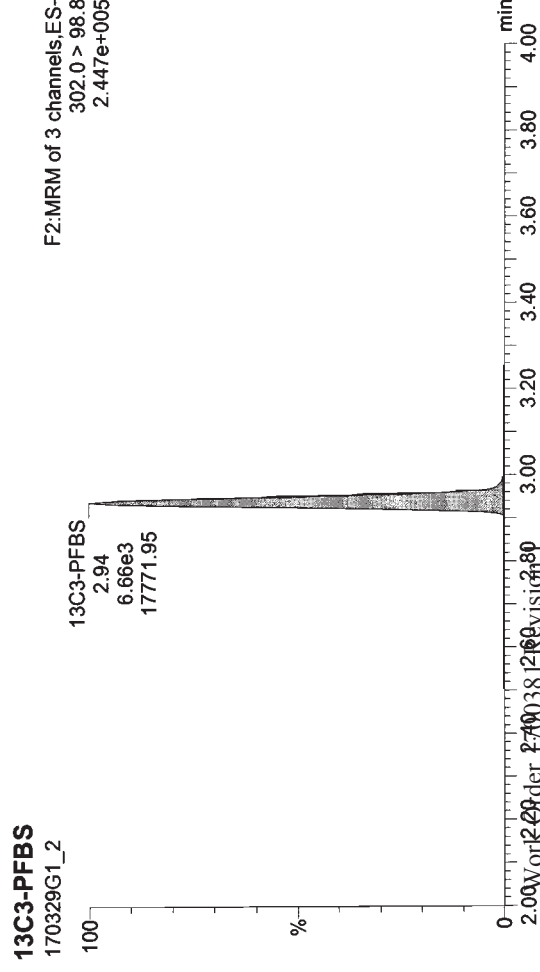
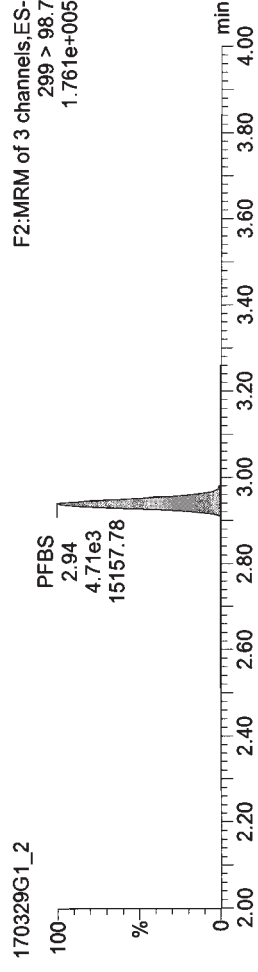
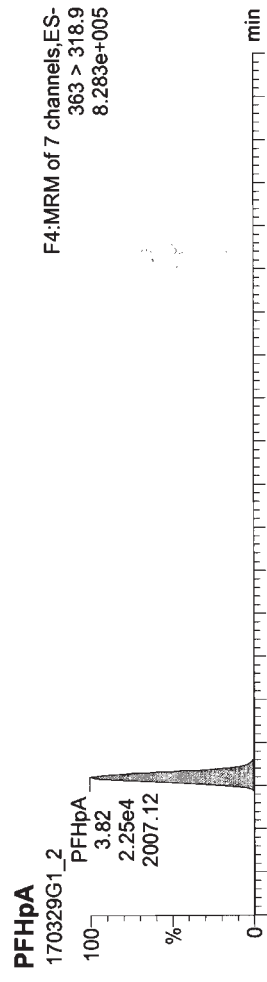
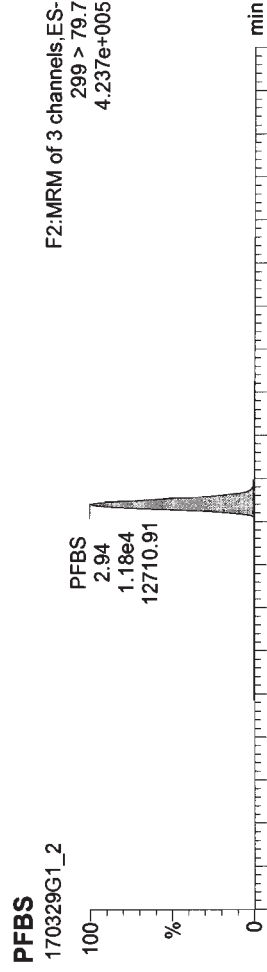
Comments:
LG 2 TRANS

Dataset: Untitled

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Printed: Thursday, March 30, 2017 10:23:09 AM Pacific Daylight Time

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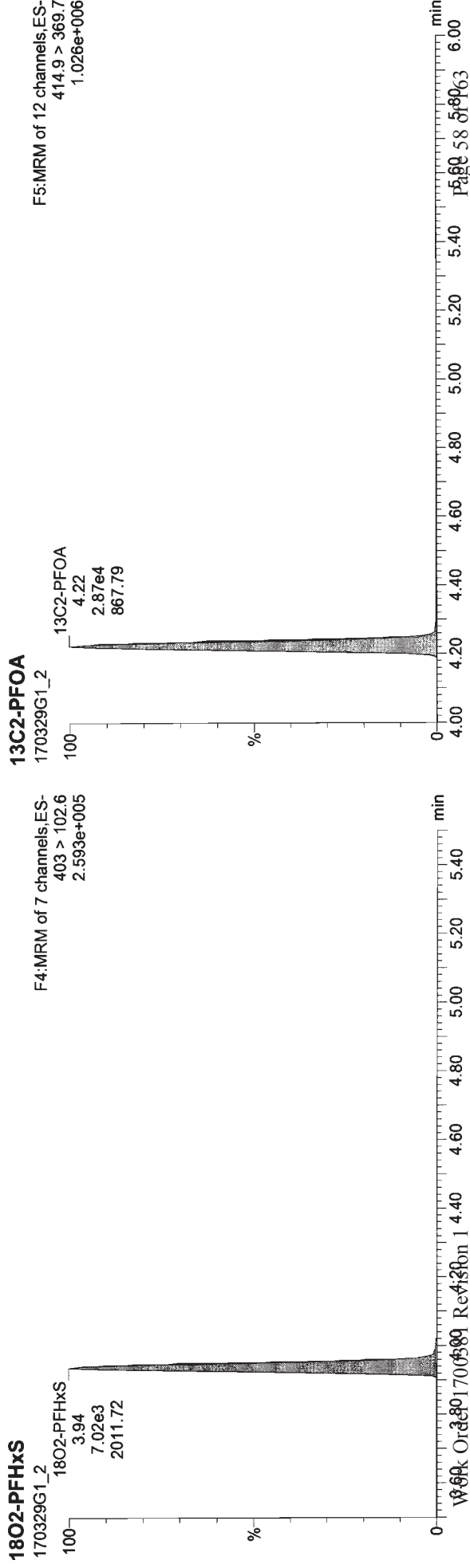
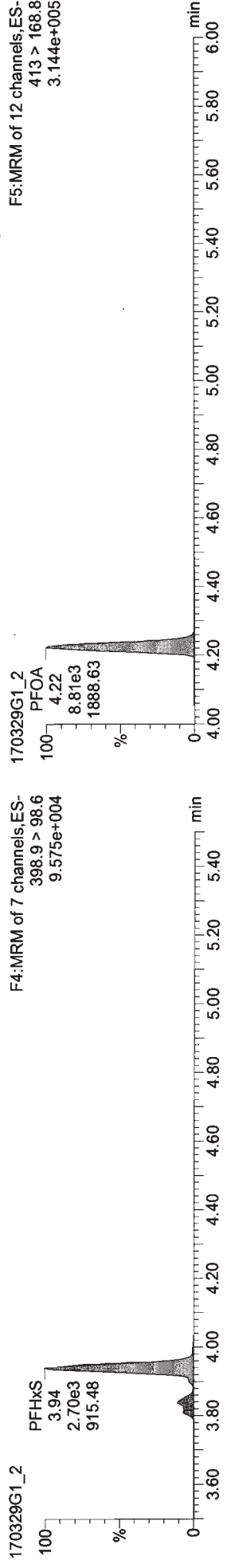
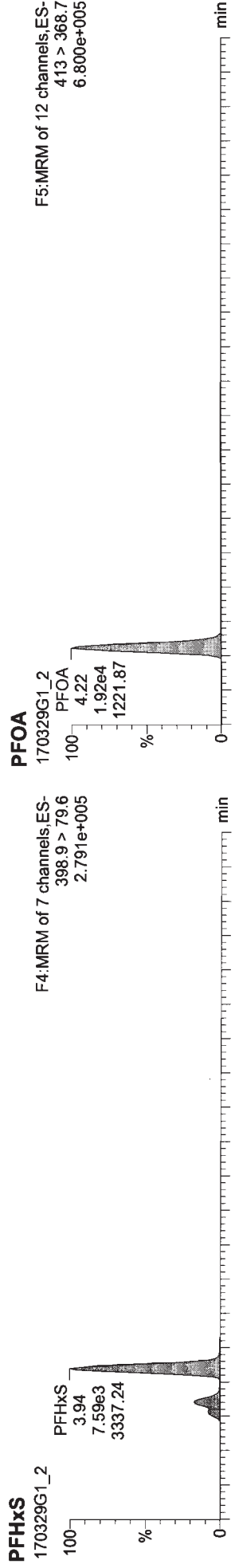
Name: 170329G1_2, Date: 29-Mar-2017, Time: 11:24:30, ID: ST170329G1-1 PFC CS3 17C2813, Description: PFC CS3 17C2813 A



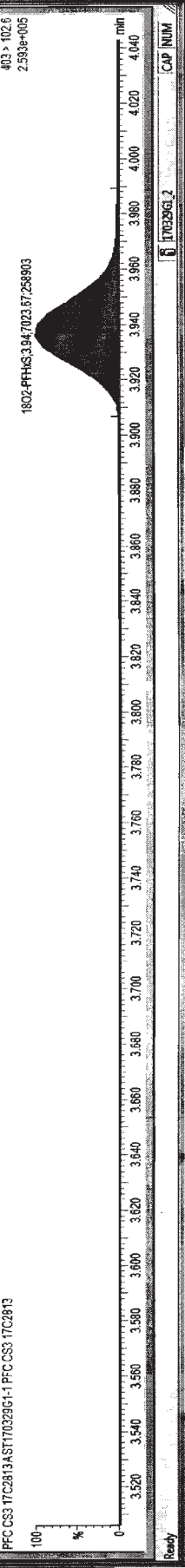
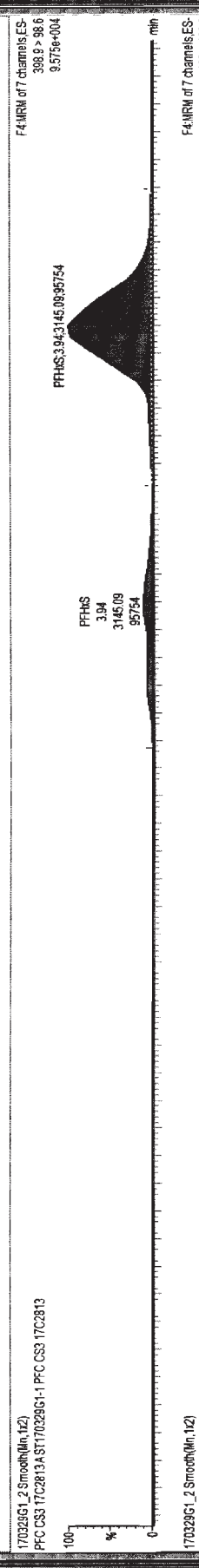
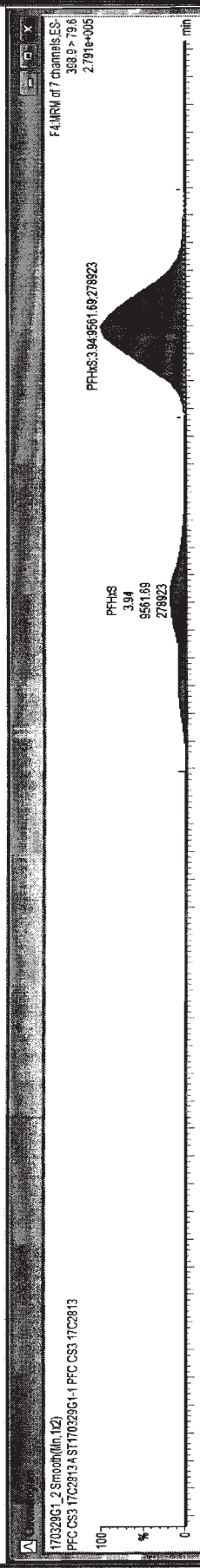
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Last Altered: Thursday, March 30, 2017 10:21:06 AM Pacific Daylight Time
Printed: Thursday, March 30, 2017 10:23:09 AM Pacific Daylight Time

Name: 170329G1_2, Date: 29-Mar-2017, Time: 11:24:30, ID: ST170329G1-1 PFC CS3 17C2813, Description: PFC CS3 17C2813 A



Item	Name	Conc.	OL	Unit	EMPC	Alt Resp	RF	RF	RF	RA	Y/N	Appt	Acq Date	Acq Time	Chr Name	Sample Text	FeedBk	SWC	Cell Pk	MSD	
1	PFBS	9.7217403	0.0000	97.2	1.180e4	2.94	1	7	0.399	YES	1.001	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	YES	
2	PFHA	10.443887	0.0000	104.4	2.254e4	3.82	2	8			1.001	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	YES	
3	PFHS	9.5018538	0.0000	95.0	9.502e3	3.94	3	9			1.001	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	YES	
4	PFOA	9.4680851	0.0000	94.7	1.924e4	4.22	4	10			1.000	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	YES	
5	PFNA	9.6679688	0.0000	96.7	1.994e4	4.51	5	11			0.999	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	YES	
6	PFO5	9.410146	0.158	94.2	3.948e3	4.62	6	12			1.000	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
7	13C3-PFBS	10.471994	0.00146	85.8	6.882e3	0.501	2.94	7	14		0.886	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
8	13C3-PFHA	9.8832199	0.0157	79.1	1.511e4	1.237	3.82	8	14		0.970	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
9	1802-PFHS	11.190398	0.0139	88.5	7.024e3	0.485	3.94	9	14		0.969	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
10	13C3-PFOA	10.72875	0.0399	83.9	2.885e4	3.21	4.22	10	15		1.000	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
11	13C3-PFNA	12.318599	0.00248	98.5	1.157e4	0.979	4.51	11	16		1.001	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
12	13C3-PFOS	12.091114	0.0127	96.7	9.370e3	1.090	4.62	12	17		0.000	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
13	13C3-PFHA	12.590000	0.00845	100.0	2.398e4	1.000	3.32	13	13		0.000	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
14	13C3-PFHS	12.590000	0.000743	100.0	1.597e4	1.000	3.94	14	14		0.000	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
15	13C3-PFOA	12.590000	0.105	100.0	1.036e4	1.000	4.22	15	15		0.000	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
16	13C3-PFNA	12.590000	0.0106	100.0	1.198e4	1.000	4.51	16	16		0.000	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
17	13C3-PFOS	12.590000	0.00432	100.0	8.970e3	1.000	4.62	17	17		0.000	29-Mar-17	11:24:30	11:24:30	ST170329G...	PFC CS3 17C28...	1.0	1.00	C18.V.	NO	
18	Total PFBS	9.7217403						18				29-Mar-17	11:24:30	11:24:30							
19	Total PFHA	11.315388						19				29-Mar-17	11:24:30	11:24:30							
20	Total PFOA	9.4680851						20				29-Mar-17	11:24:30	11:24:30							
21	Total PFOS	12.622880	0.158					21				29-Mar-17	11:24:30	11:24:30							

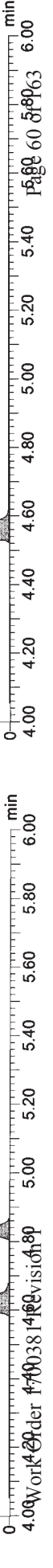
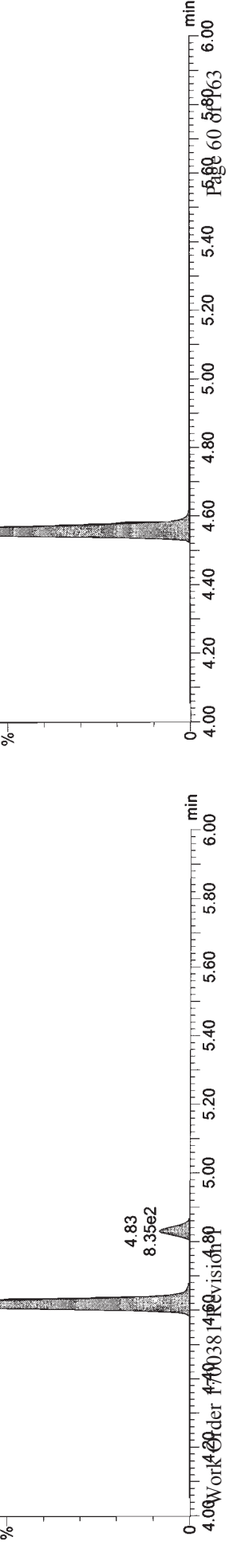
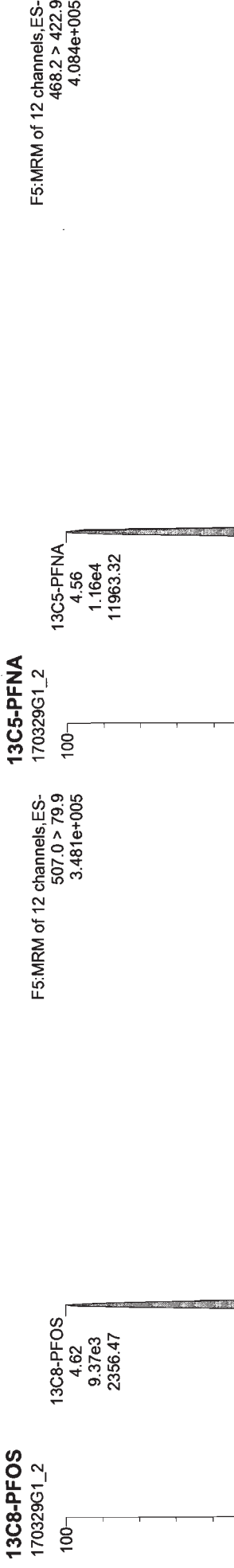
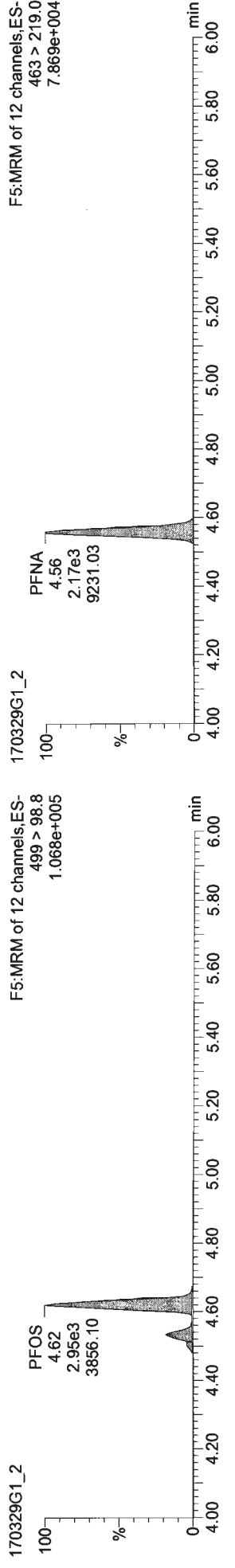
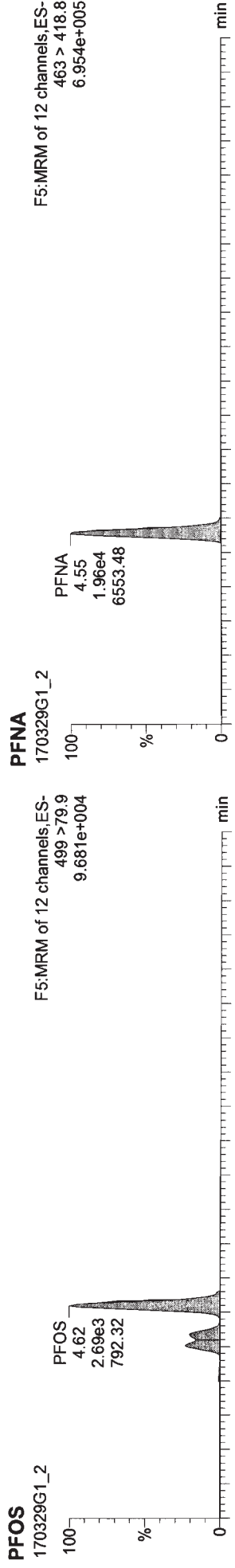


Quantify Sample Report
Vista Analytical Laboratory Q1

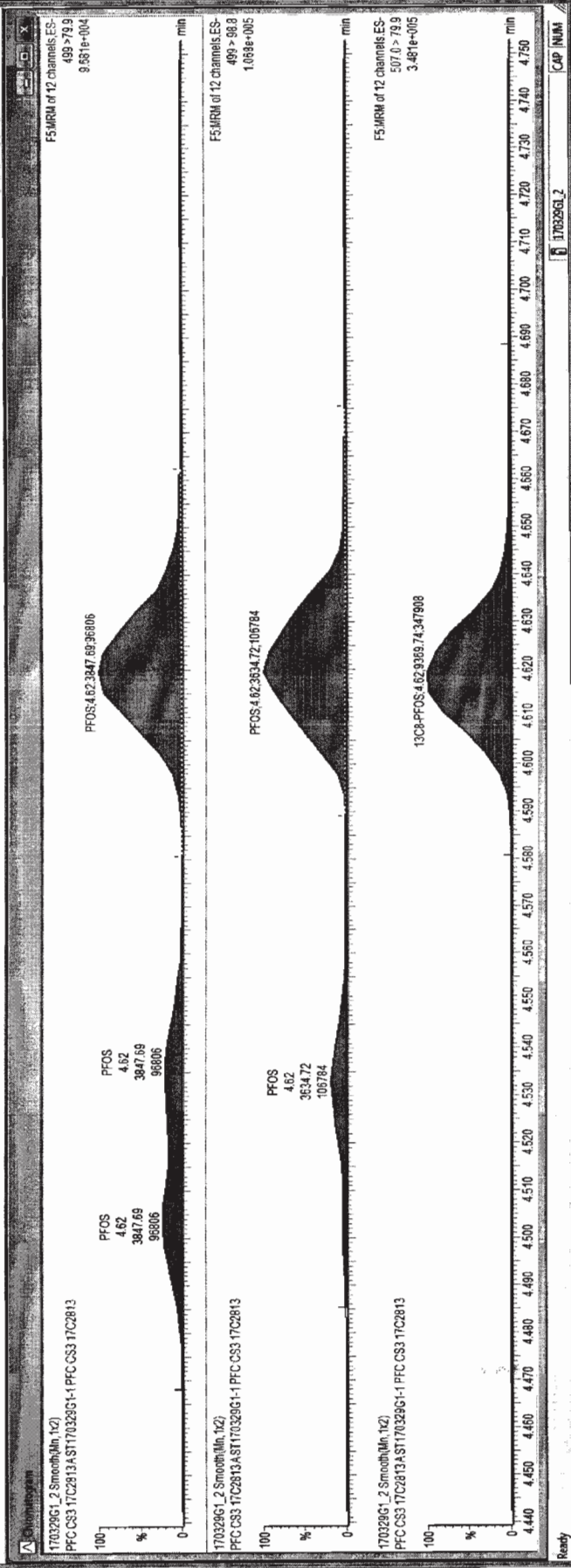
Dataset: Untitled

Last Altered: Thursday, March 30, 2017 10:21:06 AM Pacific Daylight Time
Printed: Thursday, March 30, 2017 10:23:09 AM Pacific Daylight Time

Name: 170329G1_2, Date: 29-Mar-2017, Time: 11:24:30, ID: ST170329G1-1 PFC CS3 17C2813, Description: PFC CS3 17C2813 A



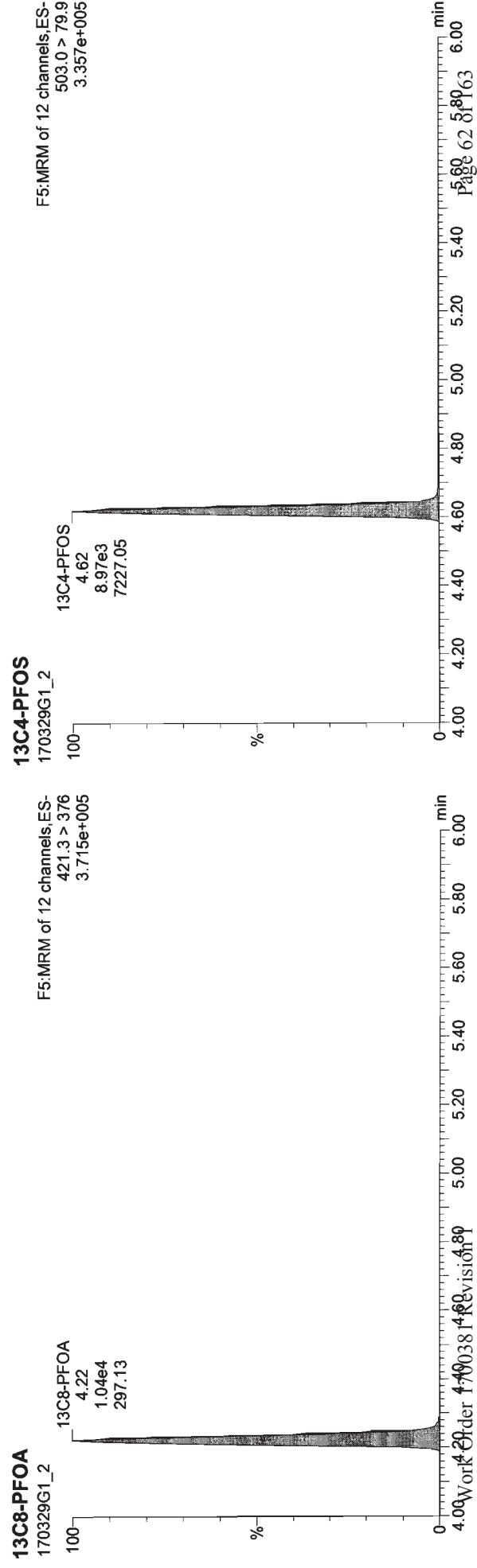
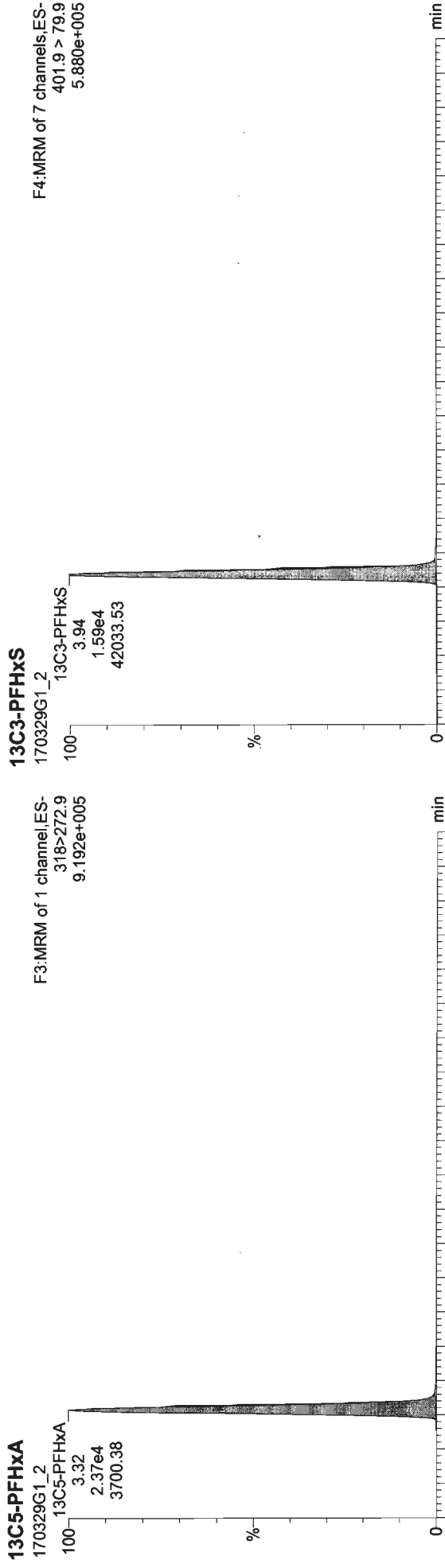
Item	Name	Conc	DL	Unit	EMPC	Abat Resp	ROF	RT	#	ES	RA	Y/N	RFT	Acq Date	Acq Time	19	Ch/Inlet	D	Sample Text	Factor1	SWR	Out File	MOD
1	PFBS	9.7217463	0.0000	97.2	1.8964			2.94	1	7	0.389	YES	1.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	YES	
2	PFPA	10.443827	0.0000	104.4	2.2564			3.52	2	8			1.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	YES	
3	PFHxS	9.5018538	0.0000	95.0	9.5263			3.54	3	9			1.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	YES	
4	PFDA	9.4693851	0.0000	94.7	1.9244			4.22	4	10			1.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	YES	
5	PFNA	9.6679698	0.0000	96.7	1.9564			4.35	5	11			1.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	YES	
6	PFOS	9.6679698	0.0000	96.7	3.9463			4.62	6	12			1.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	YES	
7	13C3-PFBS	10.471904	0.0146	83.6	6.6263	0.91		2.94	7	14			0.889	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
8	13C4-PFPA	9.882199	0.0157	79.1	1.5516	1.237		3.52	8	14			0.970	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
9	13C2-PFHS	11.190388	0.0159	89.5	7.0243	0.95		3.54	9	14			0.999	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
10	13C2-PFDA	10.732675	0.0309	85.9	2.8564	3.221		4.22	10	15			1.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
11	13C5-PFPA	12.316589	0.0248	98.5	1.5764	0.979		4.36	11	16			1.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
12	13C8-PFOS	12.091114	0.0127	96.7	9.3763	1.060		4.62	12	17			1.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
13	13C5-PFPA	12.500000	0.0685	100.0	2.3884	1.000		3.52	13	13			0.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
14	13C3-PFHS	12.500000	0.009743	100.0	1.5876	1.000		3.94	14	14			0.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
15	13C3-PFDA	12.500000	0.105	100.0	1.0364	1.000		4.22	15	15			0.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
16	13C3-PFPA	12.500000	0.0106	100.0	1.1964	1.000		4.55	16	16			0.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
17	13C4-PFOS	12.500000	0.0432	100.0	8.9763	1.000		4.62	17	17			0.001	28-Mar-17	11:24:30	11.598	ST1703296	PFC CS3 17C2813A	1.0	1.00	C18.V	NO	
18	Total PFBS	9.7217463							18														
19	Total PFPA	11.315388							19														
20	Total PFDA	9.4693851							20														
21	Total PFOS	12.622660	0.159						21														



Dataset: Untitled

Last Altered: Thursday, March 30, 2017 10:21:06 AM Pacific Daylight Time
Printed: Thursday, March 30, 2017 10:23:09 AM Pacific Daylight Time

Name: 170329G1_2, Date: 29-Mar-2017, Time: 11:24:30, ID: ST170329G1-1 PFC CS3 17C2813, Description: PFC CS3 17C2813 A

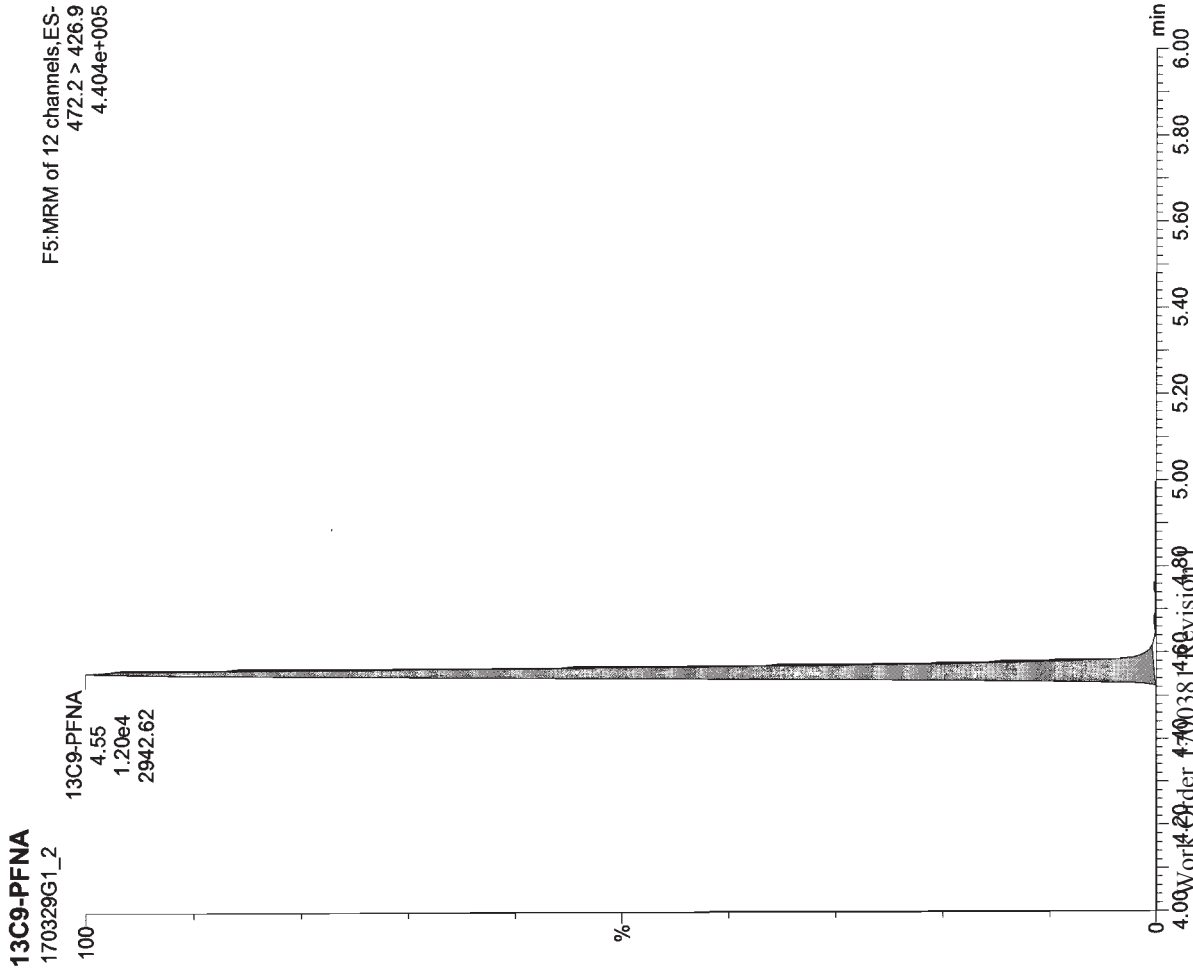


Quantify Sample Report
Vista Analytical Laboratory Q1

Dataset: Untitled

Last Altered: Thursday, March 30, 2017 10:21:06 AM Pacific Daylight Time
Printed: Thursday, March 30, 2017 10:23:09 AM Pacific Daylight Time

Name: 170329G1_2, Date: 29-Mar-2017, Time: 11:24:30, ID: ST170329G1-1 PFC CS3 17C2813, Description: PFC CS3 17C2813 A



Quantify Sample Summary Report **MassLynx 4.1 SCN815**
 Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170329G1\170329G1-20.qld

Last Altered: Thursday, March 30, 2017 11:47:34 AM Pacific Daylight Time
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Method: U:\G1.PRO\MethDB\PFAS_6_2trans_LINEAR.mdb 29 Mar 2017 15:40:51
 Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

Name: 170329G1_20, Date: 29-Mar-2017, Time: 15:34:27, ID: ST170329G1-2 PFC CS3 17C2813, Description: PFC CS3 17C2813 A

#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	PFBS	299 > 79.7	1.29e4	7.19e3		1.000	2.95	9.81	98.1
2	PFHpA	363 > 318.9	2.47e4	1.79e4		1.000	3.83	9.89	98.9
3	PFHxS	398.9 > 79.6	1.13e4	7.48e3		1.000	3.95	10.6	105.7
4	PFOA	413 > 368.7	2.33e4	3.28e4		1.000	4.24	10.0	100.3
5	PFNA	463 > 418.8	2.17e4	1.20e4		1.000	4.57	10.3	103.3
6	PFOS	499 > 79.9	4.29e3	9.84e3		1.000	4.63	9.98	99.8
7	13C3-PFBS	302.0 > 98.8	7.19e3	1.71e4	0.501	1.000	2.95	10.5	84.1
8	13C4-PFHpA	367.2 > 321.8	1.79e4	1.71e4	1.237	1.000	3.83	10.6	84.9
9	18O2-PFHxS	403 > 102.6	7.48e3	1.71e4	0.495	1.000	3.95	11.1	88.6
10	13C2-PFOA	414.9 > 369.7	3.28e4	1.16e4	3.221	1.000	4.23	11.0	88.0
11	13C5-PFNA	468.2 > 422.9	1.20e4	1.40e4	0.979	1.000	4.57	11.0	88.0
12	13C8-PFOS	507.0 > 79.9	9.84e3	9.88e3	1.080	1.000	4.63	11.5	92.2
13	13C5-PFHxA	318 > 272.9	2.55e4	2.55e4	1.000	1.000	3.33	12.5	100.0
14	13C3-PFHxS	401.9 > 79.9	1.71e4	1.71e4	1.000	1.000	3.95	12.5	100.0
15	13C8-PFOA	421.3 > 376	1.16e4	1.16e4	1.000	1.000	4.23	12.5	100.0
16	13C9-PFNA	472.2 > 426.9	1.40e4	1.40e4	1.000	1.000	4.56	12.5	100.0
17	13C4-PFOS	503.0 > 79.9	9.88e3	9.88e3	1.000	1.000	4.63	12.5	100.0

75-125
 100-150
 60-100
 100-150

Qm
 3/30/17
 JES/S/S/17

Quantify Compound Summary Report MassLynx 4.1 SCN815

Vista Analytical Laboratory VG-9

Dataset: Untitled

Last Altered: Thursday, March 30, 2017 12:38:22 Pacific Daylight Time
 Printed: Thursday, March 30, 2017 12:38:51 Pacific Daylight Time

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 Calibration: U:\G1.pro\CurveDB\IC18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

Compound name: PFBS

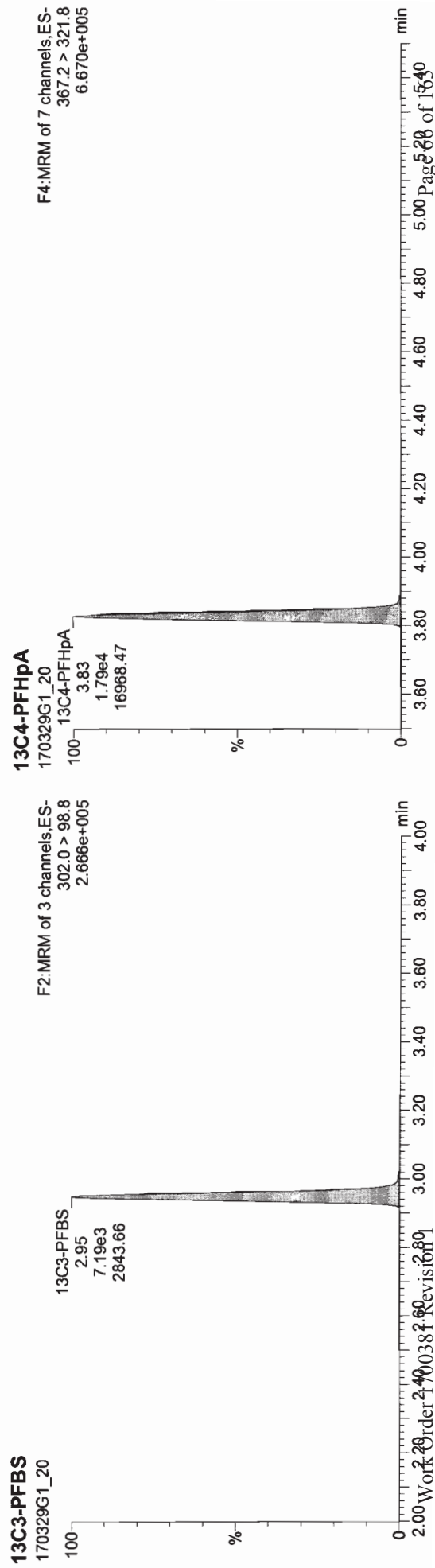
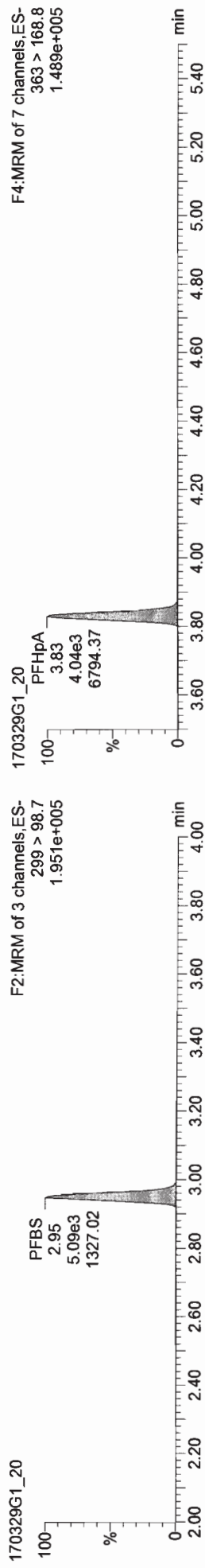
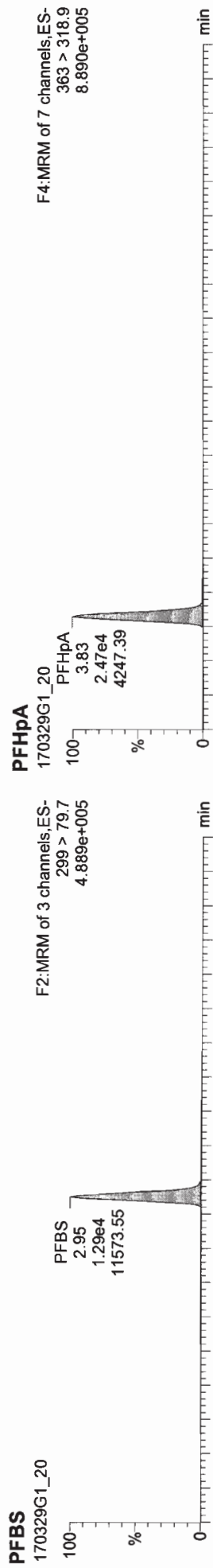
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170329G1_1	IPA	29-Mar-17	11:12:16
170329G1_2	ST170329G1-1 PFC CS3 17C2813	29-Mar-17	11:24:30
170329G1_3	IPA	29-Mar-17	11:41:24
170329G1_4	B7C0150-BS1 OPR 0.125	29-Mar-17	11:53:37
170329G1_5	B7C0136-BS1 OPR 1	29-Mar-17	12:26:20
170329G1_6	IPA	29-Mar-17	12:38:35
170329G1_7	B7C0150-BLK1 Method Blank 0.125	29-Mar-17	12:51:10
170329G1_8	B7C0136-BLK1 Method Blank 1	29-Mar-17	13:03:41
170329G1_9	1700381-01 CBD-AOA-MW12-0317 0.12275	29-Mar-17	13:16:12
170329G1_10	1700381-02 CBD-EB01-032717 0.12149	29-Mar-17	13:28:47
170329G1_11	1700381-03 CBD-AOA-MW13-0317 0.1261	29-Mar-17	13:41:26
170329G1_12	1700381-04 CBD-FB01-032717 0.12015	29-Mar-17	13:54:01
170329G1_13	1700349-01RE1@10X Sludge 2.39	29-Mar-17	14:06:35
170329G1_14	1700349-02RE1@10X White Stock 5	29-Mar-17	14:19:08
170329G1_15	1700349-03RE1@10X Kraft Stock 5	29-Mar-17	14:31:41
170329G1_16	1700352-01RE1@10X GP Primary 2.39	29-Mar-17	14:44:12
170329G1_17	1700352-02RE1@10X NP Primary 2.29	29-Mar-17	14:56:46
170329G1_18	1700352-03RE1@10X NP Secondary 4.22	29-Mar-17	15:09:18
170329G1_19	IPA	29-Mar-17	15:21:52
170329G1_20	ST170329G1-2 PFC CS3 17C2813	29-Mar-17	15:34:27
170329G1_21	IPA	29-Mar-17	15:46:57
170329G1_22	1700349-01RE1 Sludge 2.39	29-Mar-17	15:59:33
170329G1_23	1700349-02RE1 White Stock 5	29-Mar-17	16:12:06
170329G1_24	1700349-03RE1 Kraft Stock 5	29-Mar-17	16:24:37
170329G1_25	1700352-01RE1 GP Primary 2.39	29-Mar-17	16:37:10
170329G1_26	1700352-02RE1 NP Primary 2.29	29-Mar-17	16:49:46
170329G1_27	1700352-03RE1 NP Secondary 4.22	29-Mar-17	17:02:17
170329G1_28	IPA	29-Mar-17	17:14:50
170329G1_29	ST170329G1-3 PFC CS3 17C2813	29-Mar-17	17:27:23
170329G1_30	IPA	29-Mar-17	17:39:54

Dataset: Untitled

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Printed: Thursday, March 30, 2017 11:46:28 AM Pacific Daylight Time

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Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

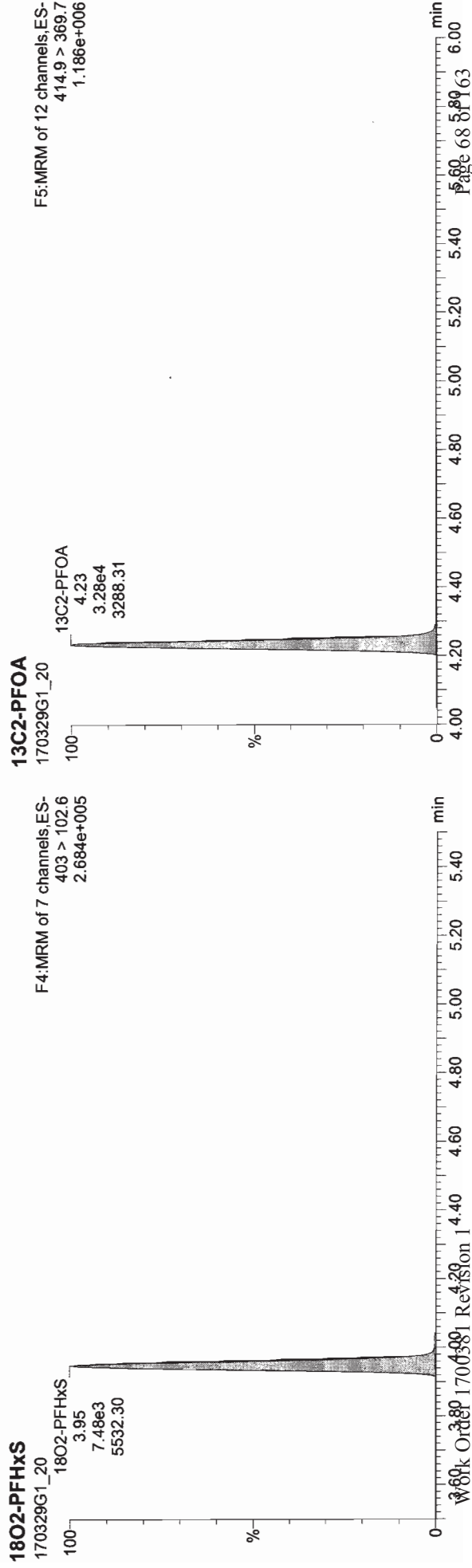
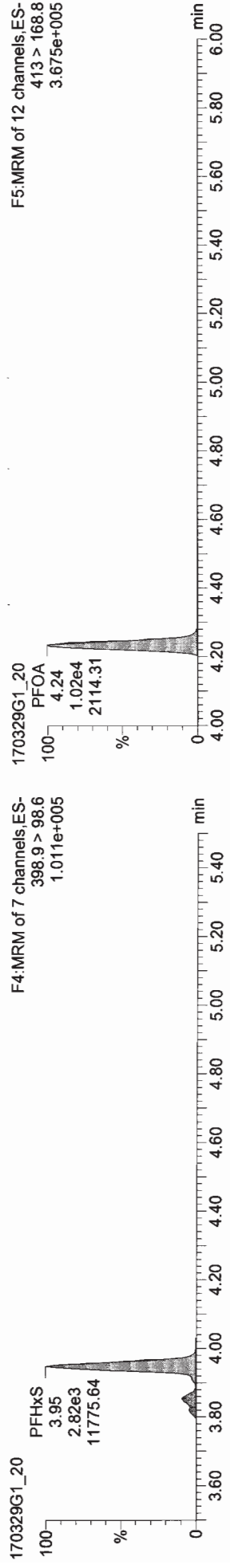
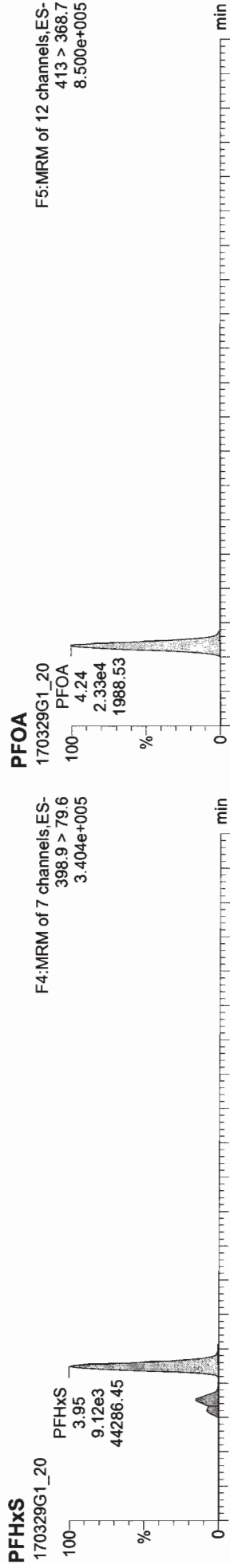
Name: 170329G1_20, Date: 29-Mar-2017, Time: 15:34:27, ID: ST170329G1-2 PFC CS3 17C2813, Description: PFC CS3 17C2813 A



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Last Altered: Thursday, March 30, 2017 11:46:12 AM Pacific Daylight Time
Printed: Thursday, March 30, 2017 11:46:28 AM Pacific Daylight Time

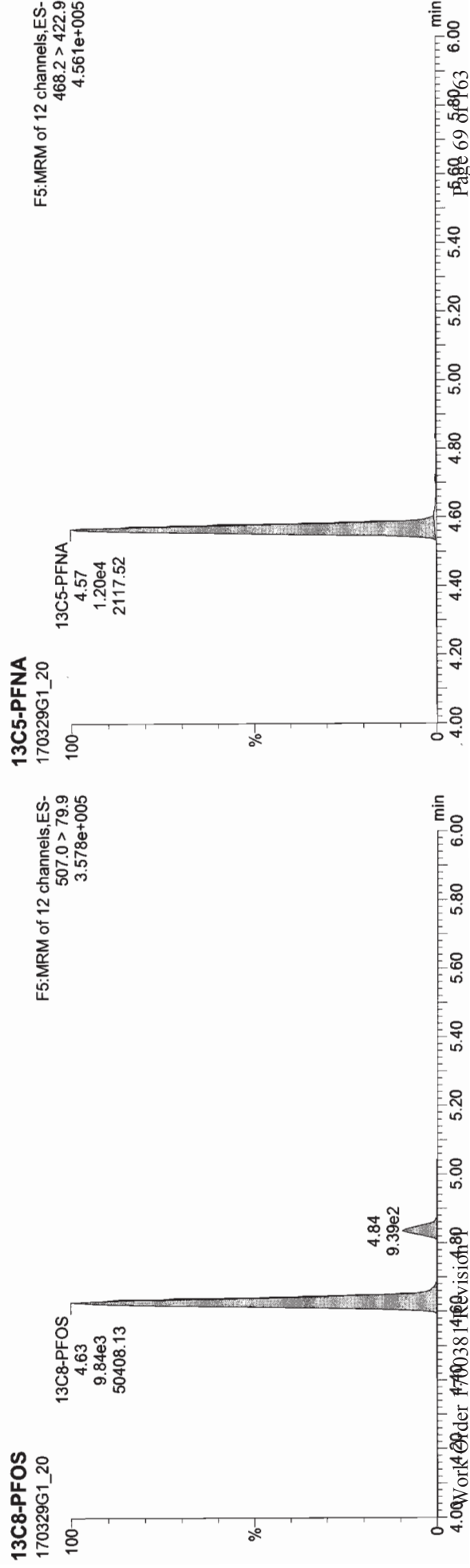
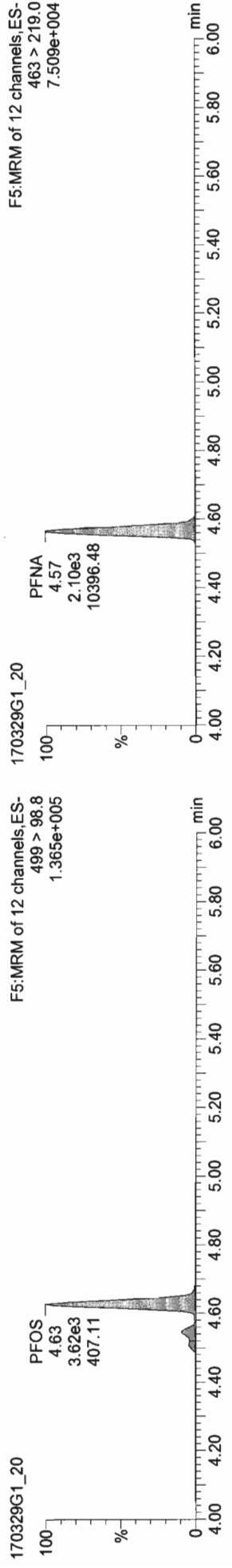
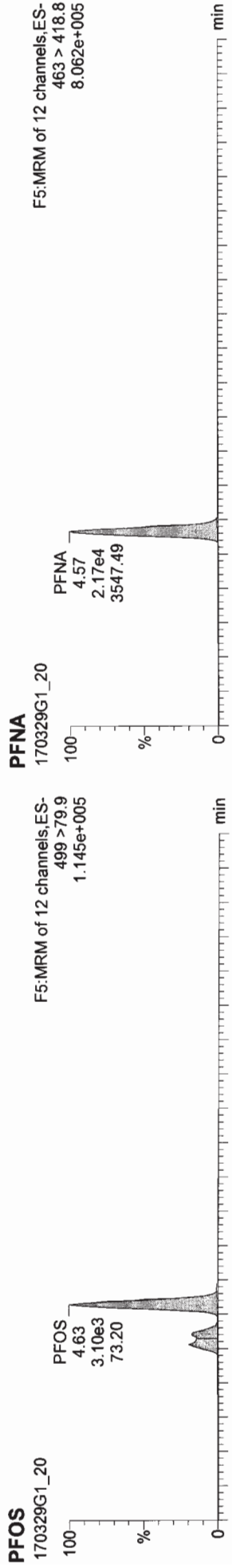
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Last Altered: Thursday, March 30, 2017 11:46:12 AM Pacific Daylight Time
 Printed: Thursday, March 30, 2017 11:46:28 AM Pacific Daylight Time

Name: 170329G1_20, Date: 29-Mar-2017, Time: 15:34:27, ID: ST170329G1-2 PFC CS3 17C2813, Description: PFC CS3 17C2813 A



170329G1_20-ST170329G1-2-PFC-CS3-17C2813 - PFC-CS3-17C2813A

Name	Trace	Area	Response	RRF	WV% ₀	67	Conc	%Rec	DL	%SD	Coeff. Q1D
1	PFBS	289 > 79.7	1.284	2.234	1.000	2.95	9.81	96.1			0.9950
2	PFHPA	363 > 318.9	2.4764	17.207	1.000	3.83	9.89	98.9			0.9950
3	PFHDS	386.9 > 79.6	1.1364	18.823	1.000	3.95	10.6	105.7			0.9984
4	PFOA	413 > 368.7	2.3364	8.679	1.000	4.24	10.3	100.3			0.9958
5	PFNA	463 > 418.8	2.1764	22.579	1.000	4.57	10.3	103.3			0.9961
6	PFOS	489 > 79.9	4.2843	5.443	1.000	4.63	9.98	99.0			0.9938
7	13C3-PFBS	302.8 > 98.8	7.1963	5.267	1.000	2.95	10.5	84.1			0.009169
8	13C4-PFHPA	367.2 > 321.6	1.7964	13.116	1.000	3.83	10.6	84.9			0.0015542
9	13C2-PFHS	403 > 102.6	7.4663	5.477	1.000	3.95	11.1	86.5			0.0047949
10	13C2-PFOA	414.9 > 368.7	3.2864	35.417	1.000	4.23	11.0	88.0			0.0082515
11	13C5-PFNA	468.2 > 422.9	1.2864	10.776	1.000	4.57	11.0	88.0			0.0155560
12	13C3-PFOS	507.0 > 79.9	9.9463	12.650	1.000	4.63	11.5	92.2			0.0005816
13	13C5-PFHPA	318.2 > 22.9	2.5564	12.500	1.000	3.33	12.5	100.0			0.0017918
14	13C3-PFHS	401.9 > 79.9	1.7164	12.500	1.000	3.95	12.5	100.0			0.0008596
15	13C8-PFOA	421.3 > 376	1.1664	12.500	1.000	4.23	12.5	100.0			0.0259833
16	13C3-PFNA	472.3 > 426.9	1.4664	12.500	1.000	4.56	12.5	100.0			0.0048089
17	13C4-PFOS	503.0 > 79.9	9.8863	12.500	1.000	4.63	12.5	100.0			0.0112382
18	Total PFBS	289 > 79.7	1.2864	22.340				9.81			0.0000
19	Total PFHPA	368.9 > 79.6	1.3464	22.443				12.4			0.0000
20	Total PFOA	413 > 368.7	2.3364	8.679				10.0			0.0000
21	Total PFOS	489 > 79.9	5.4263	6.890				12.9			0.0000

Chromatogram

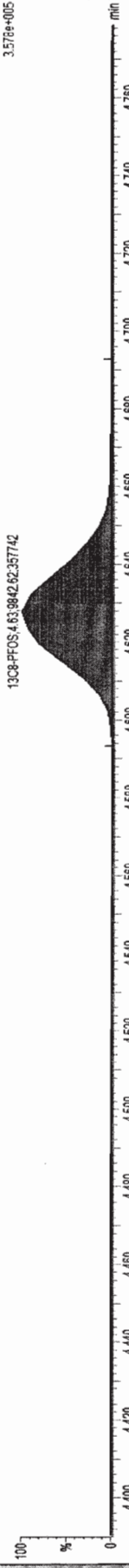
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PFC CS3 17C2813A-ST170329G1-2-PFC-CS3-17C2813



170329G1_20 Smooth(Min.12)
PFC CS3 17C2813A-ST170329G1-2-PFC-CS3-17C2813



170329G1_20 Smooth(Min.12)
PFC CS3 17C2813A-ST170329G1-2-PFC-CS3-17C2813

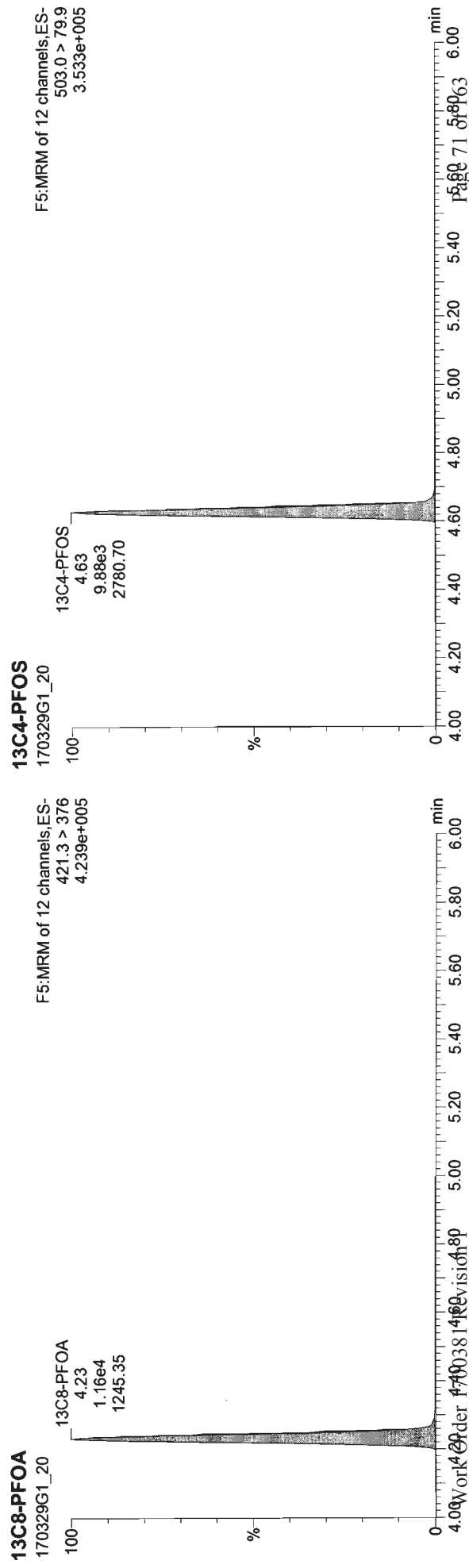
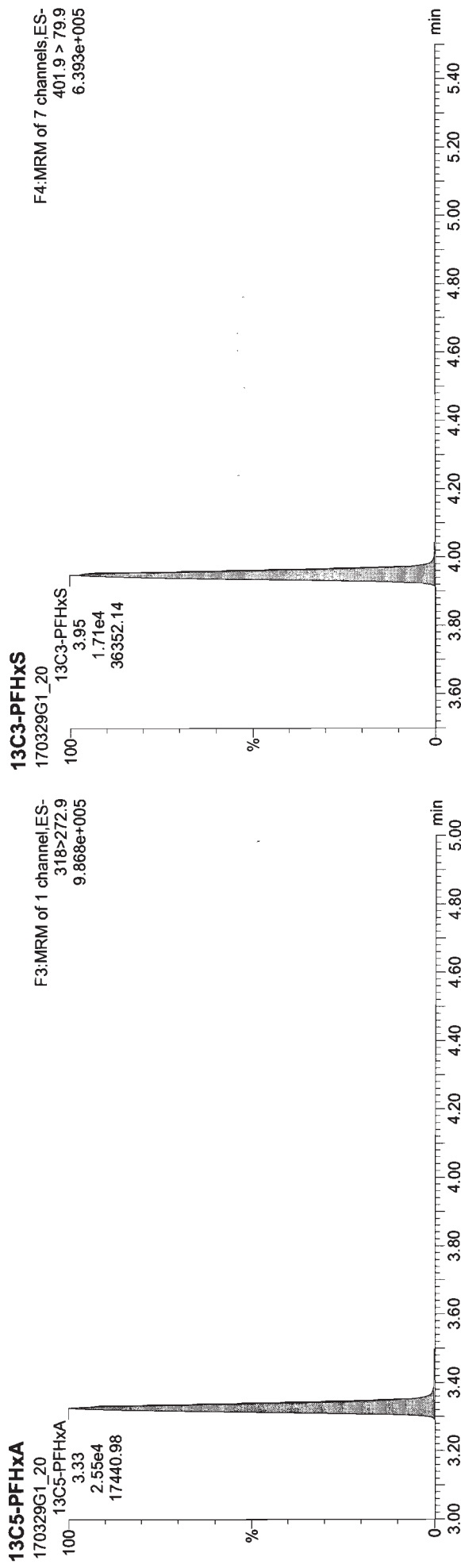


Vista Analytical Laboratory Q1

Dataset: Untitled

Last Altered: Thursday, March 30, 2017 11:46:12 AM Pacific Daylight Time
Printed: Thursday, March 30, 2017 11:46:28 AM Pacific Daylight Time

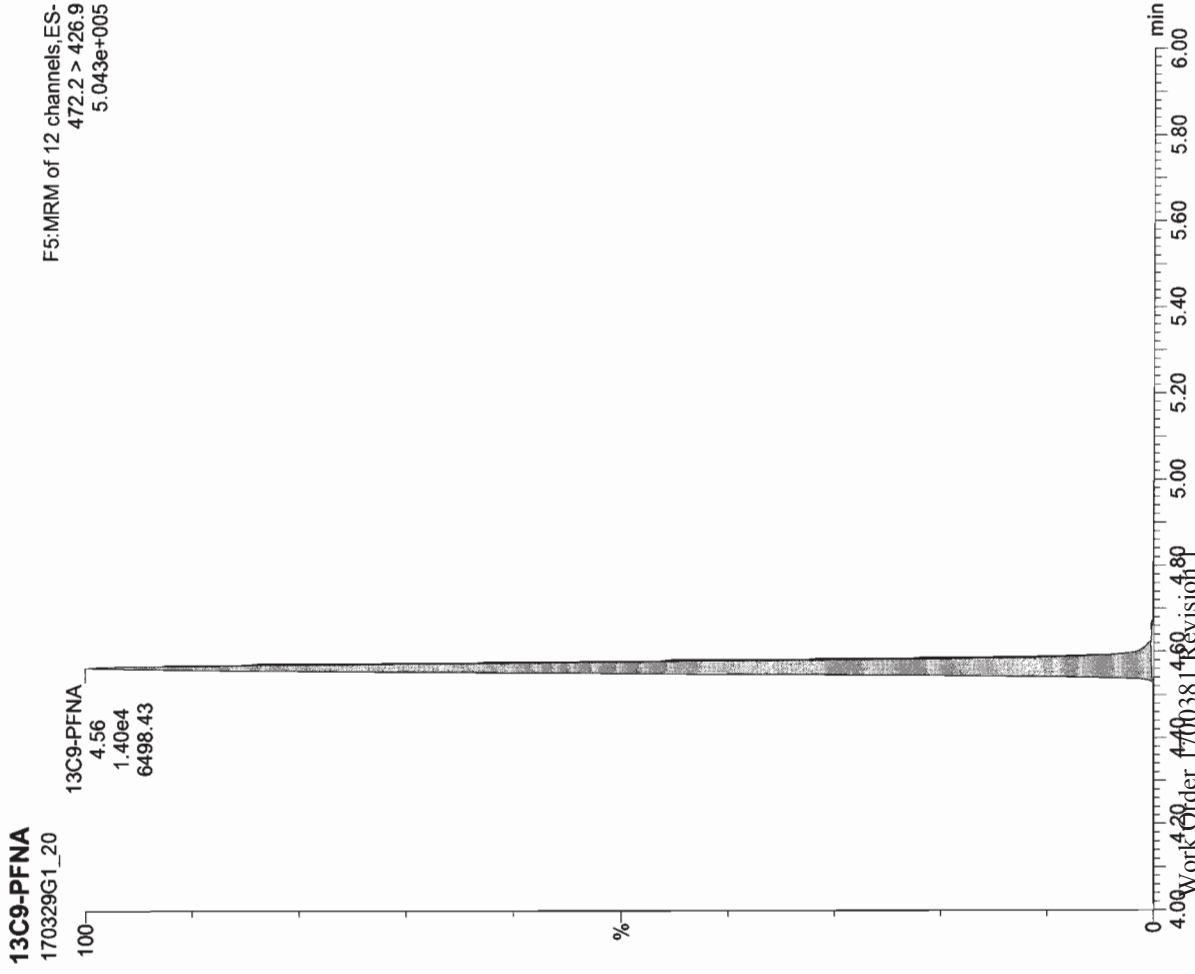
Name: 170329G1_20, Date: 29-Mar-2017, Time: 15:34:27, ID: ST170329G1-2 PFC CS3 17C2813, Description: PFC CS3 17C2813 A



Dataset: Untitled

Last Altered: Thursday, March 30, 2017 11:46:12 AM Pacific Daylight Time
Printed: Thursday, March 30, 2017 11:46:28 AM Pacific Daylight Time

Name: 170329G1_20, Date: 29-Mar-2017, Time: 15:34:27, ID: ST170329G1-2 PFC CS3 17C2813, Description: PFC CS3 17C2813 A



INITIAL CALIBRATION

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld
 Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
 Printed: Thursday, March 16, 2017 13:25:27 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_6_2trans_LINEAR.mdb 02 Mar 2017 12:26:53
 Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

Compound name: PFBS

Correlation coefficient: $r = 0.997984$, $r^2 = 0.995973$
 Calibration curve: $2.26993 * x + 0.0687359$
 Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
 Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

ES 3/16/17
 ✓ AC 3/17/17

# Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1 170316G1_2	0.250	3.02	6.04e2	1.14e4	0.262	4.9	2.66
2 170316G1_3	0.500	3.02	9.80e2	1.15e4	0.439	-12.2	2.13
3 170316G1_4	1.00	3.02	1.88e3	1.07e4	0.934	-6.6	2.19
4 170316G1_5	2.00	3.02	3.81e3	1.17e4	1.76	-11.9	2.03
5 170316G1_6	5.00	3.02	6.42e3	6.47e3	5.43	8.6	2.48
6 170316G1_7	10.0	3.02	1.49e4	6.71e3	12.2	21.7	2.77
7 170316G1_8	50.0	3.02	8.35e4	9.63e3	47.7	-4.5	2.17
8 170316G1_9	100	3.02	1.48e5	8.14e3	100	0.0	2.27

Compound name: PFHpA

Correlation coefficient: $r = 0.997479$, $r^2 = 0.994964$
 Calibration curve: $1.72647 * x + 0.128291$
 Response type: Internal Std (Ref 8), Area * (IS Conc. / IS Area)
 Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

# Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1 170316G1_2	0.250	3.89	1.15e3	2.52e4	0.256	2.4	2.28
2 170316G1_3	0.500	3.89	2.02e3	2.80e4	0.449	-10.2	1.81
3 170316G1_4	1.00	3.89	3.91e3	2.82e4	0.929	-7.1	1.73
4 170316G1_5	2.00	3.89	7.07e3	2.95e4	1.66	-16.9	1.50
5 170316G1_6	5.00	3.89	1.18e4	1.54e4	5.48	9.6	1.92
6 170316G1_7	10.0	3.89	2.74e4	1.60e4	12.3	23.4	2.14
7 170316G1_8	50.0	3.89	1.72e5	2.43e4	51.2	2.3	1.77
8 170316G1_9	100	3.89	2.88e5	2.16e4	96.5	-3.5	1.67

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld
 Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
 Printed: Thursday, March 16, 2017 13:25:27 Pacific Daylight Time

Compound name: PFHxS

Correlation coefficient: $r = 0.999182$, $r^2 = 0.998364$
 Calibration curve: $1.78157 * x + 0.0886791$
 Response type: Internal Std (Ref 9), Area * (IS Conc. / IS Area)
 Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	0.250	4.01	5.14e2	1.00e4	0.309	23.7	2.56
2	170316G1_3	0.500	4.00	7.92e2	1.13e4	0.443	-11.4	1.76
3	170316G1_4	1.00	4.00	1.38e3	1.07e4	0.857	-14.3	1.62
4	170316G1_5	2.00	4.01	2.78e3	1.08e4	1.76	-12.1	1.61
5	170316G1_6	5.00	4.00	4.90e3	6.49e3	5.25	5.0	1.89
6	170316G1_7	10.0	4.00	1.12e4	6.99e3	11.2	11.6	2.00
7	170316G1_8	50.0	4.01	6.89e4	9.95e3	48.5	-3.0	1.73
8	170316G1_9	100	4.01	1.26e5	8.79e3	100	0.5	1.79

Compound name: PFOA

Correlation coefficient: $r = 0.997916$, $r^2 = 0.995836$
 Calibration curve: $0.871455 * x + 0.142235$
 Response type: Internal Std (Ref 10), Area * (IS Conc. / IS Area)
 Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	0.250	4.29	1.33e3	4.34e4	0.276	10.4	1.53
2	170316G1_3	0.500	4.28	1.87e3	4.50e4	0.431	-13.8	1.04
3	170316G1_4	1.00	4.28	3.27e3	4.37e4	0.912	-8.8	0.937
4	170316G1_5	2.00	4.29	5.68e3	4.40e4	1.69	-15.6	0.806
5	170316G1_6	5.00	4.28	1.01e4	2.57e4	5.47	9.5	0.983
6	170316G1_7	10.0	4.28	2.29e4	2.65e4	12.2	22.3	1.08
7	170316G1_8	50.0	4.29	1.38e5	4.09e4	48.3	-3.4	0.844
8	170316G1_9	100	4.29	2.58e5	3.71e4	99.5	-0.5	0.868

Quantify Compound Summary Report **MassLynx 4.1 SCN815**
 Vista Analytical Laboratory Q2

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld
 Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
 Printed: Thursday, March 16, 2017 13:25:27 Pacific Daylight Time

Compound name: PFNA
 Correlation coefficient: $r = 0.998066, r^2 = 0.996135$
 Calibration curve: $2.1673 * x + 0.184413$
 Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
 Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	0.250	4.62	6.11e2	1.21e4	0.207	-17.0	2.54
2	170316G1_3	0.500	4.62	1.30e3	1.34e4	0.475	-5.0	2.43
3	170316G1_4	1.00	4.62	2.08e3	1.14e4	0.964	-3.6	2.27
4	170316G1_5	2.00	4.62	4.12e3	1.26e4	1.80	-10.2	2.04
5	170316G1_6	5.00	4.62	8.37e3	7.73e3	6.16	23.1	2.71
6	170316G1_7	10.0	4.62	1.70e4	8.57e3	11.4	13.8	2.48
7	170316G1_8	50.0	4.62	1.20e5	1.35e4	51.1	2.2	2.22
8	170316G1_9	100	4.62	2.27e5	1.35e4	96.7	-3.3	2.10

Compound name: PFOS
 Correlation coefficient: $r = 0.996947, r^2 = 0.993903$
 Calibration curve: $0.553136 * x + -0.0763074$
 Response type: Internal Std (Ref 12), Area * (IS Conc. / IS Area)
 Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	0.250	4.68	6.60e1	9.00e3	0.304	21.5	0.367
2	170316G1_3	0.500	4.68	1.15e2	9.58e3	0.409	-18.1	0.300
3	170316G1_4	1.00	4.68	2.68e2	6.85e3	1.02	2.3	0.489
4	170316G1_5	2.00	4.68	5.07e2	7.38e3	1.69	-15.6	0.429
5	170316G1_6	5.00	4.68	1.38e3	6.63e3	4.84	-3.1	0.520
6	170316G1_7	10.0	4.68	3.13e3	6.01e3	11.9	19.2	0.652
7	170316G1_8	50.0	4.68	2.11e4	1.06e4	45.4	-9.3	0.500
8	170316G1_9	100	4.68	4.74e4	1.04e4	103	3.2	0.570

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld
 Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
 Printed: Thursday, March 16, 2017 13:25:27 Pacific Daylight Time

Compound name: 13C3-PFBBS
 Response Factor: 0.501217
 RRF SD: 0.0718441, Relative SD: 14.3339
 Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
 Curve type: RF

# Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1 170316G1_2	12.5	3.02	1.14e4	2.01e4	14.1	13.1	0.567
2 170316G1_3	12.5	3.01	1.15e4	2.08e4	13.8	10.1	0.552
3 170316G1_4	12.5	3.02	1.07e4	2.10e4	12.7	1.7	0.510
4 170316G1_5	12.5	3.02	1.17e4	1.95e4	14.9	19.6	0.599
5 170316G1_6	12.5	3.02	6.47e3	1.62e4	9.98	-20.1	0.400
6 170316G1_7	12.5	3.02	6.71e3	1.65e4	10.1	-18.9	0.406
7 170316G1_8	12.5	3.02	9.63e3	1.97e4	12.2	-2.8	0.487
8 170316G1_9	12.5	3.02	8.14e3	1.67e4	12.2	-2.7	0.488

Compound name: 13C4-PFHpa
 Response Factor: 1.23676
 RRF SD: 0.19033, Relative SD: 15.3894
 Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
 Curve type: RF

# Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1 170316G1_2	12.5	3.89	2.52e4	2.01e4	12.7	1.7	1.26
2 170316G1_3	12.5	3.89	2.80e4	2.08e4	13.6	8.7	1.34
3 170316G1_4	12.5	3.88	2.82e4	2.10e4	13.6	8.5	1.34
4 170316G1_5	12.5	3.89	2.95e4	1.95e4	15.3	22.1	1.51
5 170316G1_6	12.5	3.89	1.54e4	1.62e4	9.65	-22.8	0.954
6 170316G1_7	12.5	3.89	1.60e4	1.65e4	9.77	-21.9	0.966
7 170316G1_8	12.5	3.89	2.43e4	1.97e4	12.4	-0.7	1.23
8 170316G1_9	12.5	3.89	2.16e4	1.67e4	13.1	4.4	1.29

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld
 Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
 Printed: Thursday, March 16, 2017 13:25:27 Pacific Daylight Time

Compound name: 18O2-PFHxS
 Response Factor: 0.494506
 RRF SD: 0.0543219, Relative SD: 10.9851
 Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
 Curve type: RF

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	12.5	4.00	1.00e4	2.01e4	12.7	1.3	0.501
2	170316G1_3	12.5	4.00	1.13e4	2.08e4	13.7	9.4	0.541
3	170316G1_4	12.5	4.00	1.07e4	2.10e4	12.8	2.4	0.506
4	170316G1_5	12.5	4.00	1.08e4	1.95e4	14.0	11.8	0.553
5	170316G1_6	12.5	4.00	6.49e3	1.62e4	10.1	-18.9	0.401
6	170316G1_7	12.5	4.00	6.99e3	1.65e4	10.7	-14.4	0.423
7	170316G1_8	12.5	4.00	9.95e3	1.97e4	12.7	1.9	0.504
8	170316G1_9	12.5	4.00	8.79e3	1.67e4	13.3	6.5	0.527

Compound name: 13C2-PFOA
 Response Factor: 3.22114
 RRF SD: 0.38407, Relative SD: 11.9234
 Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
 Curve type: RF

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	12.5	4.28	4.34e4	1.22e4	13.8	10.6	3.56
2	170316G1_3	12.5	4.28	4.50e4	1.28e4	13.6	9.0	3.51
3	170316G1_4	12.5	4.28	4.37e4	1.34e4	12.6	1.0	3.25
4	170316G1_5	12.5	4.29	4.40e4	1.25e4	13.6	9.1	3.51
5	170316G1_6	12.5	4.28	2.57e4	9.83e3	10.2	-18.7	2.62
6	170316G1_7	12.5	4.28	2.65e4	1.01e4	10.2	-18.4	2.63
7	170316G1_8	12.5	4.29	4.09e4	1.21e4	13.1	4.5	3.36
8	170316G1_9	12.5	4.28	3.71e4	1.12e4	12.9	3.0	3.32

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld
 Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
 Printed: Thursday, March 16, 2017 13:25:27 Pacific Daylight Time

Compound name: 13C5-PFNA
 Response Factor: 0.979217
 RRF SD: 0.10379, Relative SD: 10.5993
 Response type: Internal Std (Ref 16), Area * (IS Conc. / IS Area)
 Curve type: RF

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	12.5	4.62	1.21e4	1.24e4	12.4	-1.0	0.970
2	170316G1_3	12.5	4.62	1.34e4	1.25e4	13.7	9.3	1.07
3	170316G1_4	12.5	4.62	1.14e4	1.25e4	11.6	-7.0	0.911
4	170316G1_5	12.5	4.62	1.26e4	1.15e4	14.0	12.4	1.10
5	170316G1_6	12.5	4.62	7.73e3	9.48e3	10.4	-16.7	0.815
6	170316G1_7	12.5	4.62	8.57e3	9.78e3	11.2	-10.5	0.876
7	170316G1_8	12.5	4.62	1.35e4	1.33e4	13.0	3.8	1.02
8	170316G1_9	12.5	4.62	1.35e4	1.26e4	13.7	9.6	1.07

Compound name: 13C8-PFOS
 Response Factor: 1.07987
 RRF SD: 0.129751, Relative SD: 12.0155
 Response type: Internal Std (Ref 17), Area * (IS Conc. / IS Area)
 Curve type: RF

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	12.5	4.68	9.00e3	6.79e3	15.3	22.6	1.32
2	170316G1_3	12.5	4.68	9.58e3	8.34e3	13.3	6.5	1.15
3	170316G1_4	12.5	4.68	6.85e3	6.53e3	12.1	-2.9	1.05
4	170316G1_5	12.5	4.68	7.38e3	6.74e3	12.7	1.5	1.10
5	170316G1_6	12.5	4.68	6.63e3	7.58e3	10.1	-19.1	0.874
6	170316G1_7	12.5	4.68	6.01e3	6.06e3	11.5	-8.1	0.992
7	170316G1_8	12.5	4.68	1.06e4	9.54e3	12.8	2.5	1.11
8	170316G1_9	12.5	4.68	1.04e4	9.93e3	12.1	-3.0	1.05

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld
 Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
 Printed: Thursday, March 16, 2017 13:25:27 Pacific Daylight Time

Compound name: 13C5-PFHxA
 Response Factor: 1
 RRF SD: 0, Relative SD: 0
 Response type: Internal Std (Ref 13), Area * (IS Conc. / IS Area)
 Curve type: RF

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	12.5	3.37	3.44e4	3.44e4	12.5	0.0	1.00
2	170316G1_3	12.5	3.37	3.66e4	3.66e4	12.5	0.0	1.00
3	170316G1_4	12.5	3.37	3.56e4	3.56e4	12.5	0.0	1.00
4	170316G1_5	12.5	3.38	3.60e4	3.60e4	12.5	0.0	1.00
5	170316G1_6	12.5	3.37	2.57e4	2.57e4	12.5	0.0	1.00
6	170316G1_7	12.5	3.37	2.54e4	2.54e4	12.5	0.0	1.00
7	170316G1_8	12.5	3.38	3.19e4	3.19e4	12.5	0.0	1.00
8	170316G1_9	12.5	3.37	2.77e4	2.77e4	12.5	0.0	1.00

Compound name: 13C3-PFHxS
 Response Factor: 1
 RRF SD: 4.19625e-017, Relative SD: 4.19625e-015
 Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
 Curve type: RF

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	12.5	4.01	2.01e4	2.01e4	12.5	0.0	1.00
2	170316G1_3	12.5	4.00	2.08e4	2.08e4	12.5	0.0	1.00
3	170316G1_4	12.5	4.00	2.10e4	2.10e4	12.5	0.0	1.00
4	170316G1_5	12.5	4.01	1.95e4	1.95e4	12.5	0.0	1.00
5	170316G1_6	12.5	4.00	1.62e4	1.62e4	12.5	0.0	1.00
6	170316G1_7	12.5	4.00	1.65e4	1.65e4	12.5	0.0	1.00
7	170316G1_8	12.5	4.01	1.97e4	1.97e4	12.5	0.0	1.00
8	170316G1_9	12.5	4.00	1.67e4	1.67e4	12.5	-0.0	1.00

Quantify Compound Summary Report **MassLynx 4.1 SCN815**
 Vista Analytical Laboratory Q2

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld

Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
 Printed: Thursday, March 16, 2017 13:25:27 Pacific Daylight Time

Compound name: 13C8-PFOA

Response Factor: 1
 RRF SD: 0, Relative SD: 0
 Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
 Curve type: RF

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	12.5	4.28	1.22e4	1.22e4	12.5	0.0	1.00
2	170316G1_3	12.5	4.28	1.28e4	1.28e4	12.5	0.0	1.00
3	170316G1_4	12.5	4.28	1.34e4	1.34e4	12.5	0.0	1.00
4	170316G1_5	12.5	4.28	1.25e4	1.25e4	12.5	0.0	1.00
5	170316G1_6	12.5	4.28	9.83e3	9.83e3	12.5	0.0	1.00
6	170316G1_7	12.5	4.28	1.01e4	1.01e4	12.5	0.0	1.00
7	170316G1_8	12.5	4.29	1.21e4	1.21e4	12.5	0.0	1.00
8	170316G1_9	12.5	4.28	1.12e4	1.12e4	12.5	0.0	1.00

Compound name: 13C9-PFNA

Response Factor: 1
 RRF SD: 0, Relative SD: 0
 Response type: Internal Std (Ref 16), Area * (IS Conc. / IS Area)
 Curve type: RF

#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	12.5	4.62	1.24e4	1.24e4	12.5	0.0	1.00
2	170316G1_3	12.5	4.62	1.25e4	1.25e4	12.5	0.0	1.00
3	170316G1_4	12.5	4.62	1.25e4	1.25e4	12.5	0.0	1.00
4	170316G1_5	12.5	4.62	1.15e4	1.15e4	12.5	0.0	1.00
5	170316G1_6	12.5	4.62	9.48e3	9.48e3	12.5	0.0	1.00
6	170316G1_7	12.5	4.62	9.78e3	9.78e3	12.5	0.0	1.00
7	170316G1_8	12.5	4.62	1.33e4	1.33e4	12.5	0.0	1.00
8	170316G1_9	12.5	4.62	1.26e4	1.26e4	12.5	0.0	1.00

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld
 Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
 Printed: Thursday, March 16, 2017 13:25:27 Pacific Daylight Time

Compound name: 13C4-PFOS
 Response Factor: 1
 RRF SD: 0, Relative SD: 0
 Response type: Internal Std (Ref 17), Area * (IS Conc. / IS Area)
 Curve type: RF

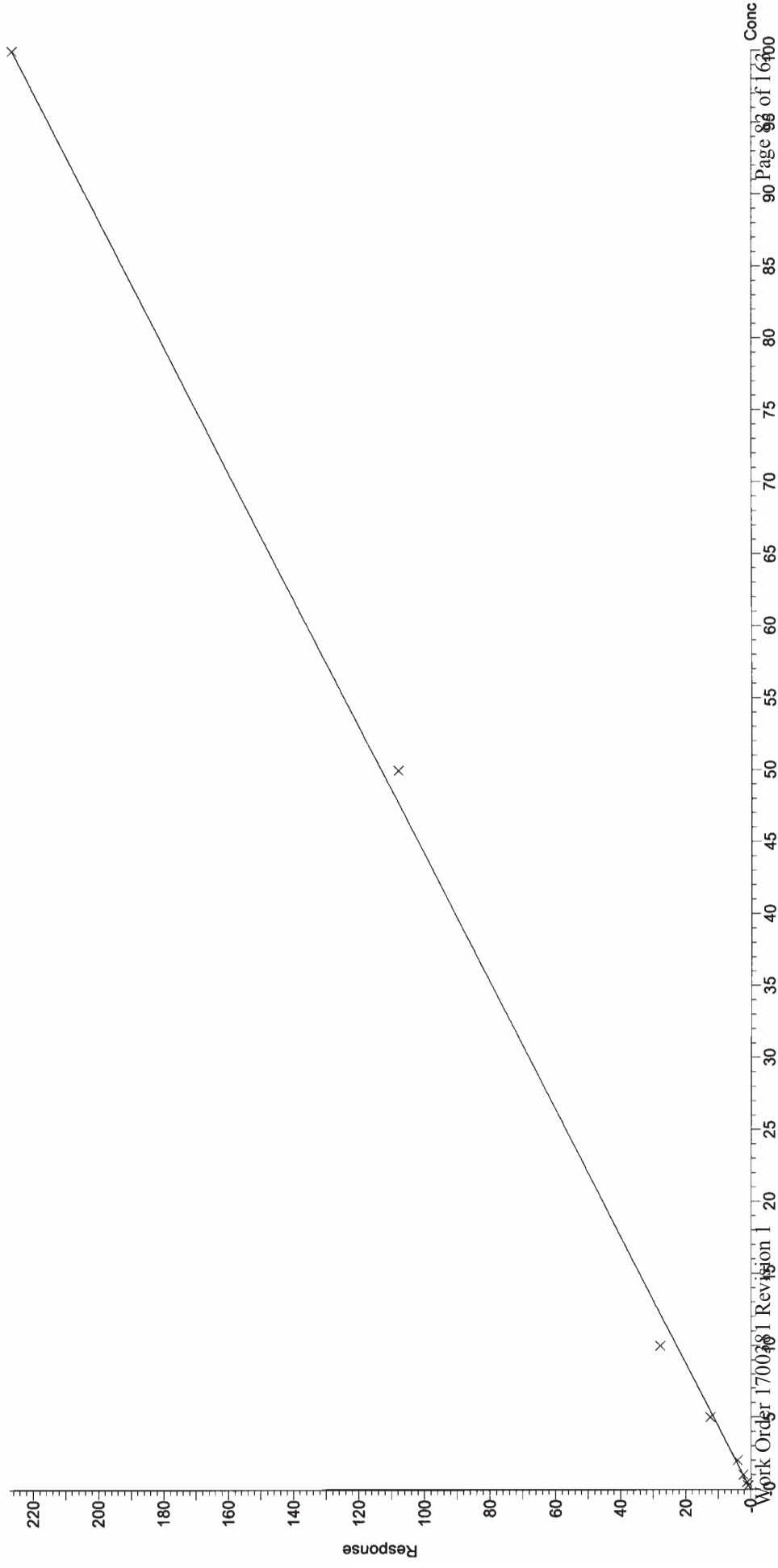
#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	170316G1_2	12.5	4.68	6.79e3	6.79e3	12.5	0.0	1.00
2	170316G1_3	12.5	4.68	8.34e3	8.34e3	12.5	0.0	1.00
3	170316G1_4	12.5	4.68	6.53e3	6.53e3	12.5	0.0	1.00
4	170316G1_5	12.5	4.68	6.74e3	6.74e3	12.5	0.0	1.00
5	170316G1_6	12.5	4.68	7.58e3	7.58e3	12.5	0.0	1.00
6	170316G1_7	12.5	4.68	6.06e3	6.06e3	12.5	0.0	1.00
7	170316G1_8	12.5	4.68	9.54e3	9.54e3	12.5	0.0	1.00
8	170316G1_9	12.5	4.68	9.93e3	9.93e3	12.5	0.0	1.00

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld

Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:26:14 Pacific Daylight Time

Method: U:\G1.pro\MethDB\IPFAS_6_2trans_LINEAR.mdb 02 Mar 2017 12:26:53
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

Compound name: PFBS
Correlation coefficient: $r = 0.997984$, $r^2 = 0.995973$
Calibration curve: $2.26993 * x + 0.0687359$
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

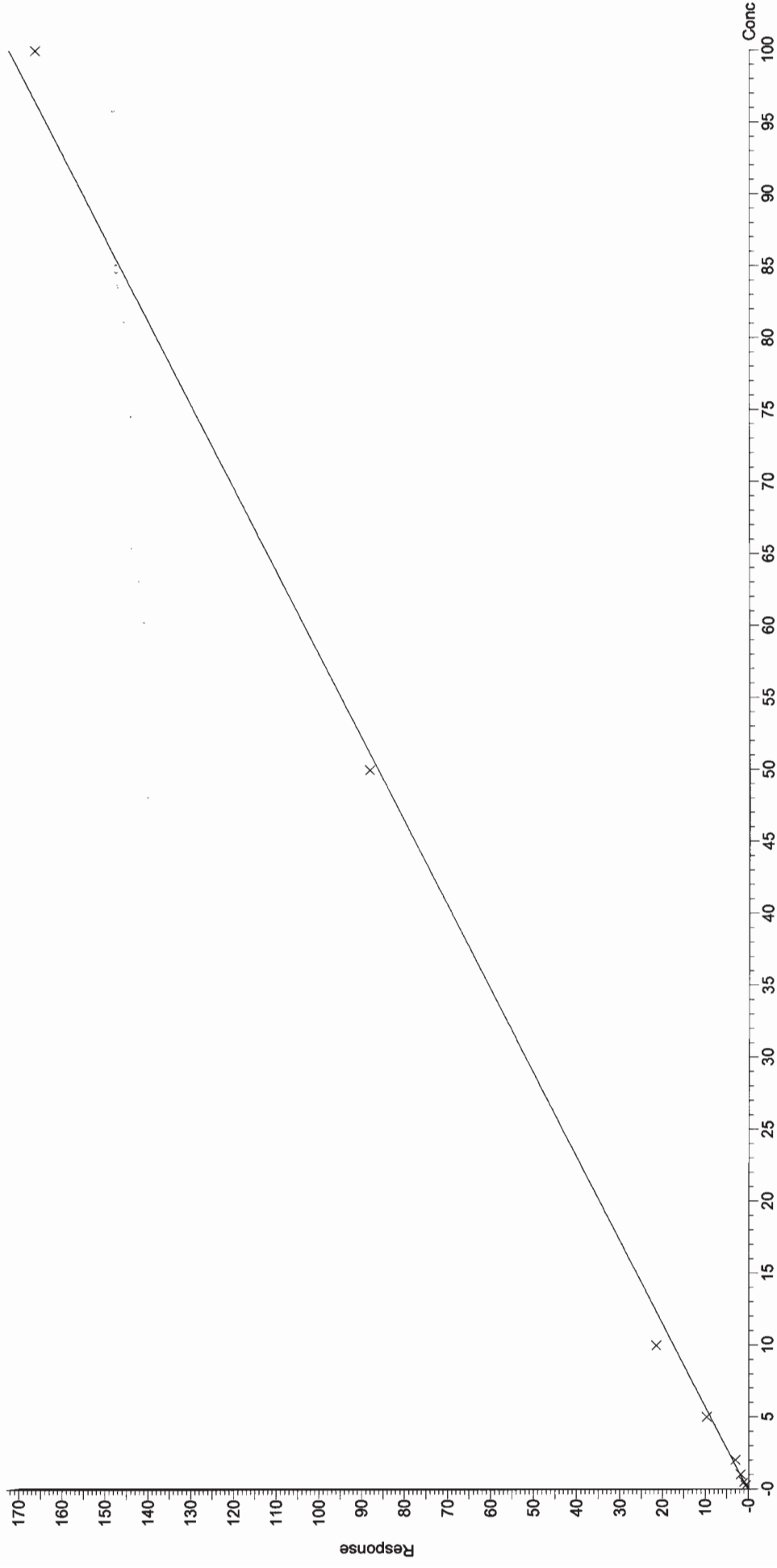


Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld

Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time

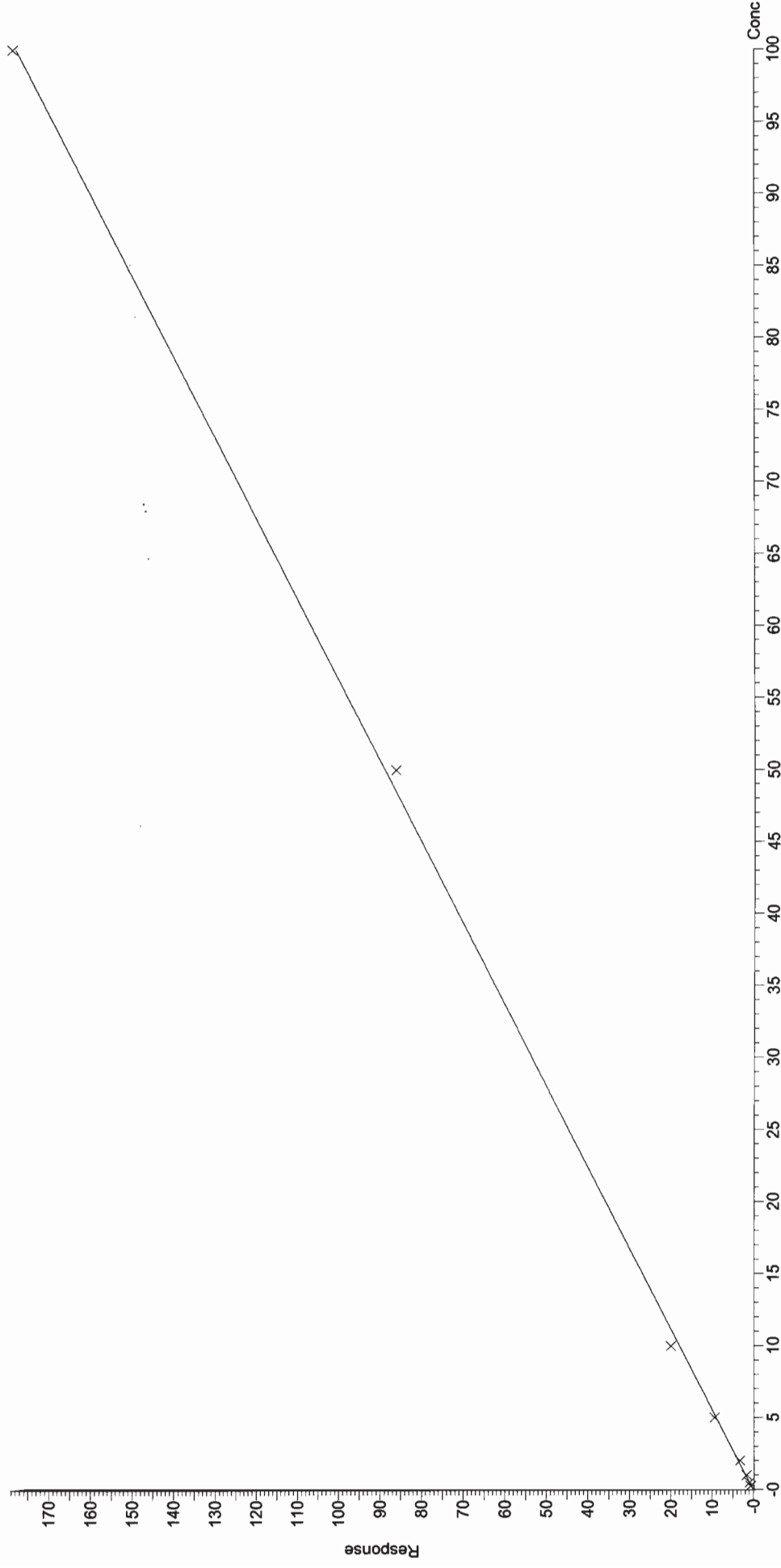
Printed: Thursday, March 16, 2017 13:26:14 Pacific Daylight Time

Compound name: PFHpA
Correlation coefficient: $r = 0.997479$, $r^2 = 0.994964$
Calibration curve: $1.72647 * x + 0.128291$
Response type: Internal Std (Ref 8), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld
Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:26:14 Pacific Daylight Time

Compound name: PFHxS
Correlation coefficient: $r = 0.999182, r^2 = 0.998364$
Calibration curve: $1.78157 * x + 0.0886791$
Response type: Internal Std (Ref 9), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

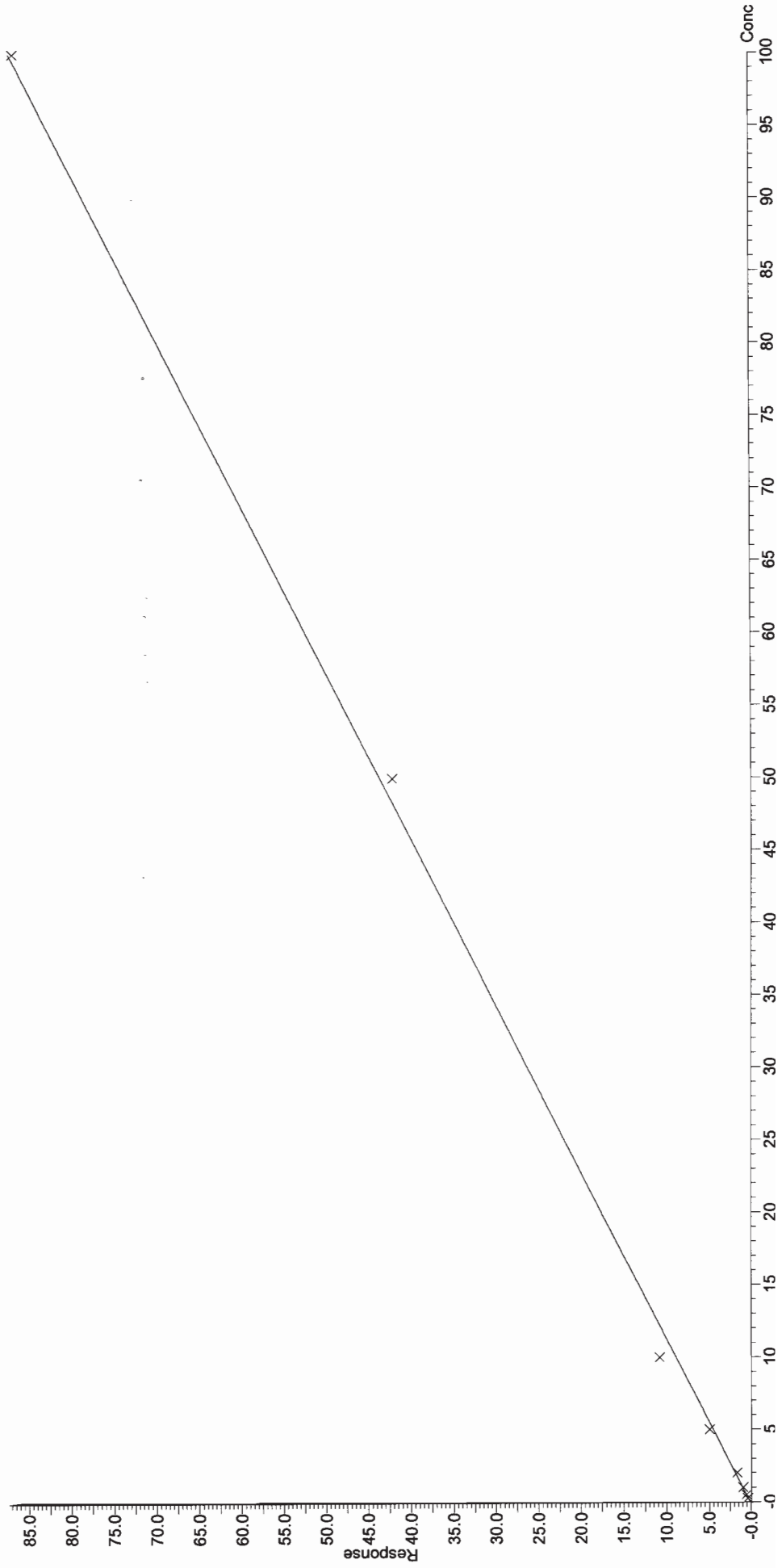


Quantify Calibration Report **MassLynx 4.1 SCN815**
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld

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Printed: Thursday, March 16, 2017 13:26:14 Pacific Daylight Time

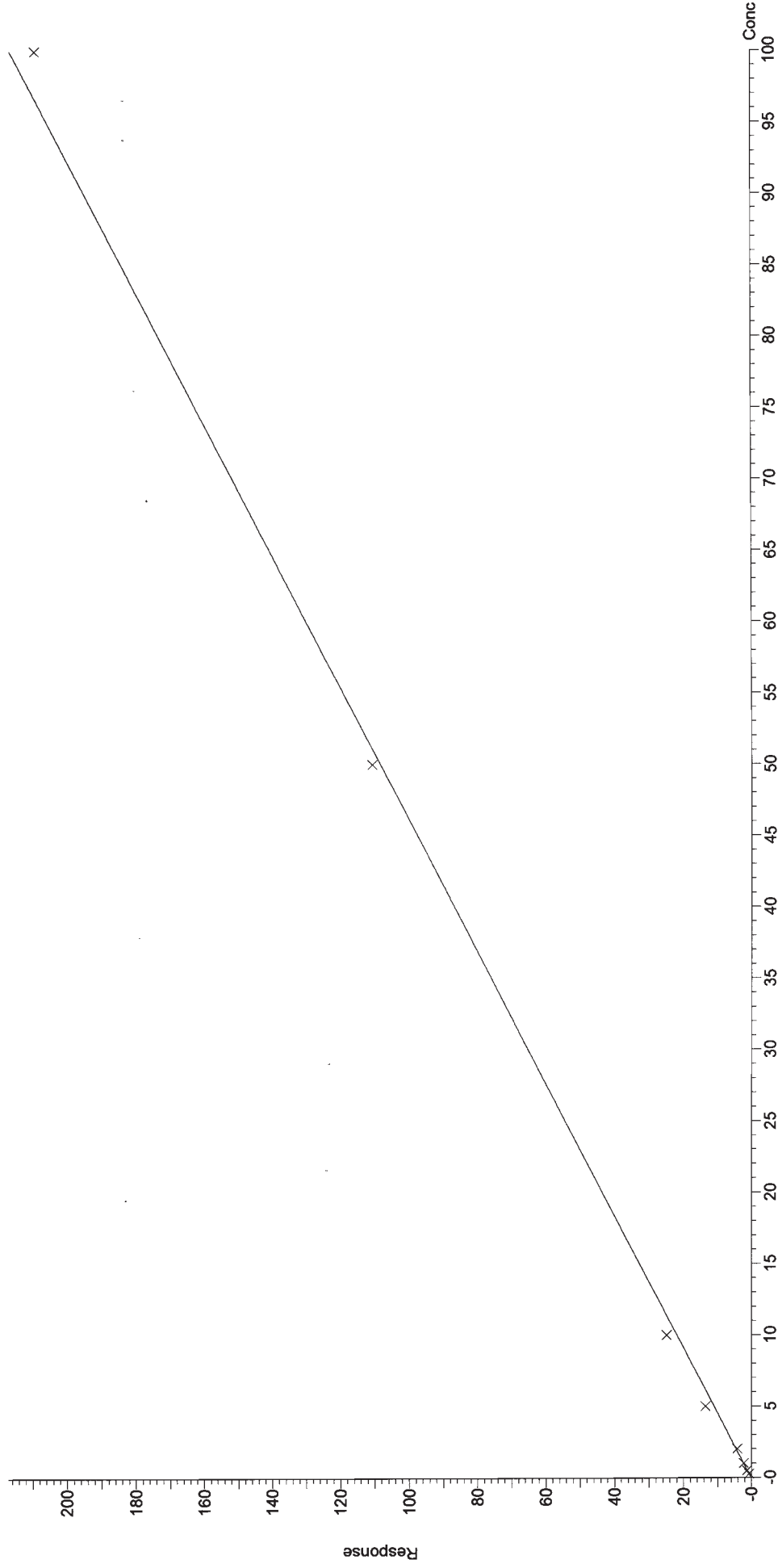
Compound name: PFOA
Correlation coefficient: $r = 0.997916$, $r^2 = 0.995836$
Calibration curve: $0.871455 * x + 0.142235$
Response type: Internal Std (Ref 10), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld

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Printed: Thursday, March 16, 2017 13:26:14 Pacific Daylight Time

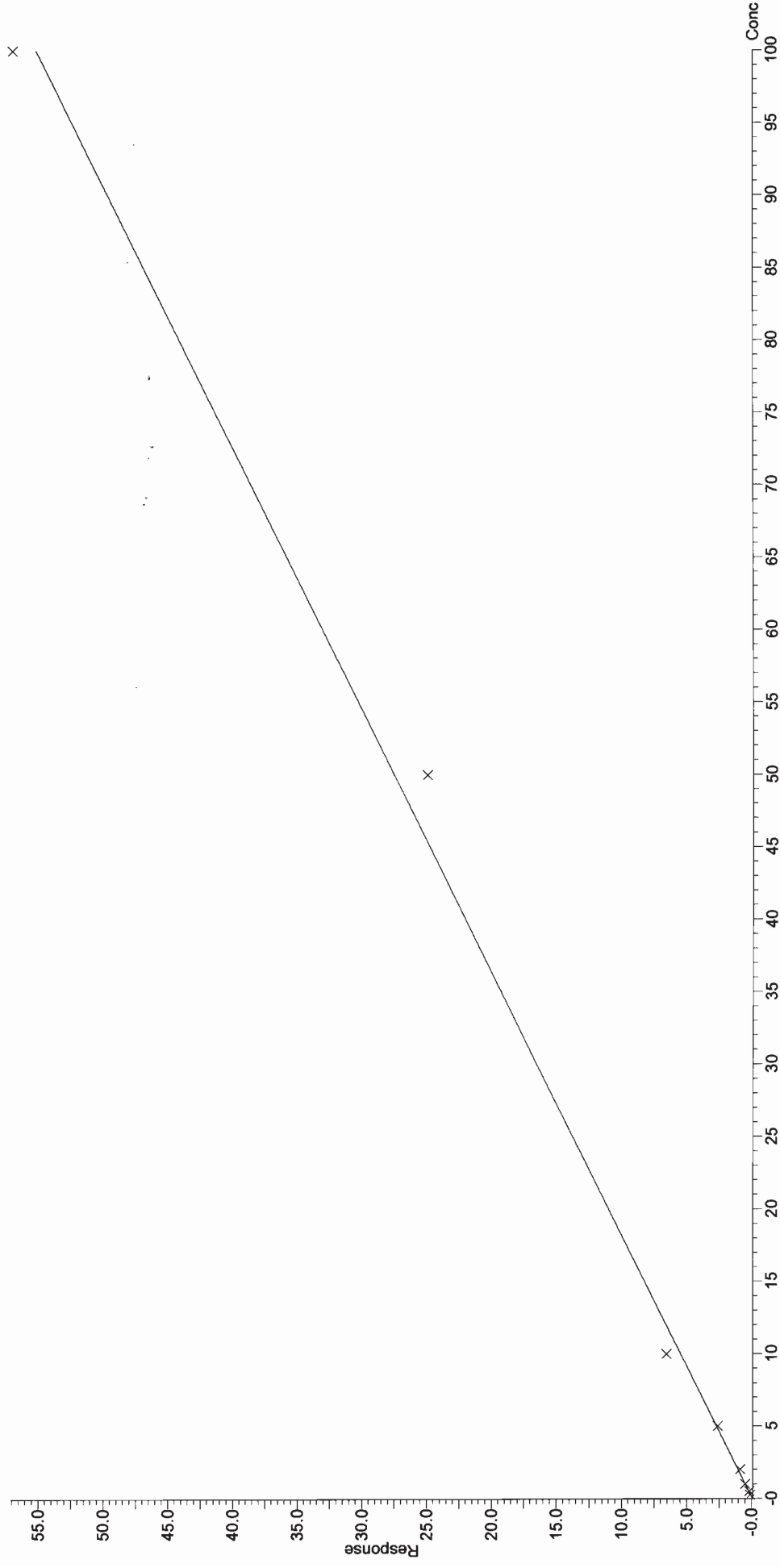
Compound name: PFNA
Correlation coefficient: $r = 0.998066$, $r^2 = 0.996135$
Calibration curve: $2.1673 * x + 0.184413$
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-CRV.qld

Last Altered: Thursday, March 16, 2017 13:24:03 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:26:14 Pacific Daylight Time

Compound name: PFOS
Correlation coefficient: $r = 0.996947, r^2 = 0.993903$
Calibration curve: $0.553136 * x + -0.0763074$
Response type: Internal Std (Ref 12), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Quantify Compound Summary Report MassLynx 4.1 SCN815
 Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Friday, March 17, 2017 08:50:58 Pacific Daylight Time
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 Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

Compound name: PFBS

Name	ID	Acq. Date	Acq. Time
170316G1_1	IPA	16-Mar-17	10:18:02
170316G1_2	ST170316G1-1 PFC CS-2 17C1502	16-Mar-17	10:30:20
170316G1_3	ST170316G1-2 PFC CS-1 17C1503	16-Mar-17	10:42:47
170316G1_4	ST170316G1-3 PFC CS0 17C1504	16-Mar-17	10:55:20
170316G1_5	ST170316G1-4 PFC CS1 17C1505	16-Mar-17	11:07:54
170316G1_6	ST170316G1-5 PFC CS2 17C1603	16-Mar-17	11:20:35
170316G1_7	ST170316G1-6 PFC CS3 17C1602	16-Mar-17	11:33:10
170316G1_8	ST170316G1-7 PFC CS4 17C1508	16-Mar-17	11:45:43
170316G1_9	ST170316G1-8 PFC CS5 17C1509	16-Mar-17	11:58:17
170316G1_10	IPA	16-Mar-17	12:11:12
170316G1_11	SS170316G1-1 PFC SSS 17C1510	16-Mar-17	12:23:32
170316G1_12	IPA	16-Mar-17	12:36:04
170316G1_13	B7C0045-BL1 OPR 0.125	16-Mar-17	12:48:40
170316G1_14	B7C0050-BL1 OPR 0.125	16-Mar-17	13:01:10
170316G1_15	B7C0063-BL1 OPR 0.125	16-Mar-17	13:58:32
170316G1_16	B7C0073-BL1 OPR 0.125	16-Mar-17	14:10:43
170316G1_17	IPA	16-Mar-17	14:23:14
170316G1_18	B7C0045-BL1 Method Blank 0.125	16-Mar-17	14:35:47
170316G1_19	B7C0050-BL1 Method Blank 0.125	16-Mar-17	14:48:20
170316G1_20	B7C0063-BL1 Method Blank 0.125	16-Mar-17	15:00:53
170316G1_21	B7C0073-BL1 Method Blank 0.125	16-Mar-17	15:13:28
170316G1_22	1700304-01 Field Blank (420-117740-1) 0.12255	16-Mar-17	15:25:56
170316G1_23	IPA	16-Mar-17	16:11:28
170316G1_24	B7C0073-BL1 Method Blank 0.125	16-Mar-17	16:23:45
170316G1_25	1700304-01 Field Blank (420-117740-1) 0.12255	16-Mar-17	16:36:18
170316G1_26	1700299-01 MATPEW100 0.12287	16-Mar-17	16:48:51
170316G1_27	1700299-02 MATPEW101 0.11464	16-Mar-17	17:01:50
170316G1_28	1700299-03 MATPEW102 0.12518	16-Mar-17	17:14:11
170316G1_29	1700311-02@5X OF-SOW-091D-0317 0.12329	16-Mar-17	17:26:47
170316G1_30	1700311-03@5X OF-SOW-091DP-0317 0.124...	16-Mar-17	17:39:24
170316G1_31	1700311-06@5X OF-SOW-091M-0317 0.12783	16-Mar-17	17:51:55

Ⓐ PI. Bad injection. 2/3/17

Quantify Compound Summary Report **MassLynx 4.1 SCN815**
 Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Friday, March 17, 2017 08:50:58 Pacific Daylight Time
 Printed: Friday, March 17, 2017 08:51:49 Pacific Daylight Time

Compound name: PFBS

	Name	ID	Acq. Date	Acq. Time
32	170316G1_32	1700311-01 OF-SOW-091A-0317 0.11879	16-Mar-17	18:04:26
33	170316G1_33	1700311-02 OF-SOW-091D-0317 0.12329	16-Mar-17	18:16:55
34	170316G1_34	1700311-03 OF-SOW-091DP-0317 0.12421	16-Mar-17	18:29:40
35	170316G1_35	1700311-04 OF-EB030817 0.12212	16-Mar-17	18:42:01
36	170316G1_36	IPA	16-Mar-17	18:54:35
37	170316G1_37	ST170316G1-9 PFC CS2 17C1603	16-Mar-17	19:07:10
38	170316G1_38	IPA	16-Mar-17	19:19:41
39	170316G1_39	1700311-05 OF-SOW-091K-0317 0.12112	16-Mar-17	19:32:15
40	170316G1_40	1700311-06 OF-SOW-091M-0317 0.12783	16-Mar-17	19:44:47
41	170316G1_41	1700311-07 OF-FB030817 0.12533	16-Mar-17	19:57:20
42	170316G1_42	1700311-08 OF-SOW-091L-0317 0.11948	16-Mar-17	20:09:53
43	170316G1_43	1700311-09 OF14-GW05-0317 0.12223	16-Mar-17	20:22:27
44	170316G1_44	1700314-01 OUTFALL #1 0.125	16-Mar-17	20:34:56
45	170316G1_45	1700314-02 OUTFALL #2 0.125	16-Mar-17	20:47:29
46	170316G1_46	1700314-03 OUTFALL #2A 0.125	16-Mar-17	21:00:02
47	170316G1_47	1700314-04 OUTFALL #3 0.125	16-Mar-17	21:12:35
48	170316G1_48	1700314-05 OUTFALL #4 0.125	16-Mar-17	21:25:09
49	170316G1_49	1700314-06 PFC FIELD BLANK@ OUTFALL#...	16-Mar-17	21:37:42
50	170316G1_50	IPA	16-Mar-17	21:50:15
51	170316G1_51	ST170316G1-10 PFC CS2 17C1603	16-Mar-17	22:02:48
52	170316G1_52	IPA	16-Mar-17	22:15:21
53	170316G1_53	B7C0050-MS1 Matrix Spike 0.125	16-Mar-17	22:27:55
54	170316G1_54	B7C0050-MSD1 Matrix Spike Dup 0.125	16-Mar-17	22:40:46
55	170316G1_55	1700304-02RE1@10XB-104-Trailer(420-1177...	16-Mar-17	22:53:00
56	170316G1_56	1700304-02RE1 B-104 -Trailer (420-117740-2)...	16-Mar-17	23:05:34
57	170316G1_57	IPA	16-Mar-17	23:18:06
58	170316G1_58	ST170316G1-11 PFC CS2 17C1603	16-Mar-17	23:30:41
59	170316G1_59	IPA	16-Mar-17	23:43:14

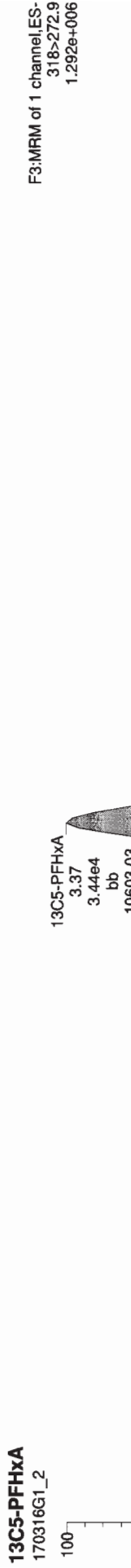
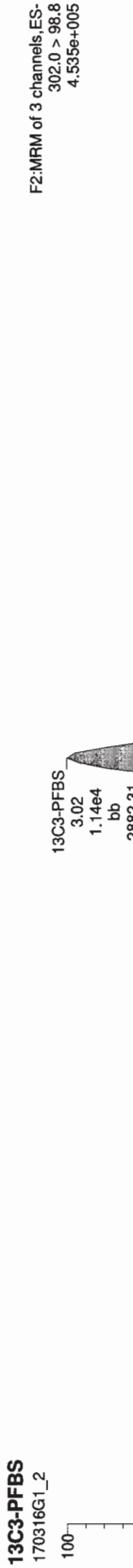
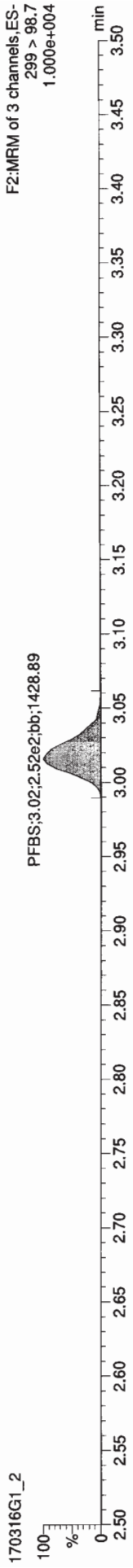
Quantify Sample Report
Vista Analytical Laboratory Q1

Dataset: Untitled

Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_6_2trans_LINEAR.mdb 02 Mar 2017 12:26:53
Calibration: 16 Mar 2017 13:27:05

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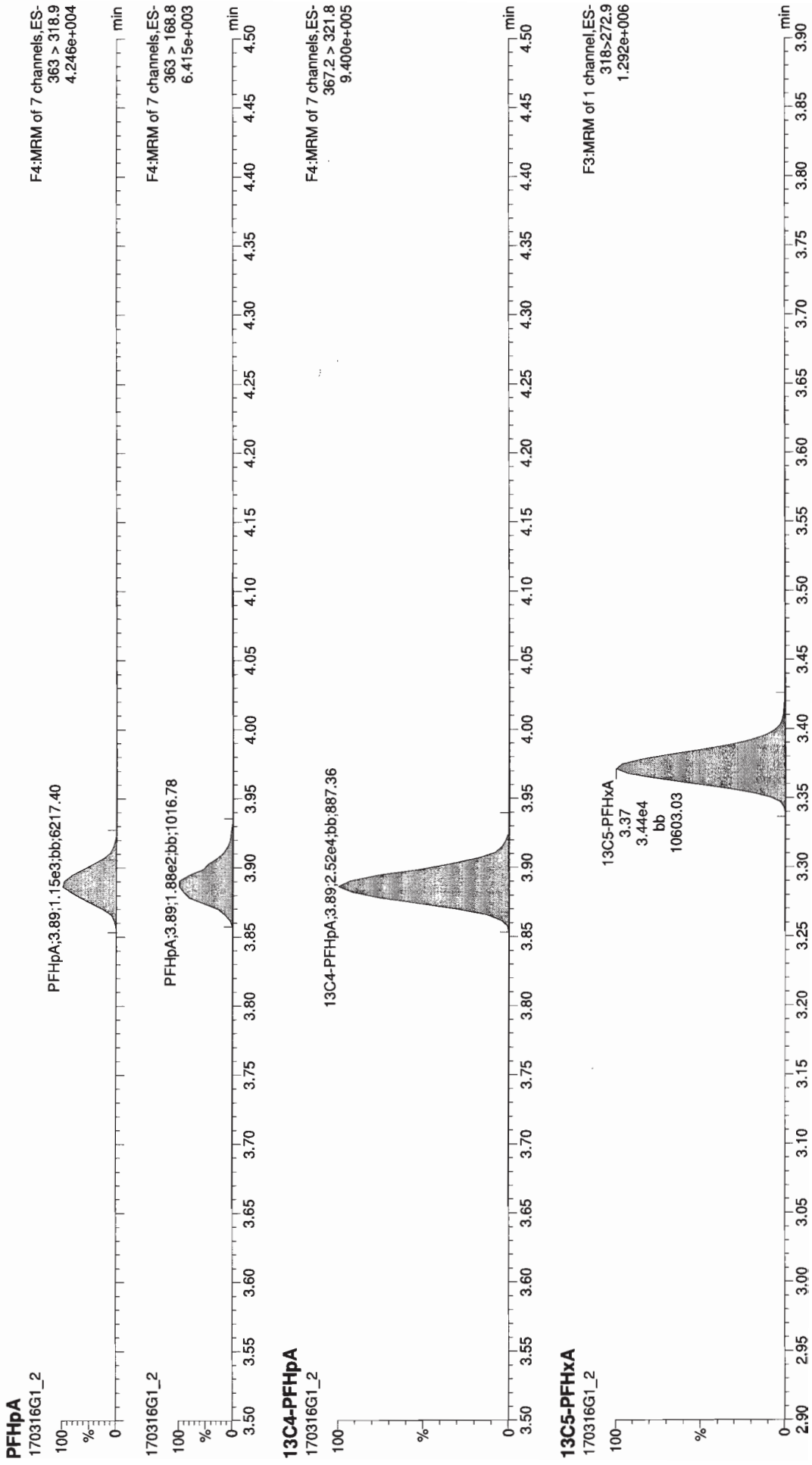


Quantify Sample Report
Vista Analytical Laboratory Q1

Dataset: Untitled

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Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

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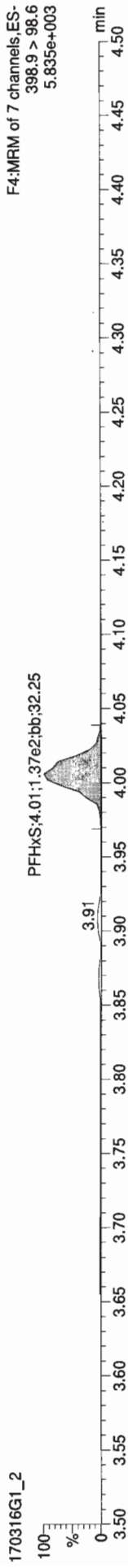
Quantify Sample Report

Vista Analytical Laboratory Q1

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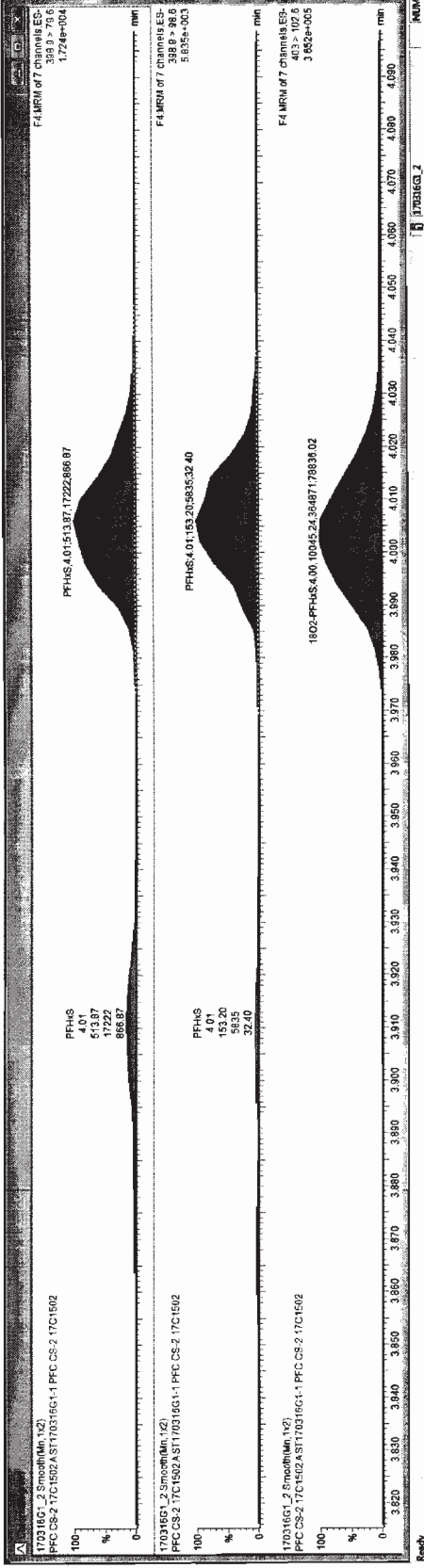
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170016G1_2 ST170316G11 PFC CS-2 17C1502 PFC CS-2 17C1602A

Line	Item	QTY	Unit	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount
1	PFAS	499.737	EA	6.142	3060.81	1.000	3060.81	1.000	3060.81	1.000	3060.81	1.000	3060.81
2	PFDA	529.314.9	EA	1.1452	605.91	1.000	605.91	1.000	605.91	1.000	605.91	1.000	605.91
3	PFNA	413.3.368.7	EA	1.3349	550.81	1.000	550.81	1.000	550.81	1.000	550.81	1.000	550.81
4	PFNA	463.4.116.8	EA	8.1142	3760.81	1.000	3760.81	1.000	3760.81	1.000	3760.81	1.000	3760.81
5	PFOS	499.739.9	EA	6.0041	2999.81	1.000	2999.81	1.000	2999.81	1.000	2999.81	1.000	2999.81
6	PFOS	302.0.98.8	EA	1.1444	345.81	1.000	345.81	1.000	345.81	1.000	345.81	1.000	345.81
7	PFNA	367.2.921.8	EA	2.5044	920.81	1.000	920.81	1.000	920.81	1.000	920.81	1.000	920.81
8	PFNA	403.9.102.6	EA	1.0044	405.81	1.000	405.81	1.000	405.81	1.000	405.81	1.000	405.81
9	PFNA	414.9.889.7	EA	4.2444	1759.81	1.000	1759.81	1.000	1759.81	1.000	1759.81	1.000	1759.81
10	PFNA	468.2.422.9	EA	1.2144	568.81	1.000	568.81	1.000	568.81	1.000	568.81	1.000	568.81
11	PFNA	507.0.79.9	EA	9.0044	4572.81	1.000	4572.81	1.000	4572.81	1.000	4572.81	1.000	4572.81
12	PFNA	318.272.9	EA	3.4444	1100.81	1.000	1100.81	1.000	1100.81	1.000	1100.81	1.000	1100.81
13	PFNA	401.9.79.9	EA	2.8144	1130.81	1.000	1130.81	1.000	1130.81	1.000	1130.81	1.000	1130.81
14	PFNA	421.3.376	EA	1.2944	545.81	1.000	545.81	1.000	545.81	1.000	545.81	1.000	545.81
15	PFNA	472.3.405.9	EA	1.2444	588.81	1.000	588.81	1.000	588.81	1.000	588.81	1.000	588.81
16	PFNA	503.0.79.9	EA	6.7944	3410.81	1.000	3410.81	1.000	3410.81	1.000	3410.81	1.000	3410.81
17	PFNA	299.2.79.7	EA	6.0444	1808.81	1.000	1808.81	1.000	1808.81	1.000	1808.81	1.000	1808.81
18	PFNA	368.3.79.6	EA	5.9244	2184.81	1.000	2184.81	1.000	2184.81	1.000	2184.81	1.000	2184.81
19	PFNA	413.3.368.7	EA	1.3349	550.81	1.000	550.81	1.000	550.81	1.000	550.81	1.000	550.81
20	PFNA	499.739.9	EA	6.0041	2999.81	1.000	2999.81	1.000	2999.81	1.000	2999.81	1.000	2999.81
21	PFNA	499.739.9	EA	6.0041	2999.81	1.000	2999.81	1.000	2999.81	1.000	2999.81	1.000	2999.81



170316G1_2 Smooth (M:1.0)

PFC CS-2 17C1502AST170316G1-1 PFC CS-2 17C1502

170316G1_2 Smooth (M:1.0)

PFC CS-2 17C1502AST170316G1-1 PFC CS-2 17C1502

170316G1_2 Smooth (M:1.0)

PFC CS-2 17C1502AST170316G1-1 PFC CS-2 17C1502

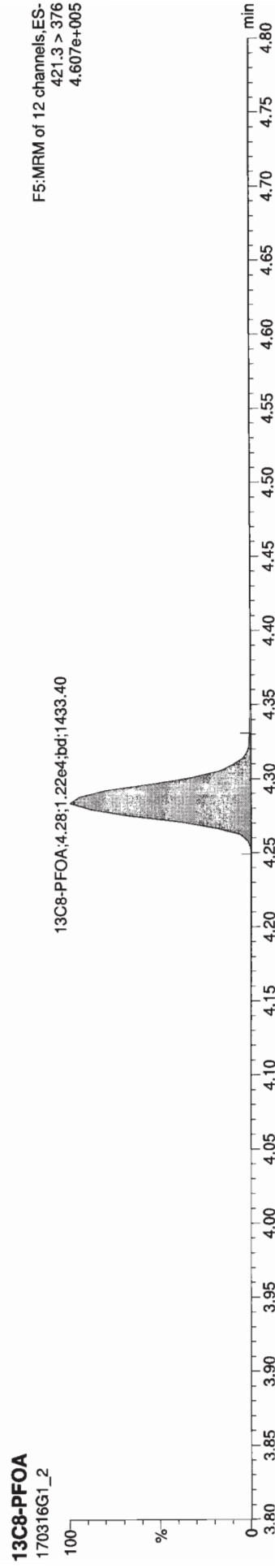
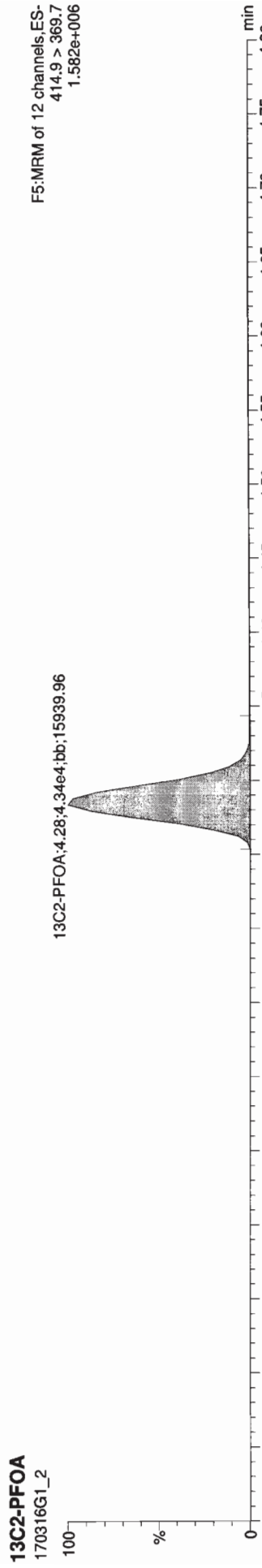
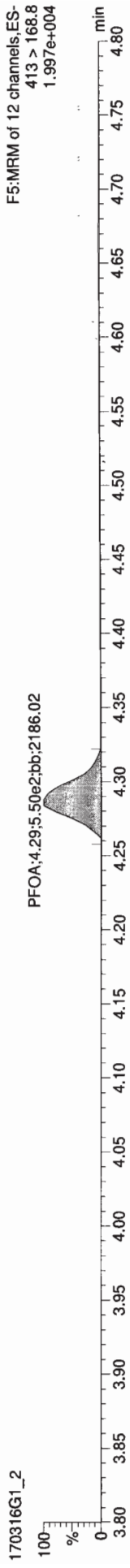
Quantify Sample Report

Vista Analytical Laboratory Q1

Dataset: Untitled

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Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

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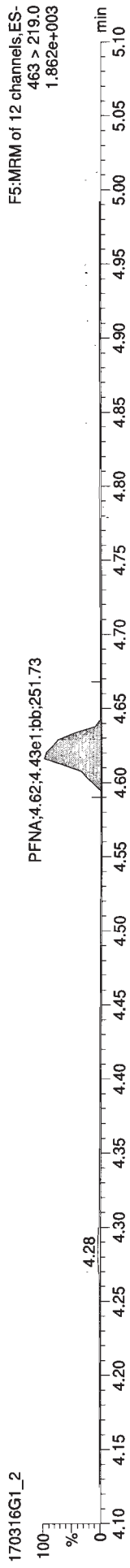


Quantify Sample Report
Vista Analytical Laboratory Q1

Dataset: Untitled

Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

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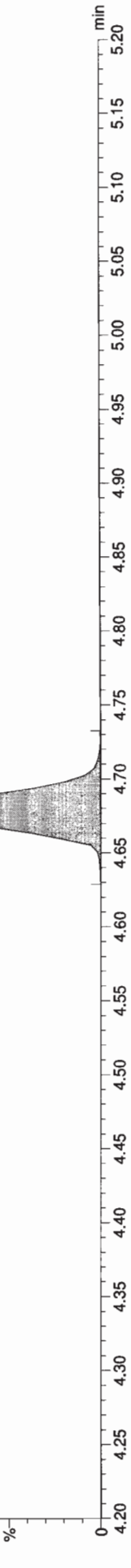
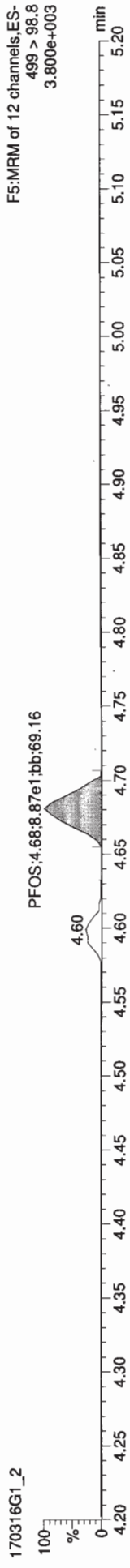
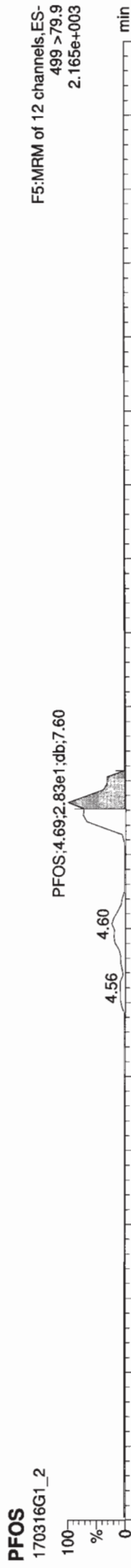
Quantify Sample Report

Vista Analytical Laboratory Q1

Dataset: Untitled

Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

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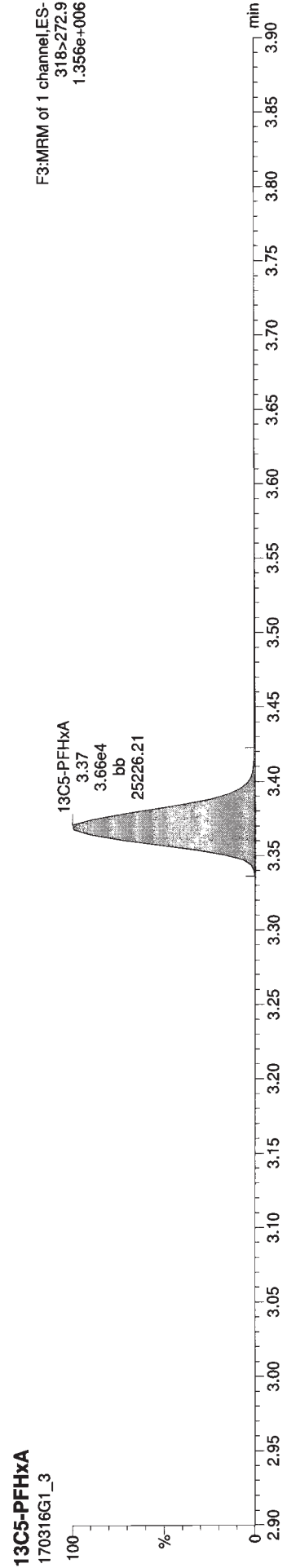
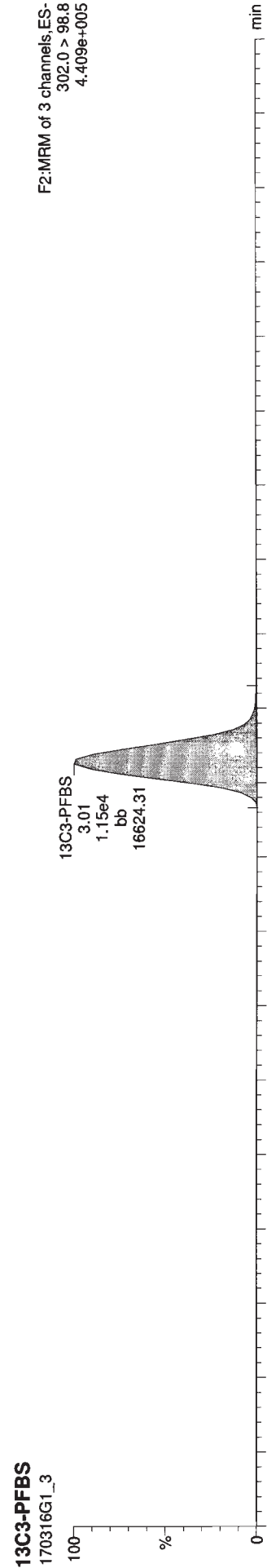
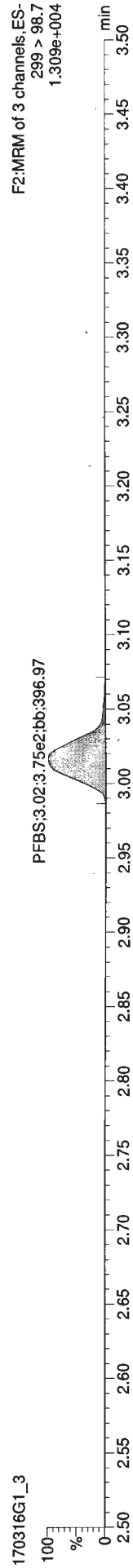
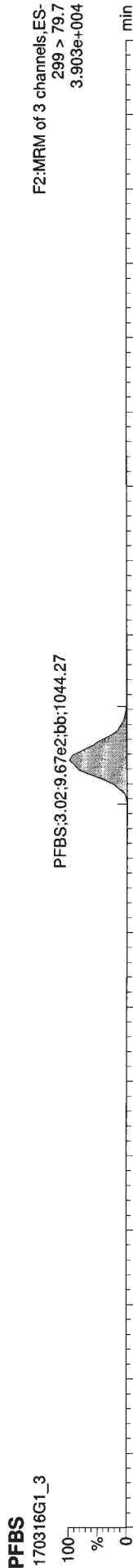
MassLynx 4.1 SCN815

Quantify Sample Report
Vista Analytical Laboratory Q1

Dataset: Untitled

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Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

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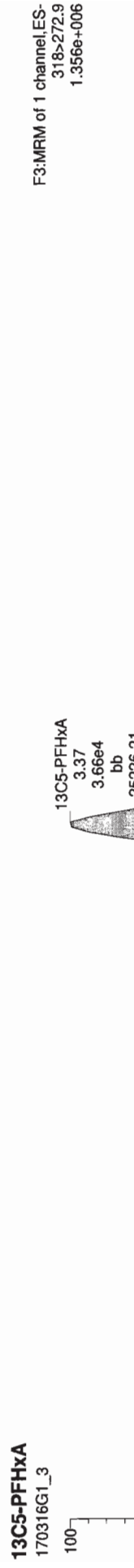
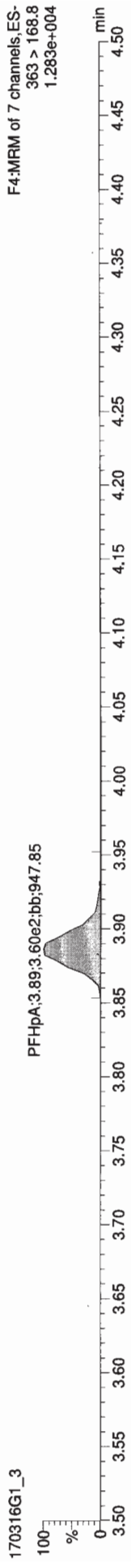
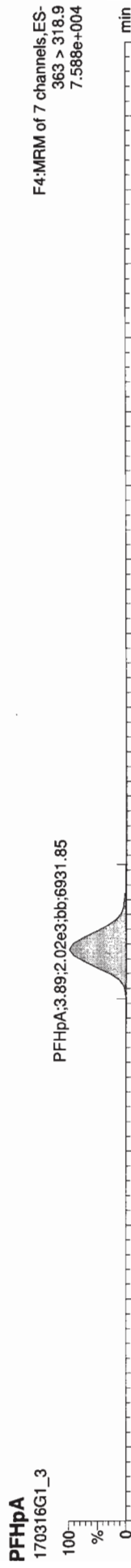


Quantify Sample Report
Vista Analytical Laboratory Q1

Dataset: Untitled

Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

ID: ST170316G1-2 PFC CS-1 17C1503, Description: PFC CS-1 17C1503 A, Name: 170316G1_3, Date: 16-Mar-2017, Time: 10:42:47, Instrument: , Lab: , User:

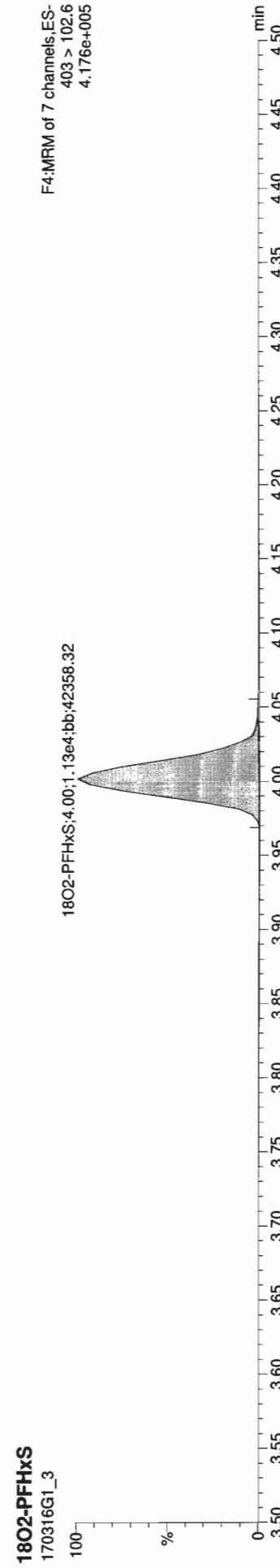
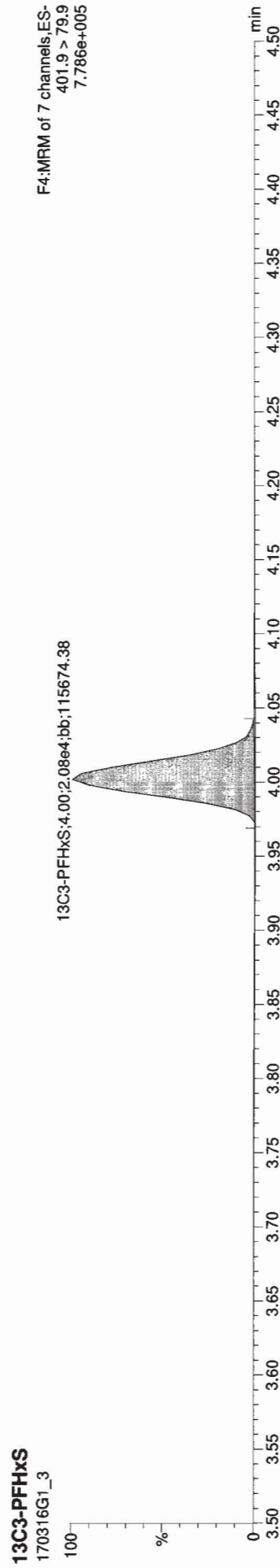
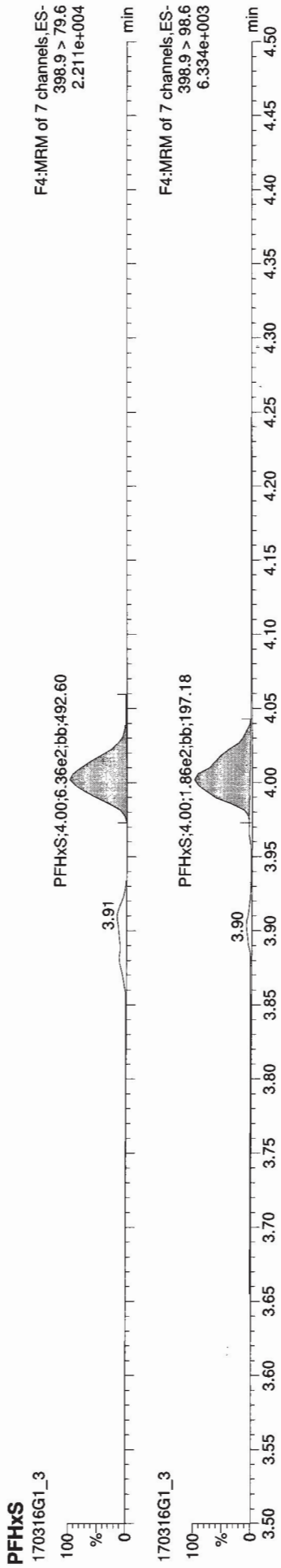


Quantity Sample Report
Vista Analytical Laboratory Q1

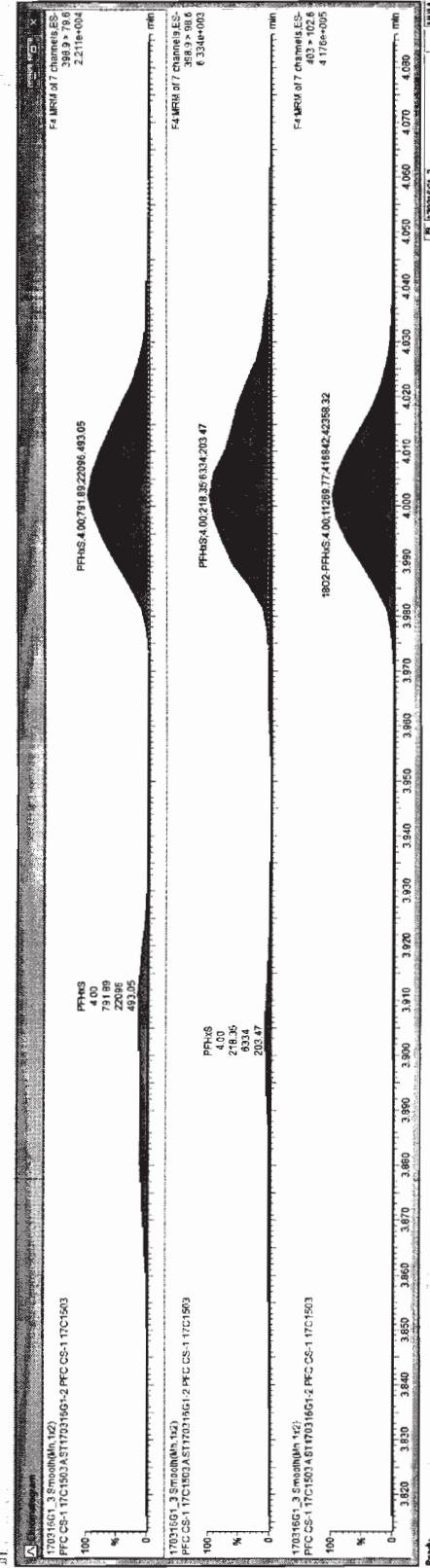
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ID: ST170316G1-2 PFC CS-1 17C1503, Description: PFC CS-1 17C1503 A, Name: 170316G1_3, Date: 16-Mar-2017, Time: 10:42:47, Instrument: , Lab: , User:



Name	Thick	Area	SP	WPAAL	Pred.RF	RT	Cont.	MFL	WPA	WPA	DI
1 PFTS	299 > 79.7	8.042		1.000	3.01	3.22	0.451	NO	ET.6		
2 PPHGA	503 > 318.9	2.050		1.000	3.19	3.68	0.448	NO	PA.8		
3 PPHGS	383 > 79.9	8.042		1.000	3.01	3.22	0.451	NO	PA.8		
4 PDA	413 > 387.7	1.973		1.000	4.28	4.28	0.451	NO	PA.2		
5 PPHGS	403 > 318.9	2.050		1.000	4.62	4.62	0.451	NO	PA.0		
6 PPHGS	403 > 318.9	2.050		1.000	3.01	3.01	0.451	NO	PA.0		
7 13C23-PHGA	307.2 > 321.8	1.584	0.91	1.000	2.99	3.01	0.451	NO	PA.0	0.1488011	
8 13C23-PHGA	307.2 > 321.8	2.894	1.24	1.000	3.89	3.89	0.451	NO	PA.0	0.1488012	
9 13C23-PHGS	403 > 318.9	1.584	0.92	1.000	4.00	4.00	0.451	NO	PA.0	0.1488012	
10 13C23-PHGA	414.9 > 369.7	4.594	3.22	1.000	4.28	4.28	0.451	NO	PA.0	0.1488012	
11 13C23-PHGA	468.2 > 422.9	1.344	0.97	1.000	4.62	4.62	0.451	NO	PA.0	0.1488012	
12 13C23-PHGS	507.8 > 79.9	8.042	1.96	1.000	4.68	4.68	0.451	NO	PA.0	0.1488012	
13 13C23-PHGA	318 > 272.9	3.694	1.96	1.000	3.29	3.27	0.451	NO	PA.0	0.1488012	
14 13C23-PHGS	401.9 > 79.9	2.894	1.96	1.000	3.94	4.00	0.451	NO	PA.0	0.1488012	
15 13C23-PHGA	421.3 > 376	2.894	1.96	1.000	4.22	4.28	0.451	NO	PA.0	0.1488012	
16 13C23-PHGA	422 > 426.9	2.584	1.96	1.000	4.56	4.62	0.451	NO	PA.0	0.1488012	
17 13C23-PHGS	403 > 318.9	2.050	1.96	1.000	3.97	4.08	0.451	NO	PA.0	0.1488012	
18 Total PPHGS	386.9 > 79.9	8.042		1.000	4.09	4.09	0.451	NO			
19 Total PPHGA	413 > 387.7	1.584		1.000	4.19	4.19	0.451	NO			
20 Total PPHGS	403 > 318.9	2.050		1.000	4.67	4.67	0.451	NO		0.1488011	



Name	Thick	Area	SP	WPAAL	Pred.RF	RT	Cont.	MFL	WPA	WPA	DI
1 PFTS	299 > 79.7	8.042		1.000	3.01	3.22	0.451	NO	ET.6		
2 PPHGA	503 > 318.9	2.050		1.000	3.19	3.68	0.448	NO	PA.8		
3 PPHGS	383 > 79.9	8.042		1.000	3.01	3.22	0.451	NO	PA.8		
4 PDA	413 > 387.7	1.973		1.000	4.28	4.28	0.451	NO	PA.2		
5 PPHGS	403 > 318.9	2.050		1.000	4.62	4.62	0.451	NO	PA.0		
6 PPHGS	403 > 318.9	2.050		1.000	3.01	3.01	0.451	NO	PA.0		
7 13C23-PHGA	307.2 > 321.8	1.584	0.91	1.000	2.99	3.01	0.451	NO	PA.0	0.1488011	
8 13C23-PHGA	307.2 > 321.8	2.894	1.24	1.000	3.89	3.89	0.451	NO	PA.0	0.1488012	
9 13C23-PHGS	403 > 318.9	1.584	0.92	1.000	4.00	4.00	0.451	NO	PA.0	0.1488012	
10 13C23-PHGA	414.9 > 369.7	4.594	3.22	1.000	4.28	4.28	0.451	NO	PA.0	0.1488012	
11 13C23-PHGA	468.2 > 422.9	1.344	0.97	1.000	4.62	4.62	0.451	NO	PA.0	0.1488012	
12 13C23-PHGS	507.8 > 79.9	8.042	1.96	1.000	4.68	4.68	0.451	NO	PA.0	0.1488012	
13 13C23-PHGA	318 > 272.9	3.694	1.96	1.000	3.29	3.27	0.451	NO	PA.0	0.1488012	
14 13C23-PHGS	401.9 > 79.9	2.894	1.96	1.000	3.94	4.00	0.451	NO	PA.0	0.1488012	
15 13C23-PHGA	421.3 > 376	2.894	1.96	1.000	4.22	4.28	0.451	NO	PA.0	0.1488012	
16 13C23-PHGA	422 > 426.9	2.584	1.96	1.000	4.56	4.62	0.451	NO	PA.0	0.1488012	
17 13C23-PHGS	403 > 318.9	2.050	1.96	1.000	3.97	4.08	0.451	NO	PA.0	0.1488012	
18 Total PPHGS	386.9 > 79.9	8.042		1.000	4.09	4.09	0.451	NO			
19 Total PPHGA	413 > 387.7	1.584		1.000	4.19	4.19	0.451	NO			
20 Total PPHGS	403 > 318.9	2.050		1.000	4.67	4.67	0.451	NO		0.1488011	

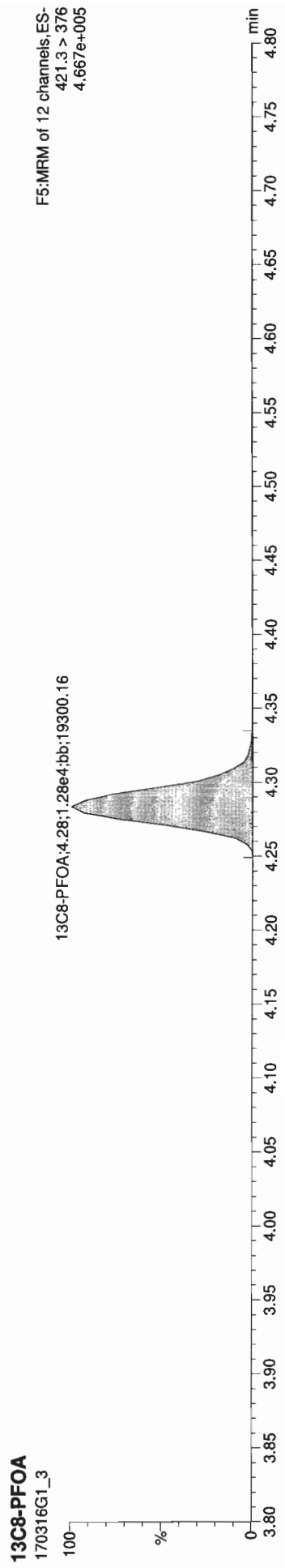
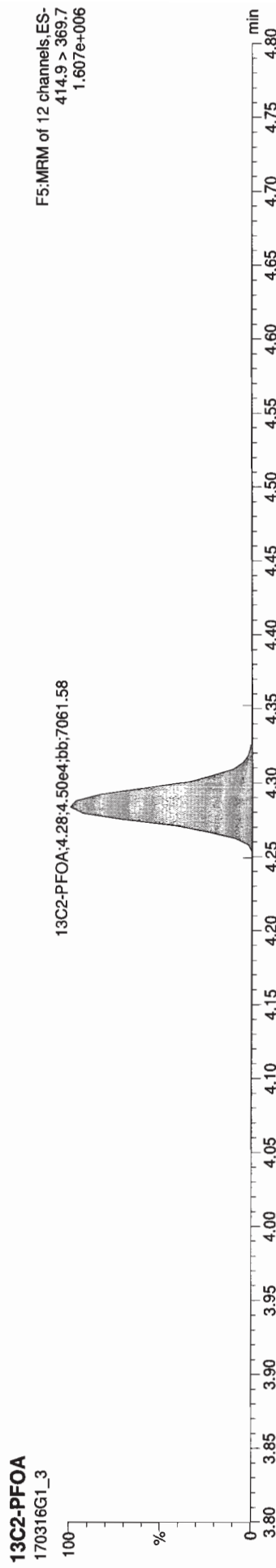
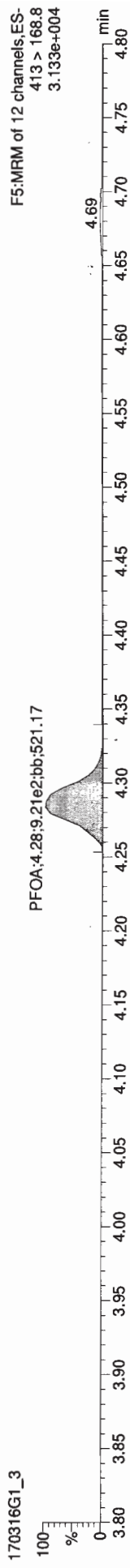
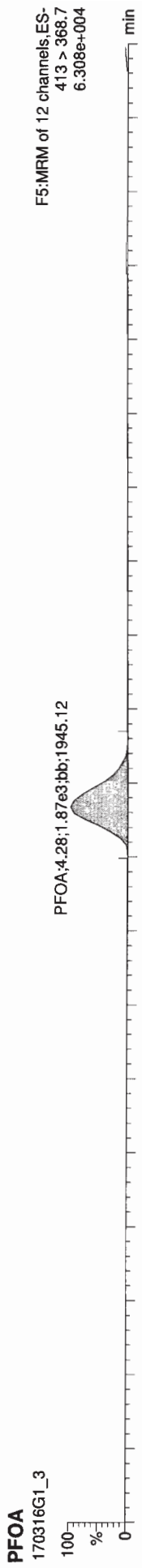


Quantify Sample Report
Vista Analytical Laboratory Q1

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ID: ST170316G1-2 PFC CS-1 17C1503, Description: PFC CS-1 17C1503 A, Name: 170316G1_3, Date: 16-Mar-2017, Time: 10:42:47, Instrument: , Lab: , User:



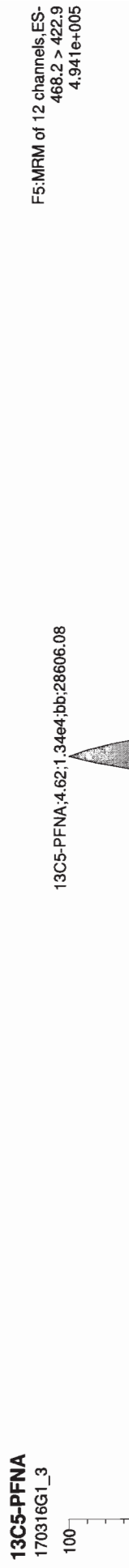
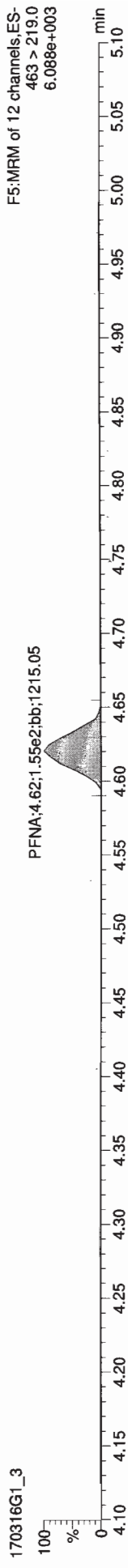
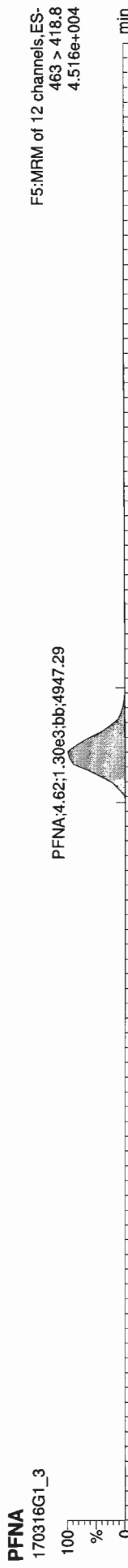
Quantify Sample Report

Vista Analytical Laboratory Q1

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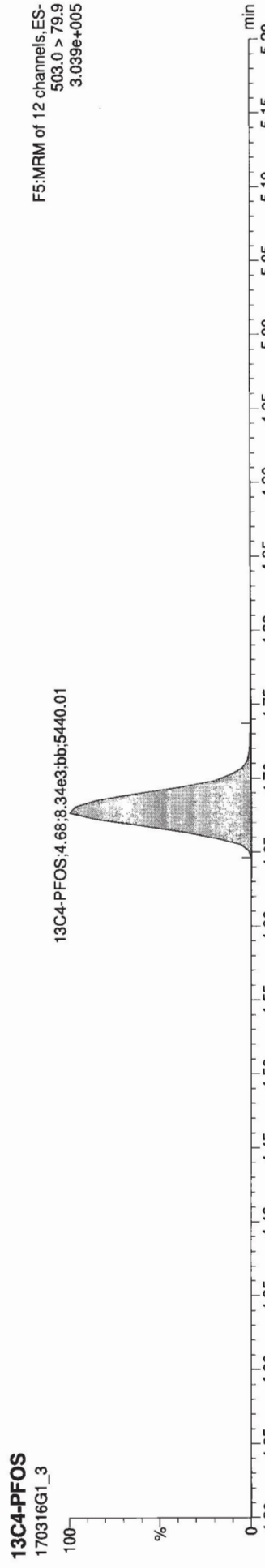
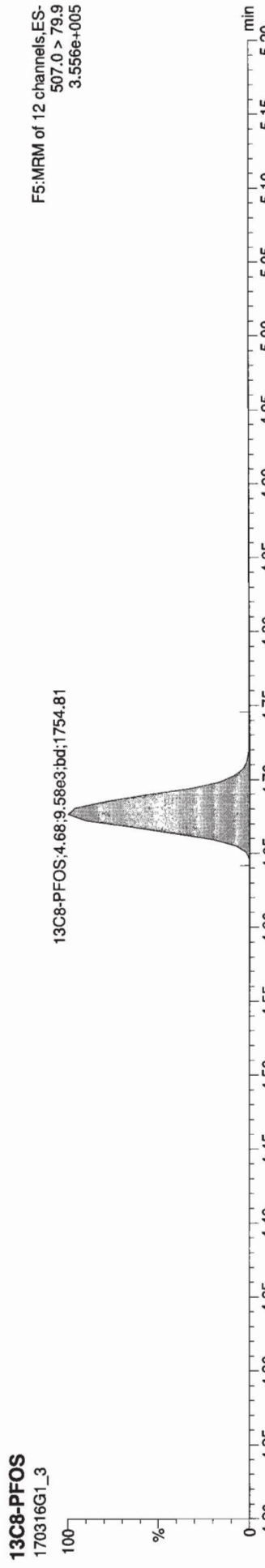
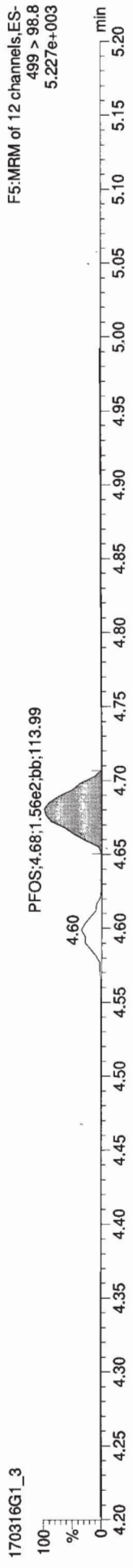
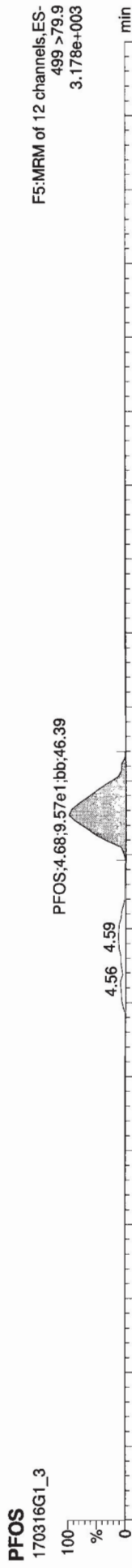
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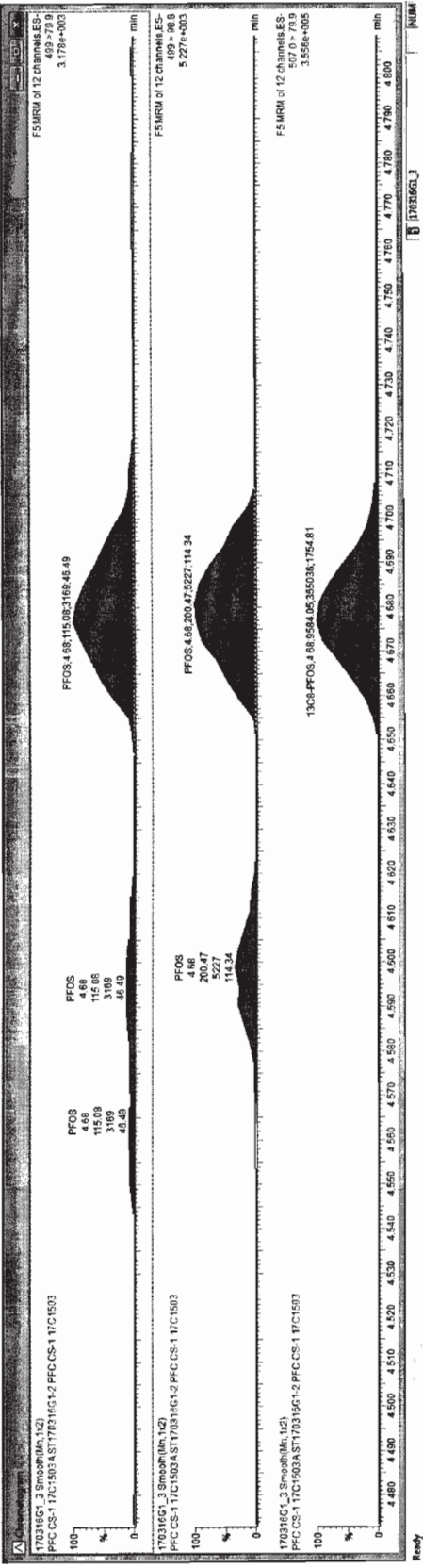
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170316C1_3_ST170316C1_2_PFC CS-1 17C1503 PFC CS-1 17C1503A

ID	Name	Track	Area	RF	MWMA	Pred BT	RT	Critic	MTC	Min-C	OK
1	PFBS	299 > 79.7	9.804	1.000	3.01	3.02	NO	0.439	NO	87.9	
2	PFPA	383 > 318.9	2.024	1.000	3.89	3.89	NO	0.449	NO	89.5	
3	PFPC	388.9 > 79.6	7.924	1.000	4.00	4.00	NO	0.443	NO	88.5	
4	PFDA	413 > 368.7	1.873	1.000	4.28	4.28	NO	0.431	NO	86.2	
5	PFPA	463 > 416.8	1.304	1.000	4.62	4.62	NO	0.475	NO	85.9	
6	PFBS	489 > 79.7	1.144	1.000	2.89	2.89	NO	0.469	NO	81.9	0.1488011
7	17C3-PFBS	302.3 > 80.3	1.154	0.951	3.01	3.01	NO	0.438	NO	110.1	0.0021264
8	17C3-PFPA	307.2 > 301.8	2.864	1.000	3.88	3.88	NO	0.481	NO	108.7	0.0053286
9	17C3-PFPC	403 > 368.7	1.194	1.000	4.30	4.30	NO	0.494	NO	109.4	0.0009912
10	17C3-PFDA	453 > 416.8	0.924	1.000	4.52	4.52	NO	0.501	NO	108.3	0.0017446
11	17C3-PFBS	468.2 > 62.9	1.344	0.970	3.00	3.00	NO	0.437	NO	108.5	0.0017262
12	17C3-PFPA	507.9 > 79.9	0.840	1.000	4.68	4.68	NO	0.484	NO	106.5	0.0017262
13	17C3-PFPC	518.272.9	0.864	1.000	3.29	3.29	NO	0.439	NO	100.0	0.0017388
14	17C3-PFDA	619.9 > 79.9	2.064	1.000	3.94	4.00	NO	0.425	NO	100.0	0.0002702
15	17C3-PFBS	621.3 > 378	1.284	1.000	4.22	4.28	NO	0.428	NO	100.0	0.0016192
16	17C3-PFPA	672.2 > 408.9	1.254	1.000	4.56	4.62	NO	0.425	NO	100.0	0.0352425
17	17C3-PFPC	503.9 > 79.9	6.340	1.000	4.67	4.68	NO	0.439	NO	100.0	0.0057445
18	Total PFBS	299 > 79.7	9.804	1.000	3.11						
19	Total PFPA	388.9 > 79.6	9.452	1.000	4.09						
20	Total PFPC	413 > 368.7	1.594	1.000	4.39						
21	Total PFDA	469 > 79.7	1.224	1.000	4.67						0.1488011

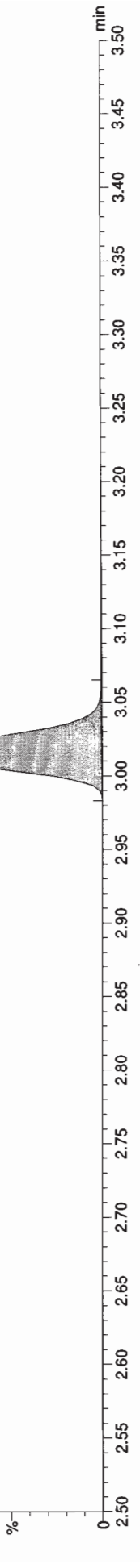
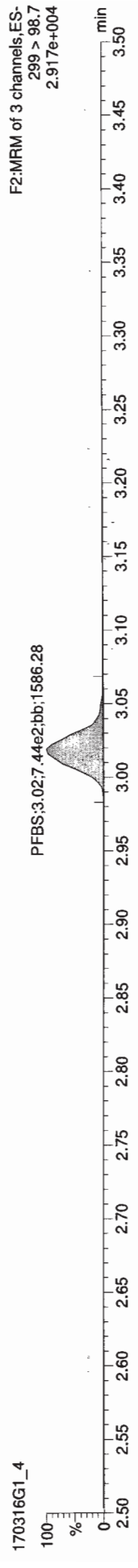
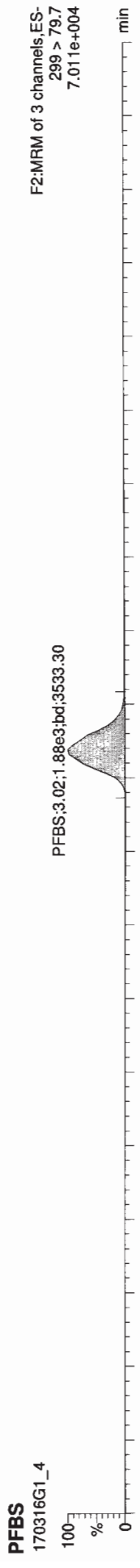


Quantify Sample Report
Vista Analytical Laboratory Q1

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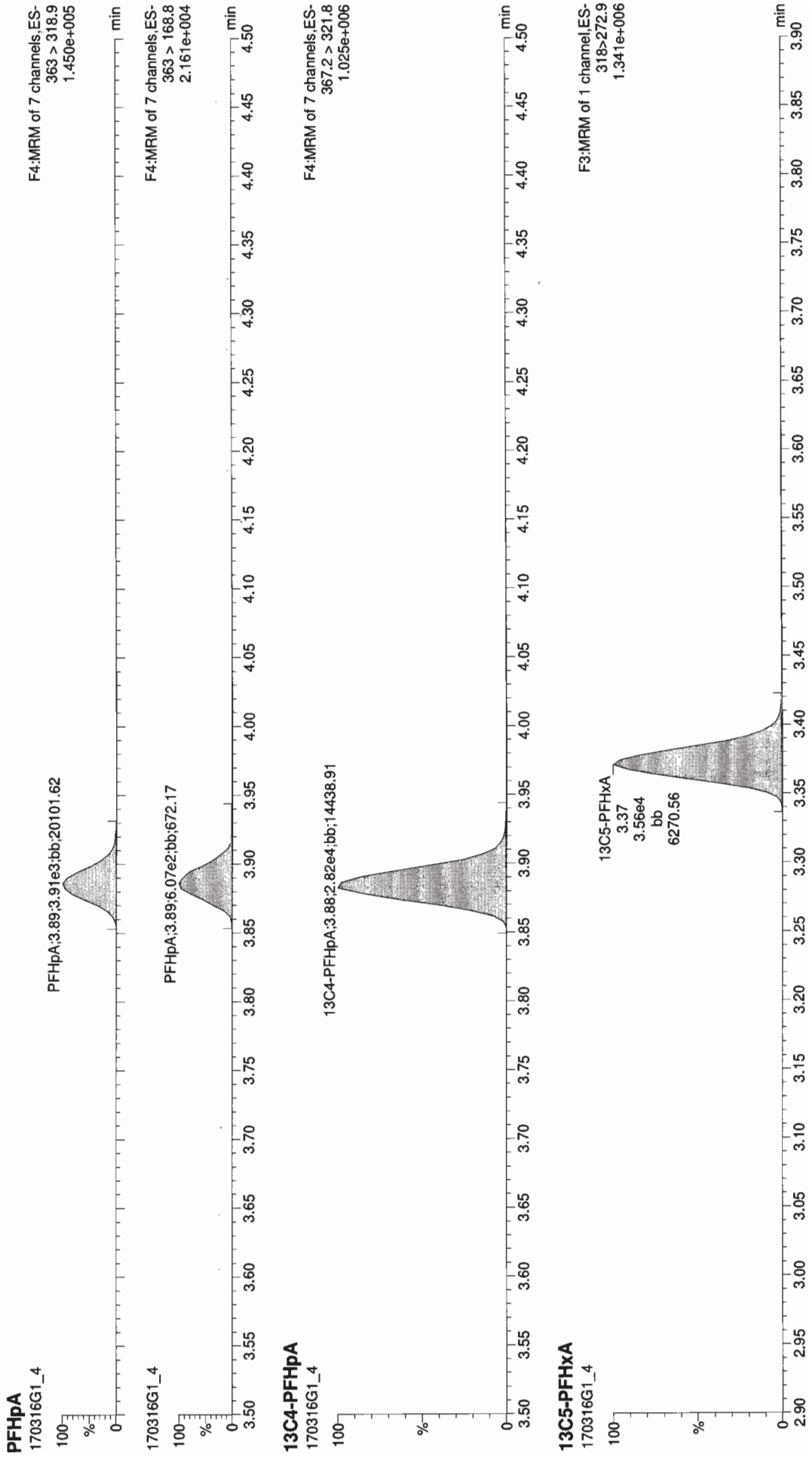


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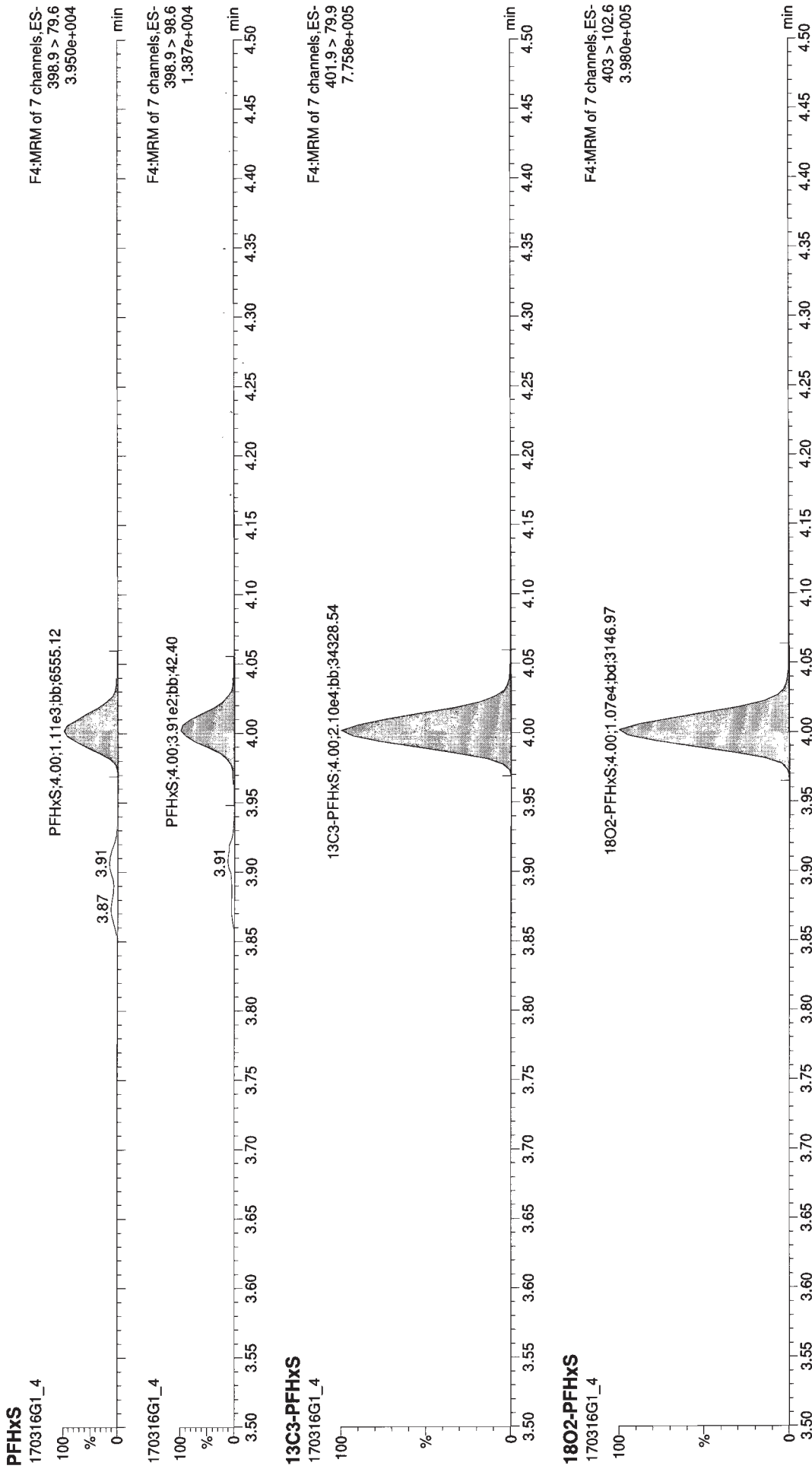


Quantify Sample Report
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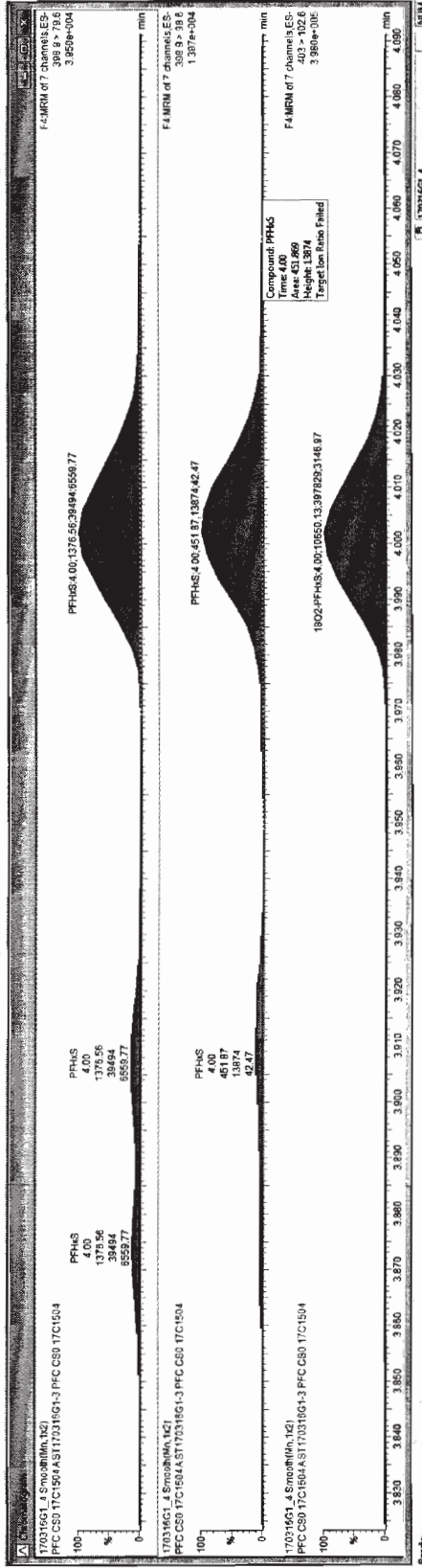
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Item	Name	Trace	Area	PPH	PPH/FT	RT	Conv.	MUL	%Rev	DA
1	PFBS	299 > 79.7	1.9643	1.000	3.02	3.02	0.934	NO	93.4	
2	PFPA	363 > 316.8	3.9163	1.000	3.68	3.69	0.929	NO	92.9	
3	PFOS	443.3 > 378.6	6.6193	1.000	4.00	4.01	0.997	NO	99.7	
4	PFOA	413 > 366.7	3.7163	1.000	4.28	4.28	0.912	NO	91.2	
5	PFNA	469 > 418.8	2.0903	1.000	4.62	4.62	0.964	NO	96.4	
6	PFDS	489 > 379.9	2.0903	1.000	4.66	4.66	1.02	NO	102.3	0.1493747
7	13C3-PFBS	362.9 > 361.8	1.0764	1.000	2.99	3.02	12.7	NO	101.7	0.0083920
8	13C3-PFPA	367.2 > 357.8	2.8264	1.000	3.58	3.68	13.6	NO	108.5	0.0023139
9	13C3-PFOS	414.9 > 369.9	4.4274	1.000	4.30	4.30	12.8	NO	102.4	0.0101178
10	13C3-PFOA	414.9 > 369.9	4.4274	1.000	4.22	4.22	11.6	NO	99.0	0.0120597
11	13C3-PFNA	468.2 > 422.9	1.1444	1.000	4.62	4.62	12.1	NO	97.1	0.0022184
12	13C3-PFDS	507.0 > 718.8	6.6563	1.000	4.68	4.68	12.5	NO	103.0	0.0010836
13	13C3-PFBS	318 > 272.9	2.8644	1.000	3.29	3.37	12.5	NO	103.0	0.0010836
14	13C3-PFPA	401.9 > 378.8	2.1044	1.000	3.94	4.00	12.5	NO	103.0	0.0010836
15	13C3-PFOS	421.3 > 378.8	1.3444	1.000	4.22	4.28	12.5	NO	103.0	0.0010836
16	13C3-PFOA	472.2 > 426.8	1.2644	1.000	4.56	4.62	12.5	NO	103.0	0.0012402
17	13C4-PFOS	583.9 > 79.9	6.5363	1.000	4.87	4.68	12.5	NO	103.0	0.0455233
18	Total PFBS	299 > 79.7	1.9643	1.000	3.11	4.68	0.934	NO		
19	Total PFPA	363 > 316.8	3.9163	1.000	4.99	4.68	0.933	NO		
20	Total PFOS	413 > 366.7	3.7163	1.000	4.39	4.62	0.912	NO		
21	Total PFOA	413 > 366.7	2.0903	1.000	4.67	4.62	1.23	NO		0.1493747

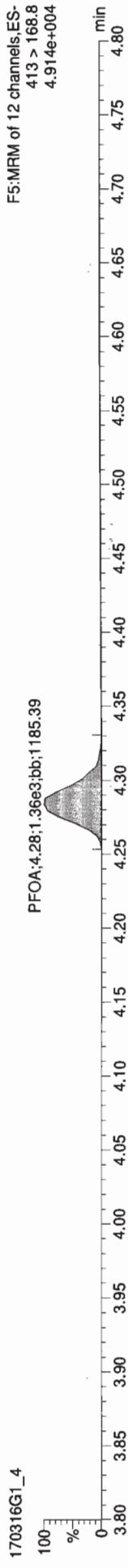


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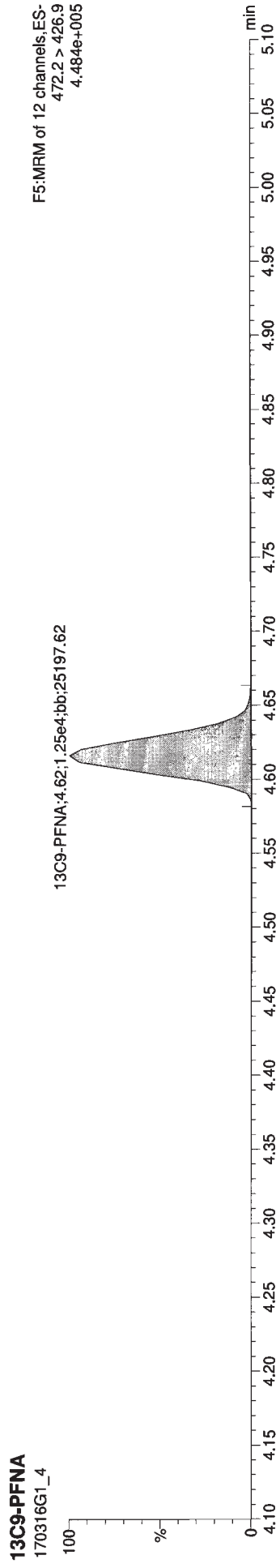
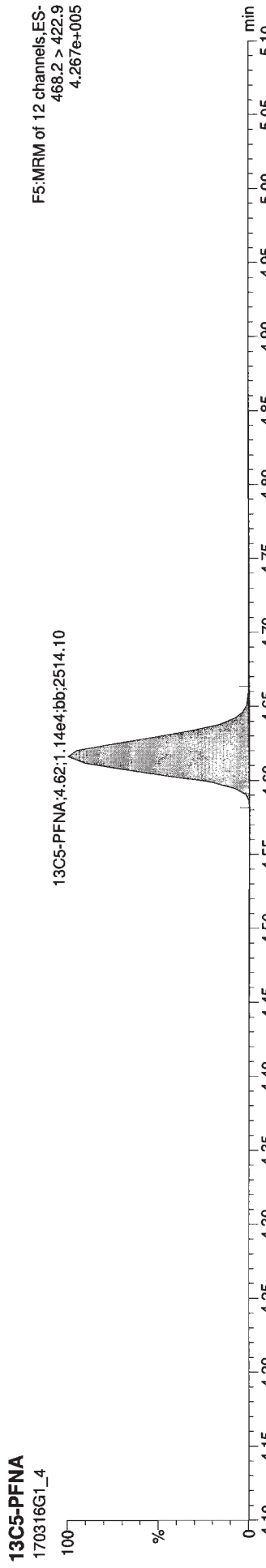
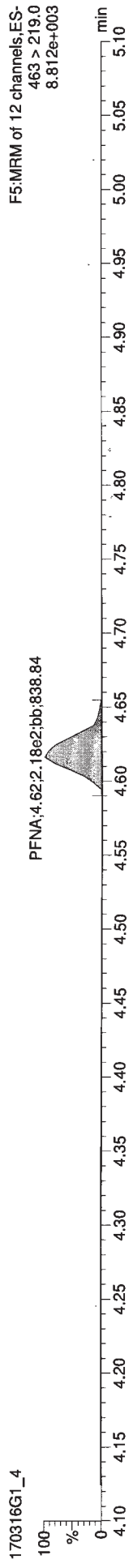
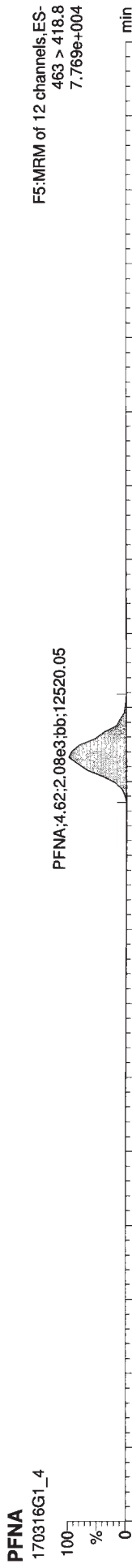
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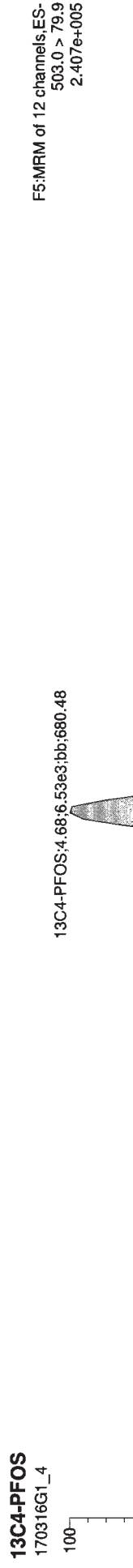
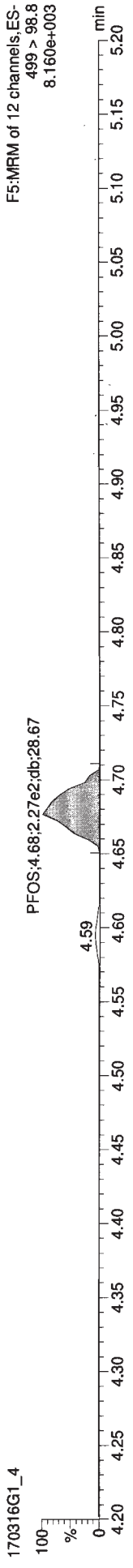
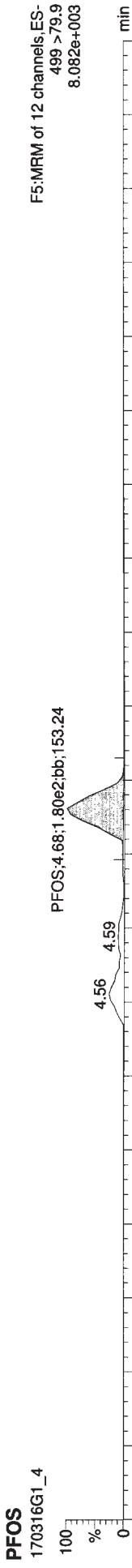


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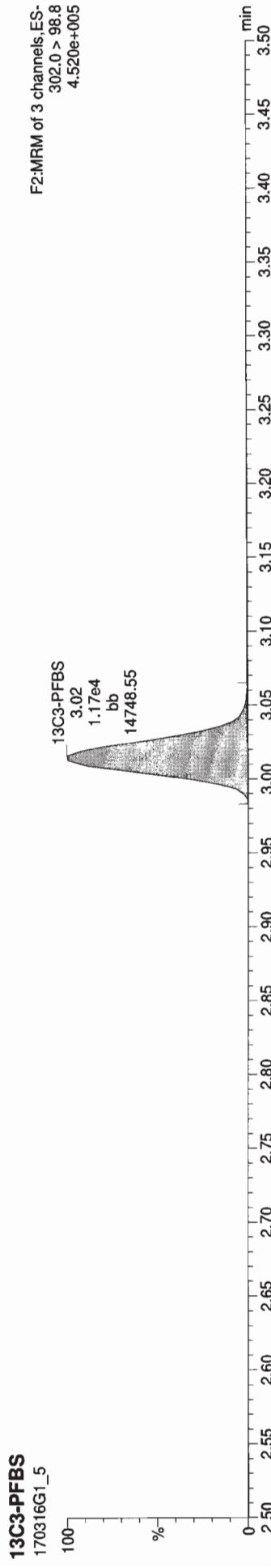
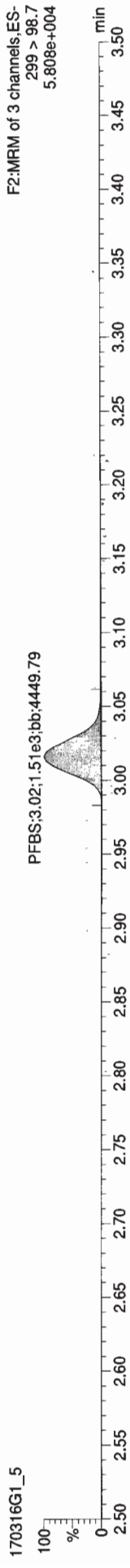
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ID: ST170316G1-4 PFC CS1 17C1505, Description: PFC CS1 17C1505 A, Name: 170316G1_5, Date: 16-Mar-2017, Time: 11:07:54, Instrument: , Lab: , User:

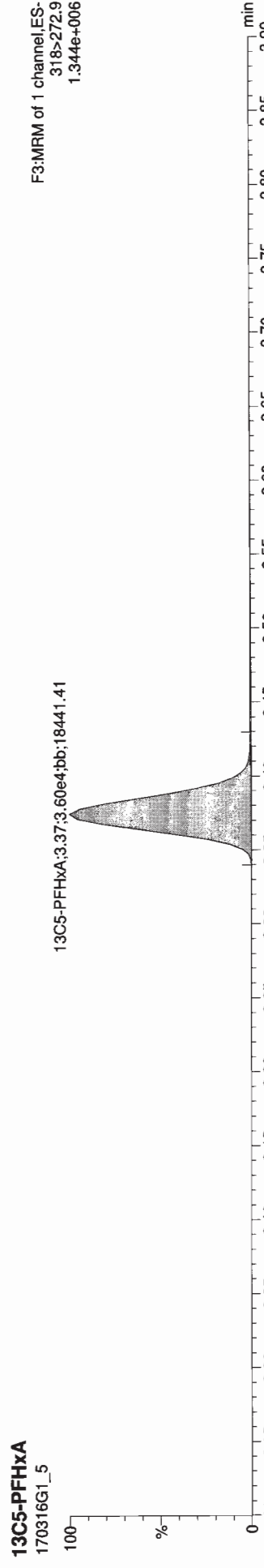
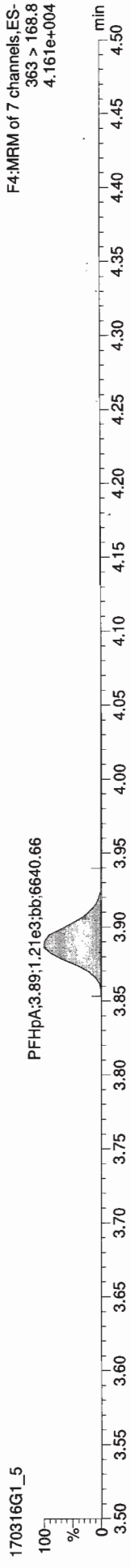
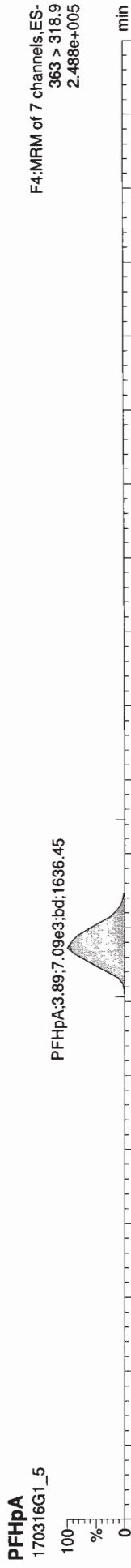


Quantify Sample Report
Vista Analytical Laboratory Q1

Dataset: Untitled

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Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

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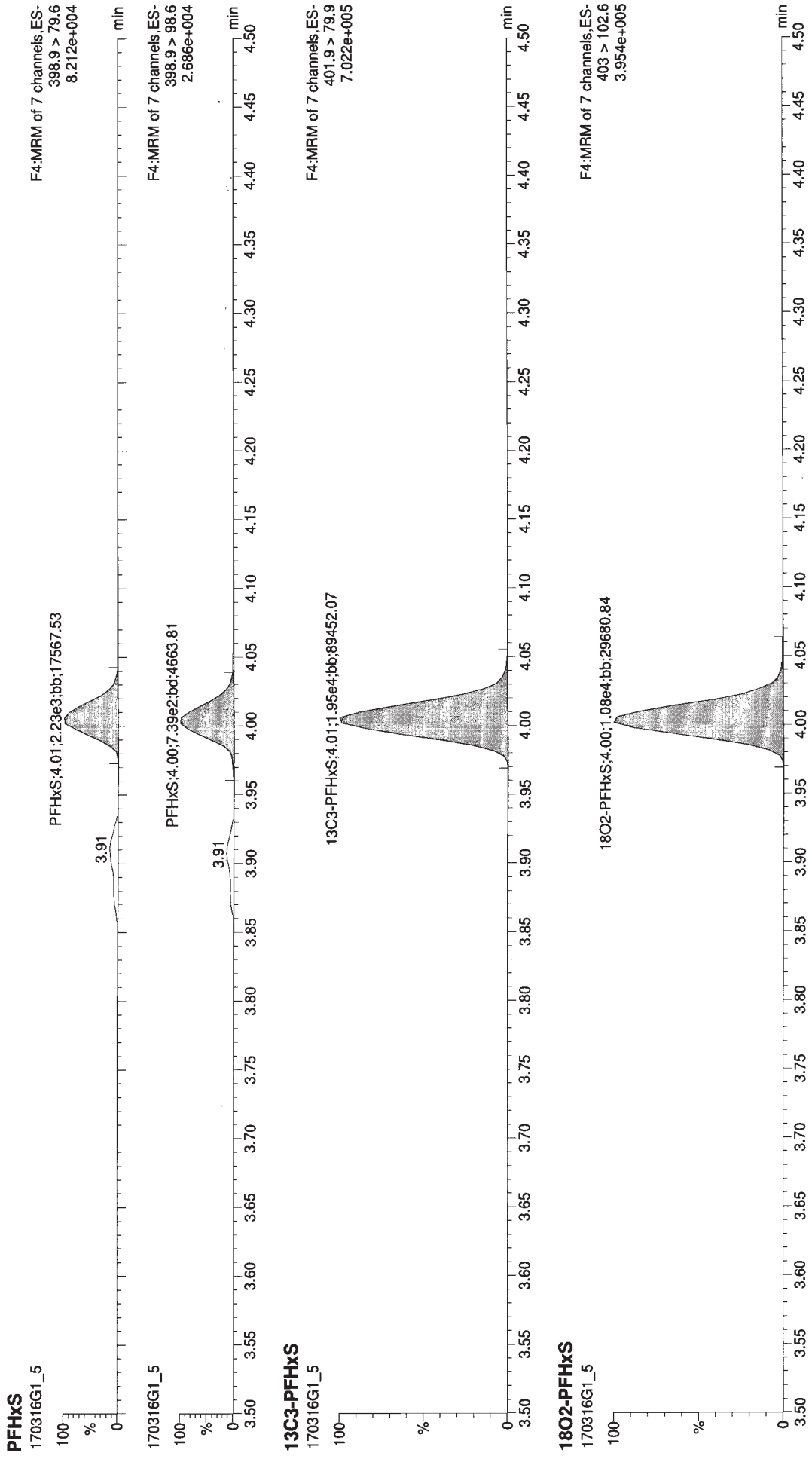


Quantify Sample Report
Vista Analytical Laboratory Q1

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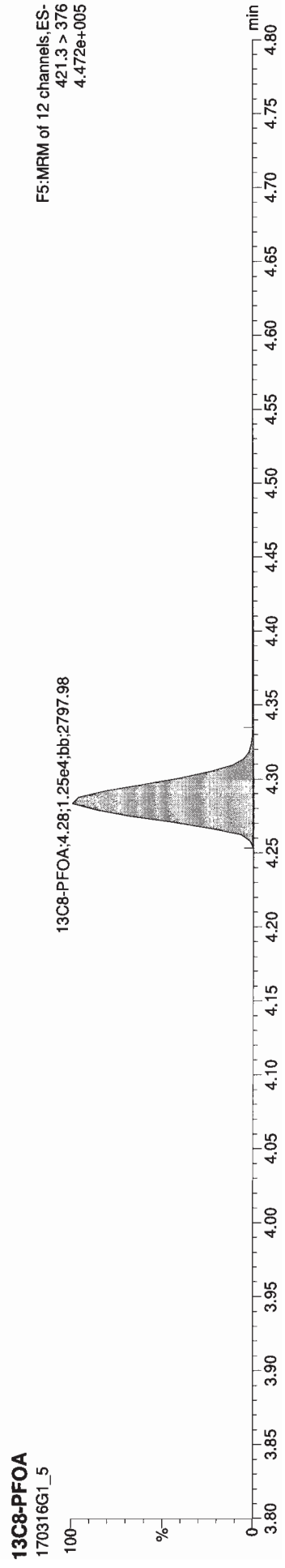
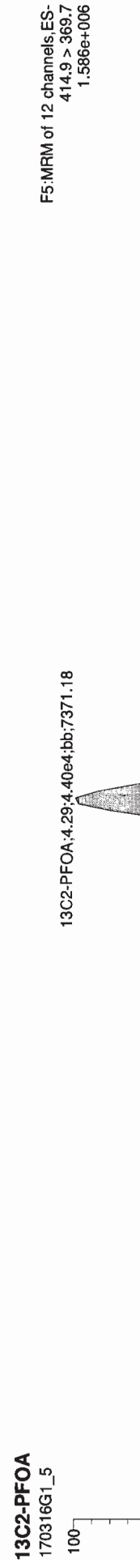
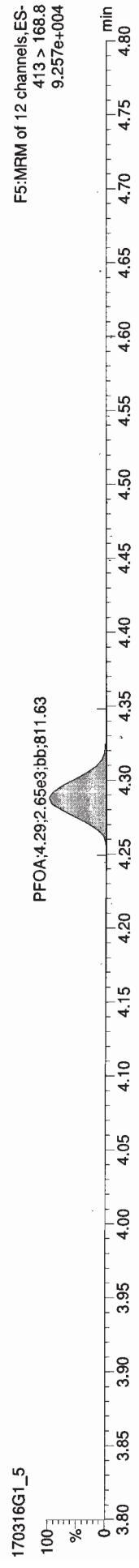
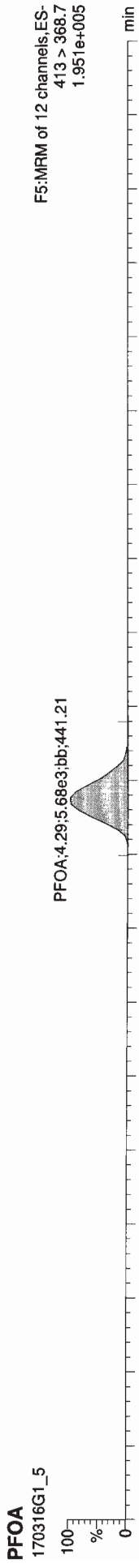
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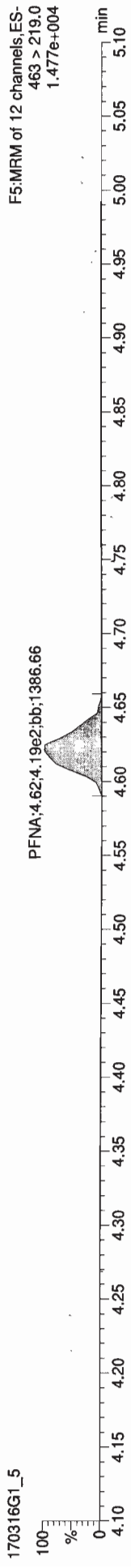
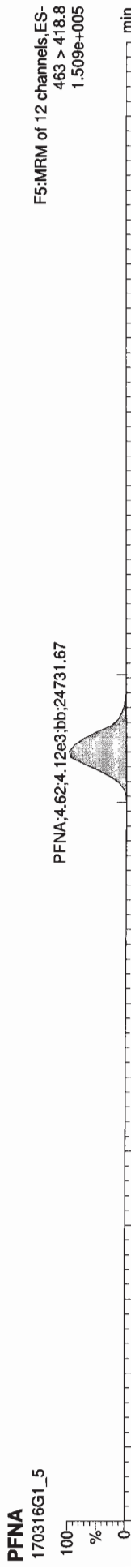
MassLynx 4.1 SCN815

Quantify Sample Report
Vista Analytical Laboratory Q1

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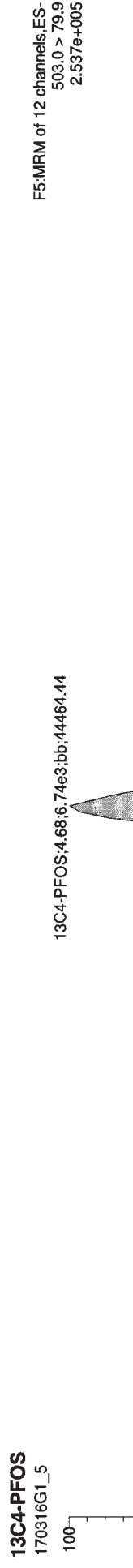
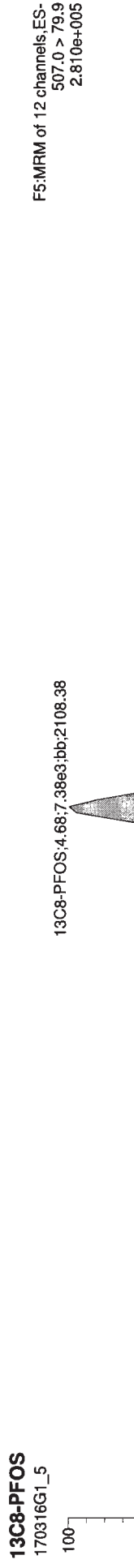
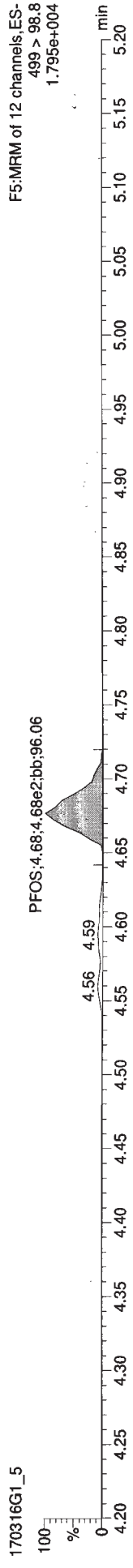
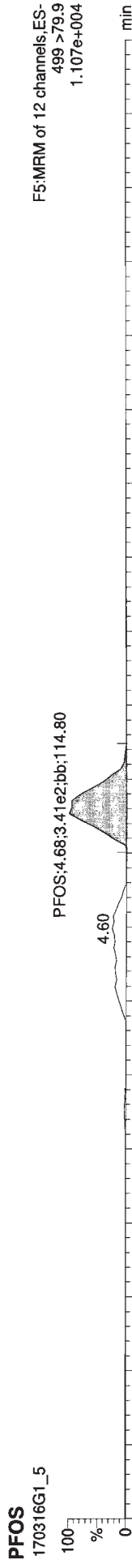
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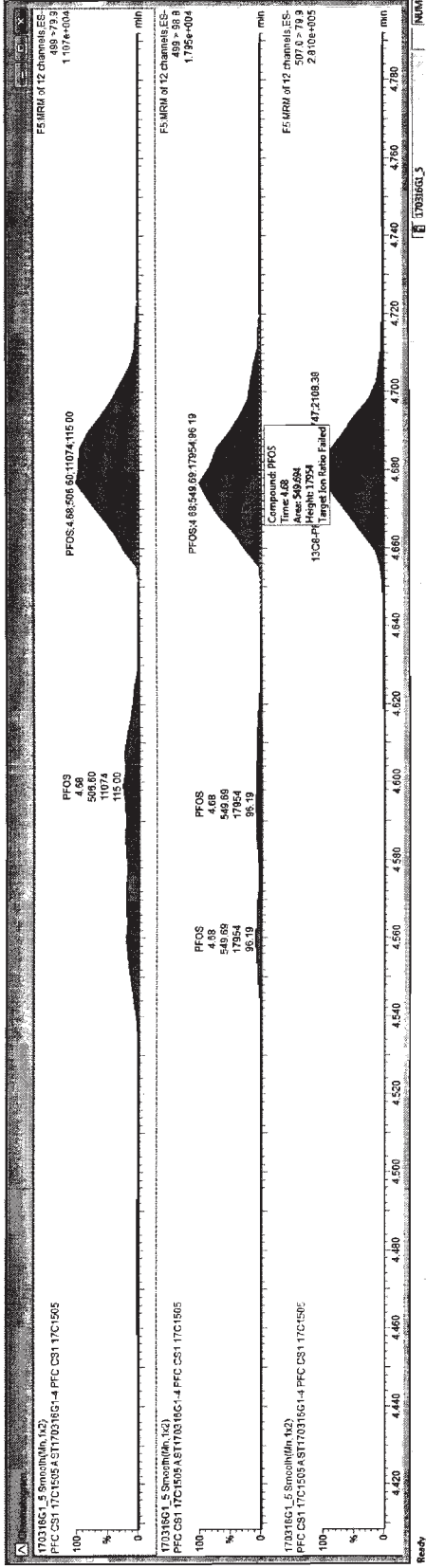
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170316G1_5-ST170316G14-PFC-CS117C1505-PFC-CS117C1506A

SI	Mass	Wt%	Area	RF	Wt%	Pred RT	RT	Conc.	WOL	%Rec	DL
1	PFOS	299.7 > 79.7	3.81e3	1.000	3.02	3.02	1.76	NO	NO	85.1	
2	PFHxA	383.3 > 161.8	7.07e3	1.000	3.89	3.89	1.06	NO	NO	83.1	
3	PFHxS	388.9 > 191.6	2.78e3	1.000	4.01	4.01	1.79	NO	NO	87.9	
4	PFDA	413.3 > 368.7	5.88e3	1.000	4.29	4.29	1.69	NO	NO	84.4	
5	PFNA	463.3 > 416.8	4.12e3	1.000	4.62	4.62	1.80	NO	NO	89.8	
6	PFOS	502.9 > 188.1	1.17e4	1.000	2.99	3.02	14.9	NO	NO	119.6	0.1574016
7	PFHxS	507.2 > 301.8	2.95e4	1.000	3.89	3.89	15.3	NO	NO	122.1	0.0659352
8	PFHxA	513.3 > 368.7	4.12e3	1.000	4.31	4.31	14.0	NO	NO	111.5	0.0111986
9	PFOS	513.3 > 368.7	4.12e3	1.000	4.31	4.31	14.0	NO	NO	111.5	0.0111986
10	PFHxS	513.3 > 368.7	4.12e3	1.000	4.31	4.31	14.0	NO	NO	111.5	0.0111986
11	PFHxA	513.3 > 368.7	4.12e3	1.000	4.31	4.31	14.0	NO	NO	111.5	0.0111986
12	PFOS	507.2 > 301.8	2.95e4	1.000	3.89	3.89	15.3	NO	NO	122.1	0.0659352
13	PFHxS	507.2 > 301.8	2.95e4	1.000	3.89	3.89	15.3	NO	NO	122.1	0.0659352
14	PFHxA	507.2 > 301.8	2.95e4	1.000	3.89	3.89	15.3	NO	NO	122.1	0.0659352
15	PFOS	421.3 > 176	1.25e4	1.000	4.22	4.29	12.5	NO	NO	100.0	0.0111986
16	PFHxA	472.2 > 426.9	1.15e4	1.000	4.56	4.62	12.5	NO	NO	100.0	0.0069303
17	PFOS	503.9 > 79.9	6.74e3	1.000	4.87	4.88	12.5	NO	NO	100.0	0.0007026
18	Total PFOS	299.7 > 79.7	3.81e3	1.000	3.11		1.76	NO	NO		
19	Total PFHxA	388.9 > 191.6	3.31e3	1.000	4.09		2.00	NO	NO		
20	Total PFHxS	413.3 > 368.7	5.71e3	1.000	4.39		1.69	NO	NO		
21	Total PFDA	463.3 > 416.8	6.63e3	1.000	4.67		2.44	NO	NO		



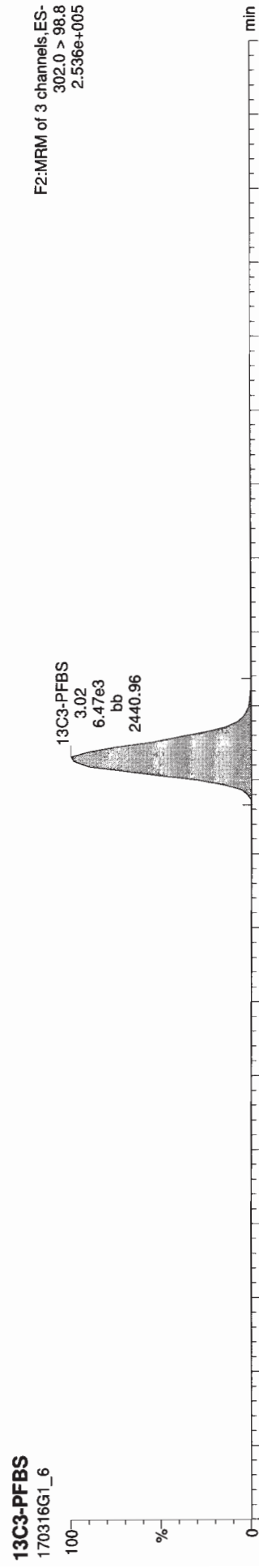
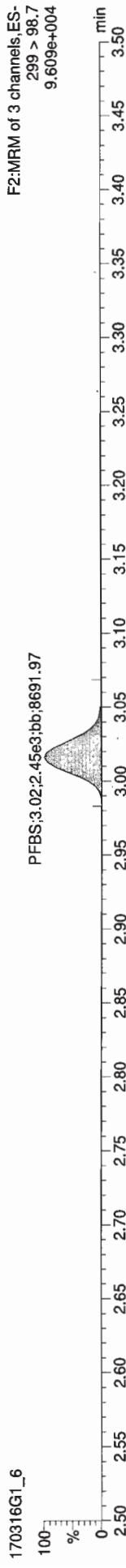
Quantify Sample Report

Vista Analytical Laboratory Q1

Dataset: Untitled

Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

ID: ST170316G1-5 PFC CS2 17C1603, Description: PFC CS2 17C1603 A, Name: 170316G1_6, Date: 16-Mar-2017, Time: 11:20:35, Instrument: , Lab: , User:

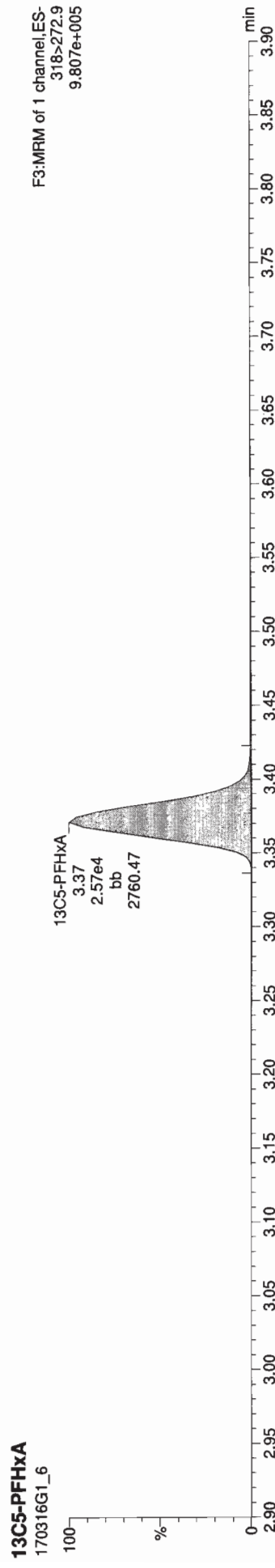
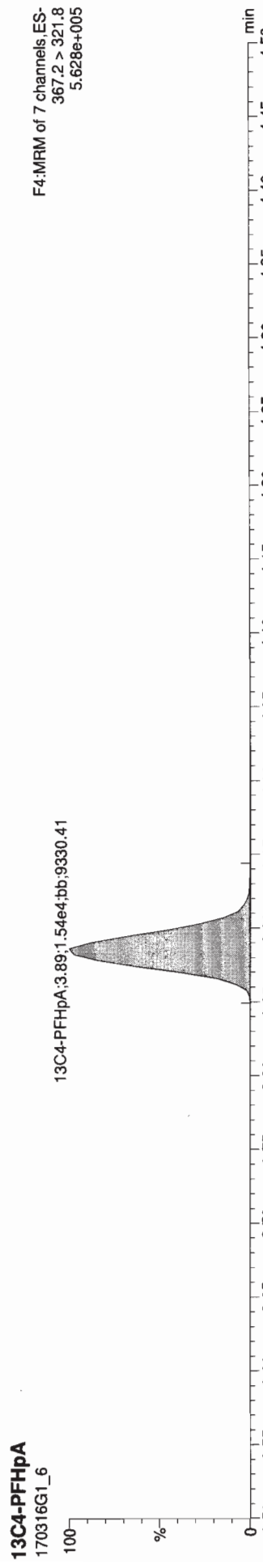
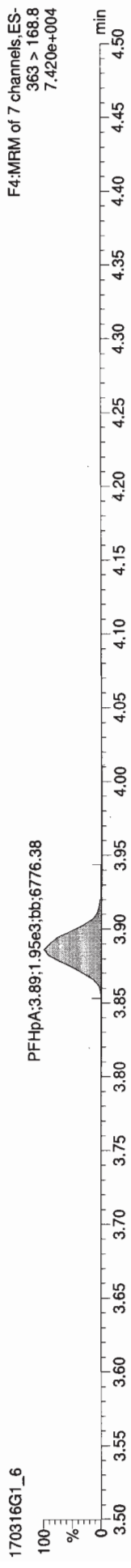
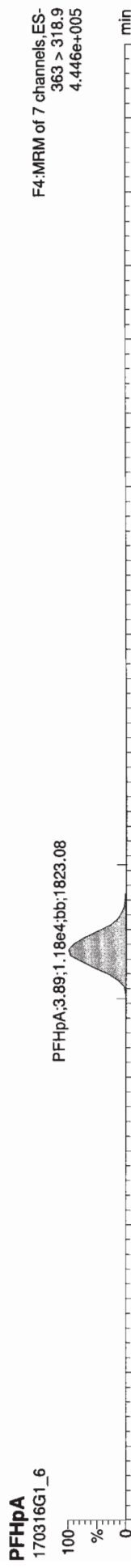


Quantify Sample Report
Vista Analytical Laboratory Q1

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Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

ID: ST170316G1-5 PFC CS2 17C1603, Description: PFC CS2 17C1603 A, Name: 170316G1_6, Date: 16-Mar-2017, Time: 11:20:35, Instrument: , Lab: , User:



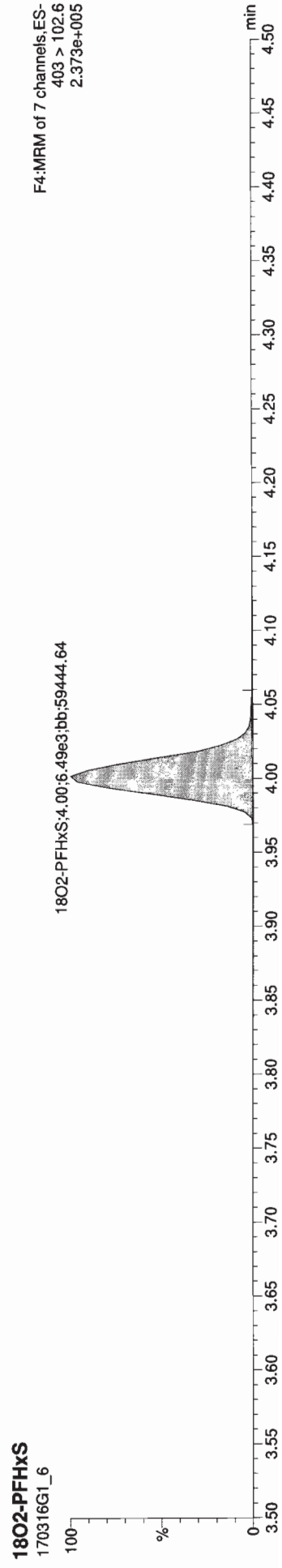
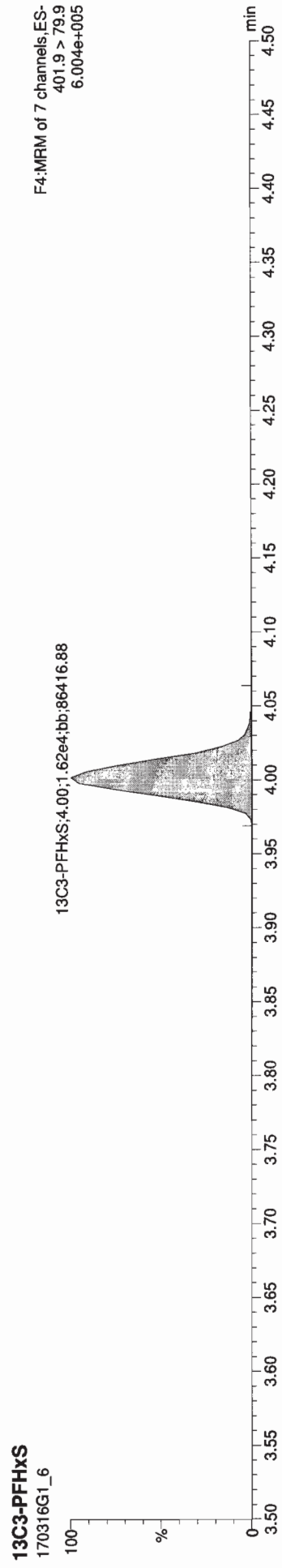
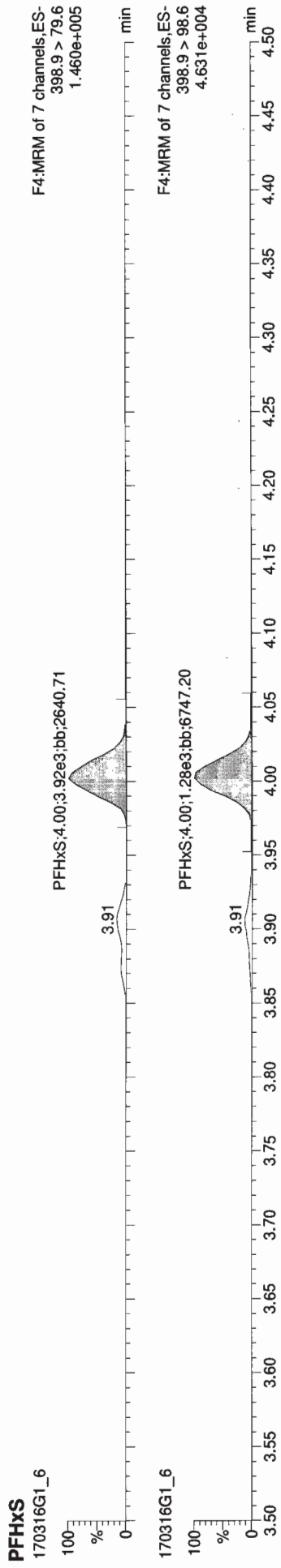
Quantify Sample Report

Vista Analytical Laboratory Q1

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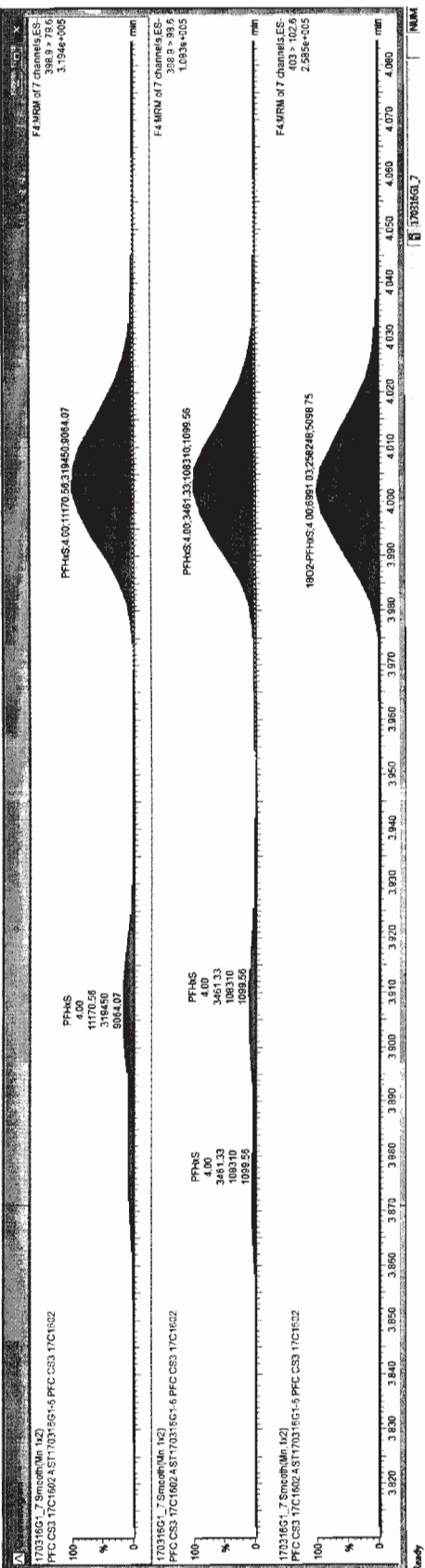
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Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

ID: ST170316G1-5 PFC CS2 17C1603, Description: PFC CS2 17C1603 A, Name: 170316G1_6, Date: 16-Mar-2017, Time: 11:20:35, Instrument: , Lab: , User:



170316G1.7 - S1170316D1-6 PFC CS3 17C1602 - PFC CS3 17C1602A

ID	Name	Yield	Area	Wt%	Area	Wt%	RT	Exc.	Int.	%MS	DE
1	PFBS	229.717	1.464	1.000	3.32	12.2	12.17	12.2	12.17		
2	PFBA	521.319	2.744	1.000	3.32	12.2	12.17	12.2	12.17		
3	PFPA	582.819	3.088	1.000	4.26	12.2	12.17	12.2	12.17		
4	PFNA	413.263	2.264	1.000	4.26	12.2	12.17	12.2	12.17		
5	PFDA	463.438	2.704	1.000	4.26	12.2	12.17	12.2	12.17		
6	PFOA	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
7	PFOA	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
8	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
9	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
10	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
11	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
12	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
13	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
14	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
15	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
16	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
17	PFOS	469.779	2.744	1.000	4.26	12.2	12.17	12.2	12.17		
18	Total PFBS	229.717	1.464	1.000	3.11	12.2	NO	12.2	NO		
19	Total PFBA	521.319	2.744	1.000	4.09	12.2	NO	12.2	NO		
20	Total PFPA	413.263	2.264	1.000	4.39	12.2	NO	12.2	NO		
21	Total PFOA	469.779	2.744	1.000	4.67	12.2	NO	12.2	NO		

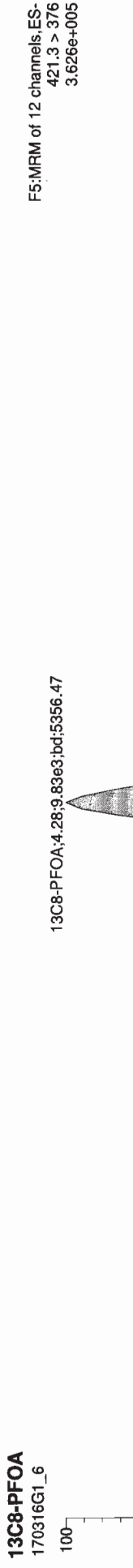
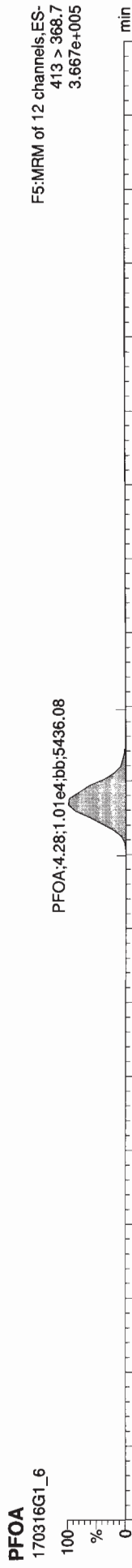


Quantify Sample Report
Vista Analytical Laboratory Q1

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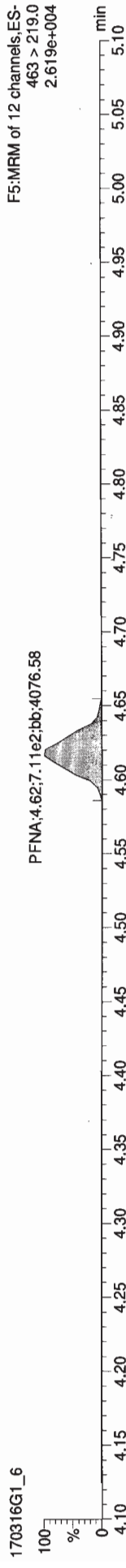
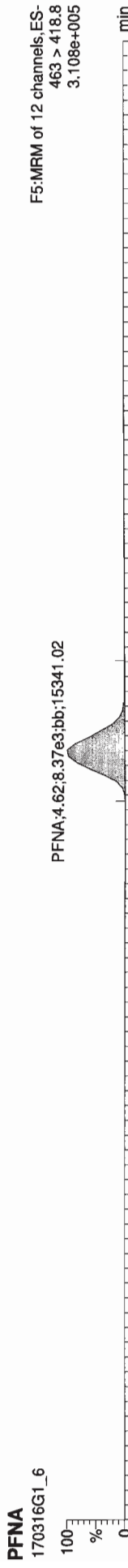
Quantify Sample Report

Vista Analytical Laboratory Q1

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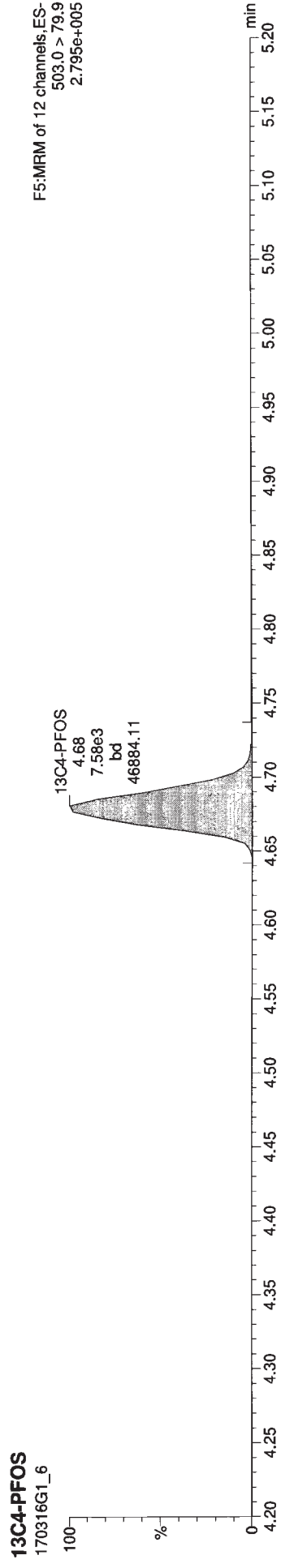
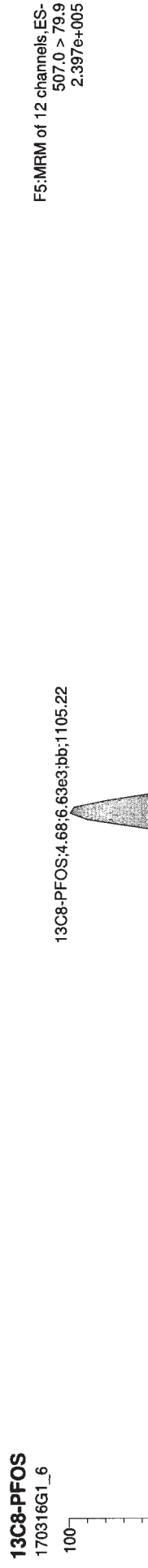
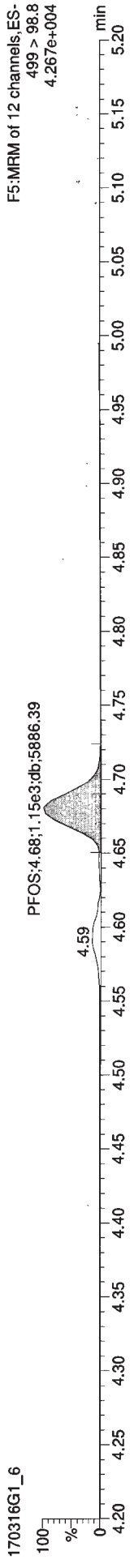
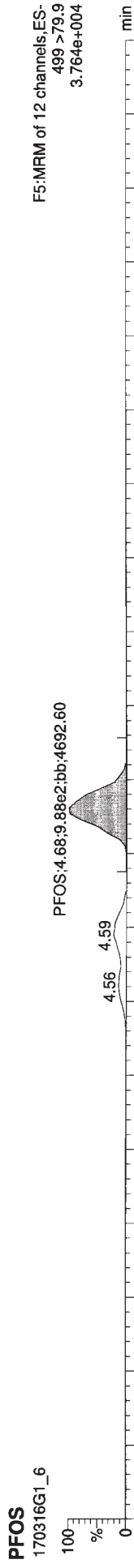


Quantity Sample Report
Vista Analytical Laboratory Q1

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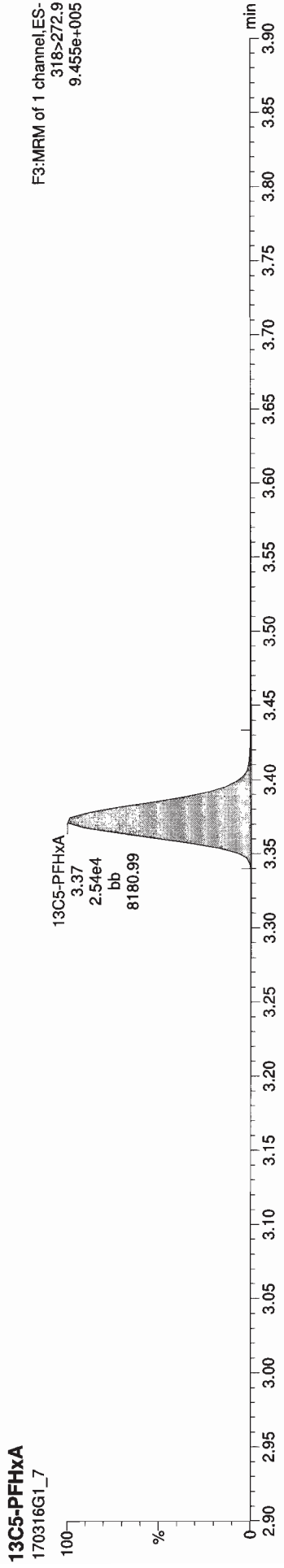
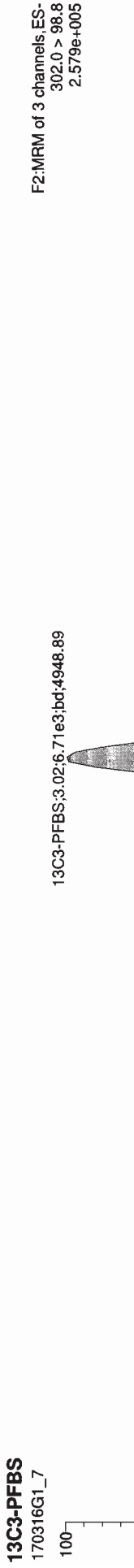
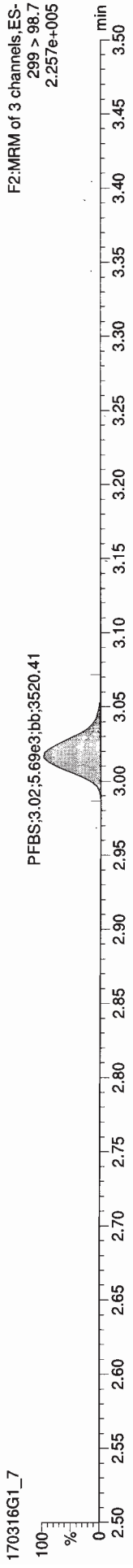
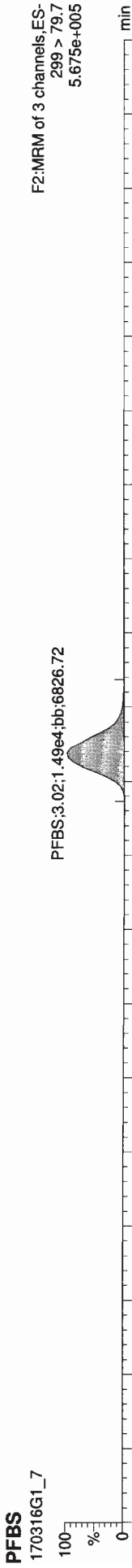
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Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

ID: ST170316G1-6 PFC CS3 17C1602, Description: PFC CS3 17C1602 A, Name: 170316G1_7, Date: 16-Mar-2017, Time: 11:33:10, Instrument: , Lab: , User:

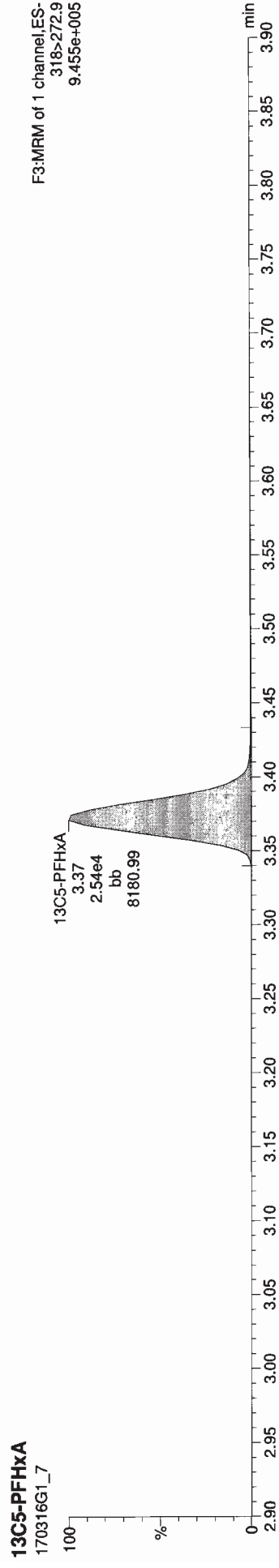
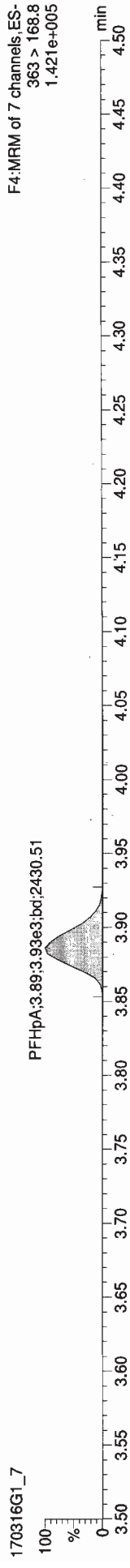
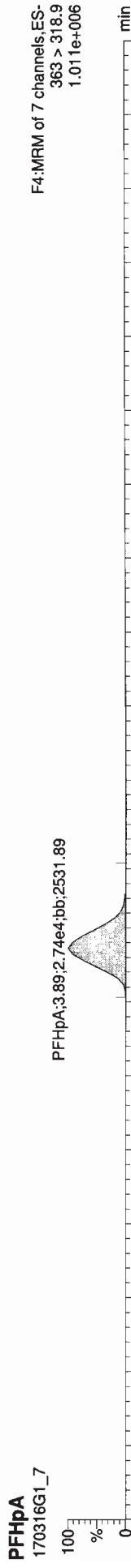


Quantify Sample Report
Vista Analytical Laboratory Q1

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Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
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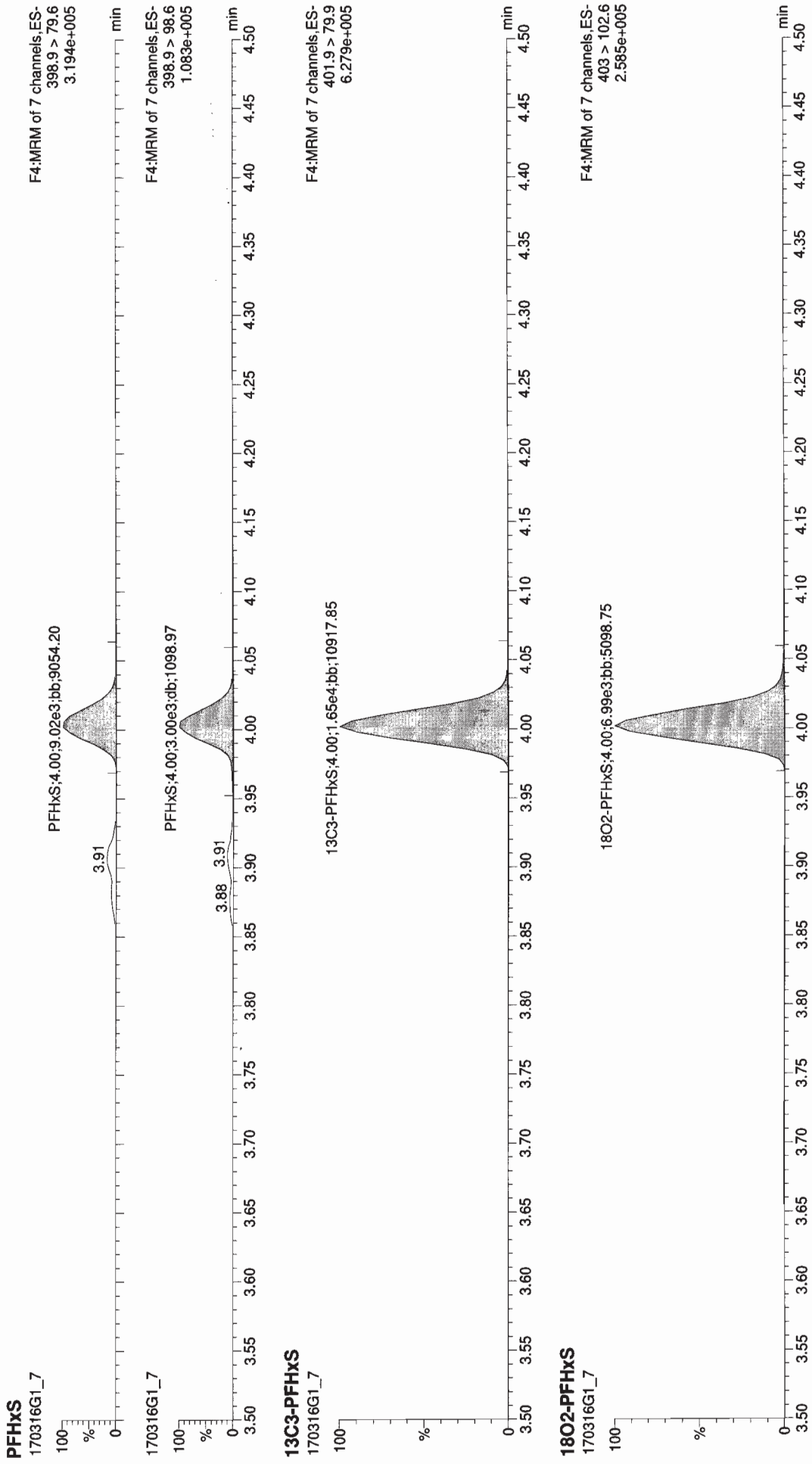
Quantify Sample Report
MassLynx 4.1 SCN815

Vista Analytical Laboratory Q1

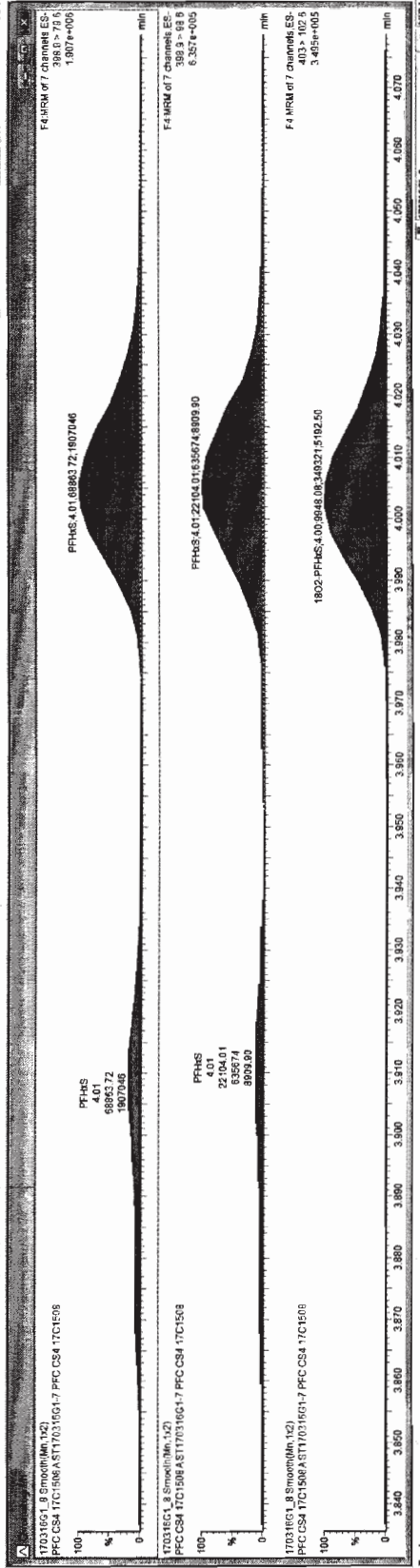
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Item	Name	Track	Area	BRF	WVHL	Prod RT	RT	Comp	MLC	WVSL	DL
1	PFSS	299 > 79.7	8.2544		1.000	3.02	4.77	YES	96.5	0.0000000	
2	PFPGA	300 > 216.9	1.7245		1.000	3.98	5.12	YES	102.3	0.0000000	
3	PFPHS	308.9 > 79.6	6.8644		1.000	4.00	4.91	YES	97.0	0.0000000	
4	PFDA	413 > 305.7	1.2652		1.000	4.29	4.82	YES	96.6	0.0000000	
5	PFDA	403 > 418.8	1.2652		1.000	4.62	4.82	YES	102.3	0.0000000	
6	PFSS	409 > 79.9	2.1144		1.000	4.08	4.68	YES	99.7	0.1137419	
7	PFSS	409 > 79.9	2.1144		1.000	3.08	3.22	NO	97.1	0.0086822	
8	PFSS	409 > 79.9	2.1144		1.000	3.08	3.22	NO	97.1	0.0086822	
9	PFSS	409 > 79.9	2.1144		1.000	4.01	4.00	NO	104.1	0.2981128	
10	PFSS	409 > 79.9	2.1144		1.000	4.01	4.00	NO	104.1	0.2981128	
11	PFSS	409 > 79.9	2.1144		1.000	4.02	4.62	NO	103.1	0.0010323	
12	PFSS	409 > 79.9	2.1144		1.000	4.08	4.68	NO	102.0	0.0072801	
13	PFSS	409 > 79.9	2.1144		1.000	3.20	3.30	NO	100.0	0.0013842	
14	PFSS	409 > 79.9	2.1144		1.000	3.94	4.01	NO	100.0	0.0011898	
15	PFSS	409 > 79.9	2.1144		1.000	4.22	4.29	NO	100.0	0.0009100	
16	PFSS	409 > 79.9	2.1144		1.000	4.56	4.62	NO	100.0	0.0015849	
17	PFSS	409 > 79.9	2.1144		1.000	4.62	4.68	NO	100.0	0.0010081	
18	Total PFSS	299 > 79.7	8.2544		1.000	3.11	4.77	NO			
19	Total PFSS	308.9 > 79.6	6.8644		1.000	4.09	5.65	NO			
20	Total PFSS	413 > 305.7	1.2652		1.000	4.29	4.82	NO			
21	Total PFSS	409 > 79.9	2.1144		1.000	4.02	5.97	NO			0.1137419

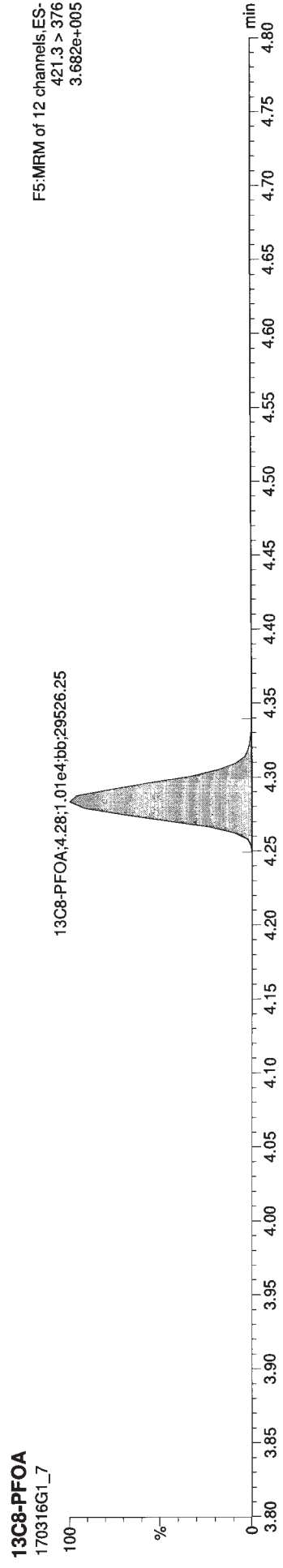
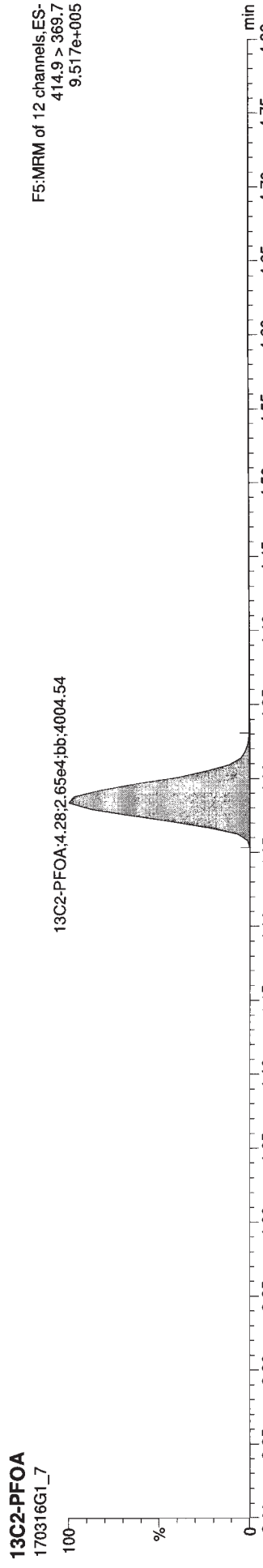
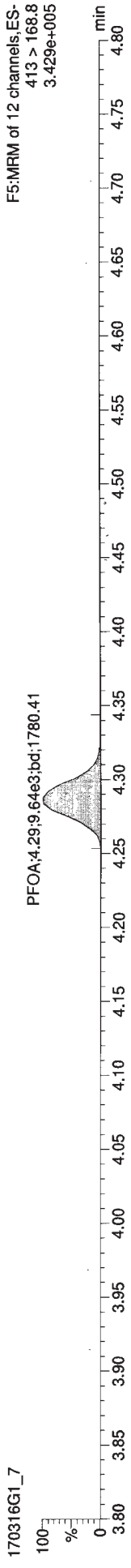
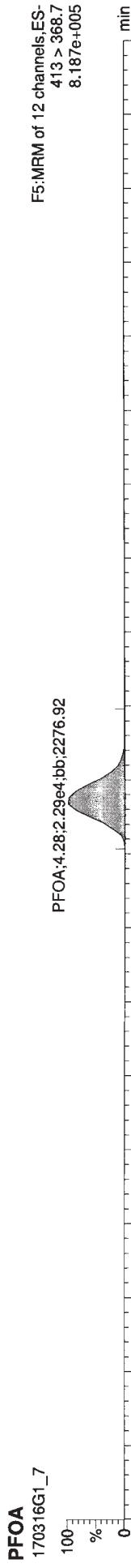


Quantity Sample Report
Vista Analytical Laboratory Q1

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Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

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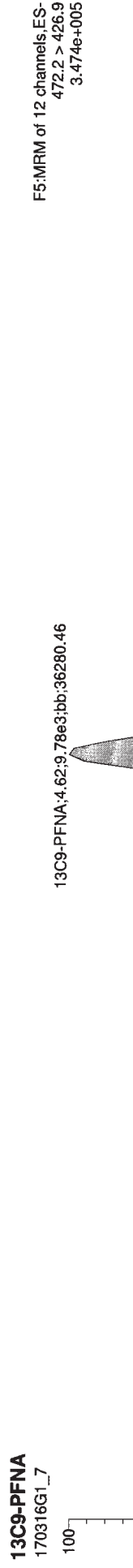
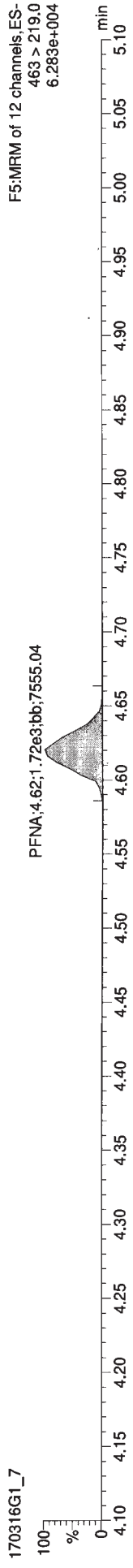
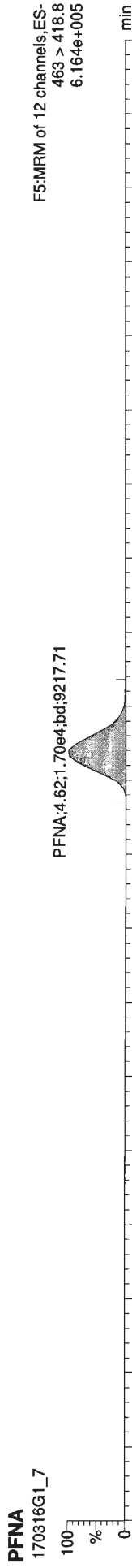


Quantify Sample Report
Vista Analytical Laboratory Q1

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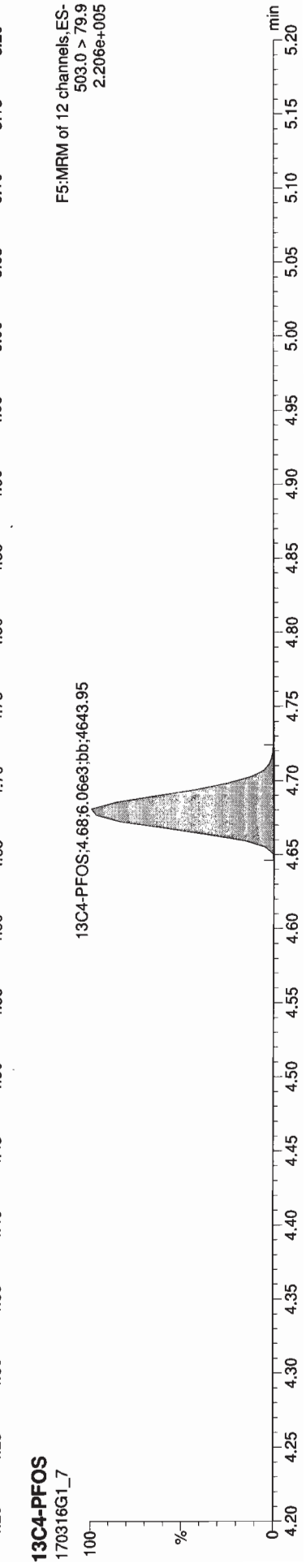
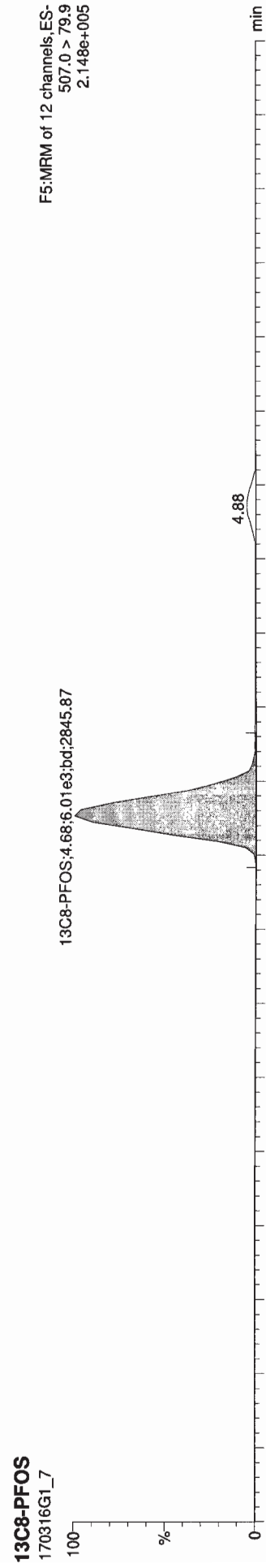
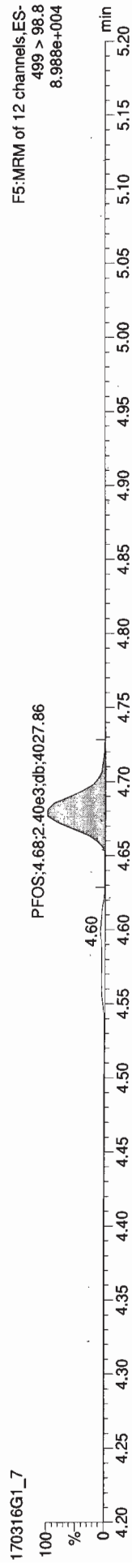
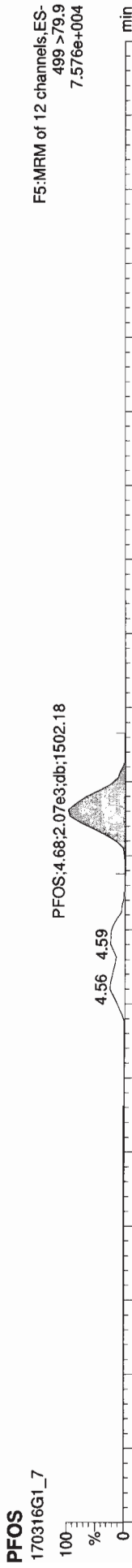


Quantify Sample Report
Vista Analytical Laboratory Q1

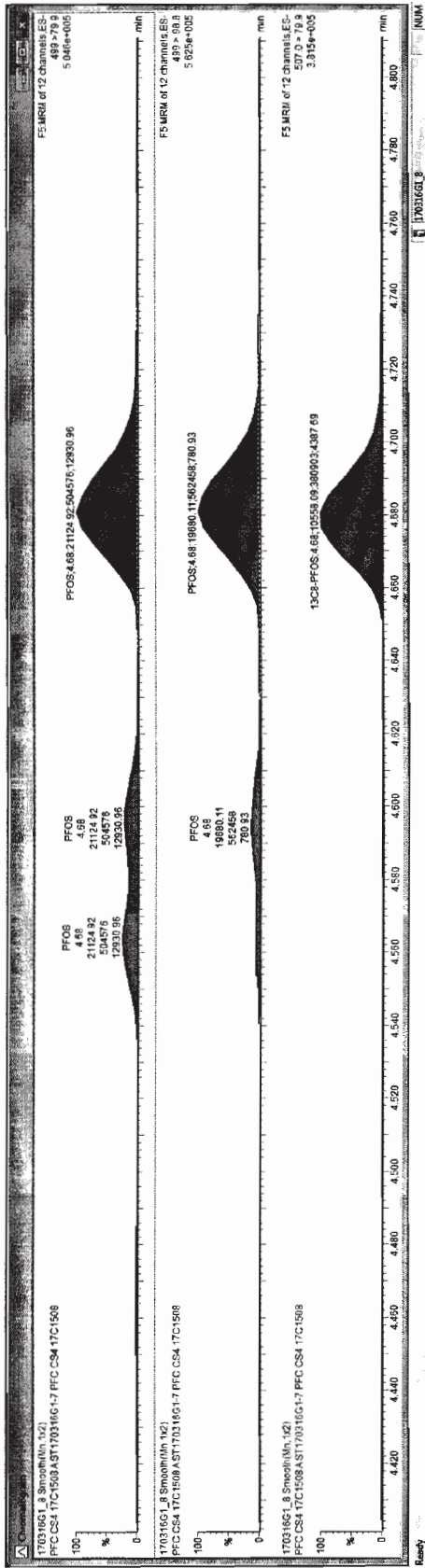
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SL	Name	Trans	Arriv	RFQ	W/Mat	Prod RT	RT	Cmic	Shed	Match	DL
1	PFBS	299.779.7	0.3544		1.000	3.02	3.02	47.7	YES	93.5	0.000000
2	PFPA	383.316.9	1.7245		1.000	3.89	3.89	51.2	YES	102.3	0.000000
3	PFHCS	388.976.8	6.8944		1.000	4.00	4.01	48.5	YES	97.0	0.000000
4	PFDA	413.368.7	1.3845		1.000	4.29	4.29	48.3	YES	96.6	0.000000
5	PFHA	463.418.8	1.2045		1.000	4.62	4.62	51.1	YES	102.2	0.000000
6	PFHCS	469.979.9	2.1144		1.000	4.98	4.98	45.4	YES	90.7	0.140749
7	PFBS	302.038.3	0.5143		1.000	3.00	3.02	12.2	NO	97.2	0.008632
8	PFPA	387.237.8	2.4943		1.000	3.88	3.89	12.4	NO	99.3	0.003455
9	PFHCS	403.102.8	0.9563		1.000	4.01	4.00	12.7	NO	104.5	0.0061974
10	PFDA	414.979.7	4.0944		1.000	4.29	4.29	13.1	NO	103.8	0.0051832
11	PFHA	465.222.9	1.3544		1.000	4.62	4.62	13.0	NO	102.5	0.0072681
12	PFHCS	507.979.9	1.0844		1.000	4.98	4.98	12.2	NO	100.0	0.0073942
13	PFBS	302.038.3	0.5143		1.000	3.00	3.00	12.2	NO	100.0	0.0010888
14	PFPA	387.237.8	2.4943		1.000	3.88	3.88	12.2	NO	100.0	0.0091080
15	PFHCS	403.102.8	0.9563		1.000	4.01	4.01	12.2	NO	100.0	0.0013549
16	PFDA	413.368.7	1.3845		1.000	4.29	4.29	12.2	NO	100.0	0.0013549
17	PFHA	463.418.8	1.2045		1.000	4.62	4.62	12.2	NO	100.0	0.0013549
18	PFHCS	469.979.9	2.1144		1.000	4.97	4.98	12.2	NO	100.0	0.0013549
19	PFBS	299.779.7	0.3544		1.000	3.11	4.65	47.7	NO		
20	PFPA	388.976.8	6.8244		1.000	4.00	5.65	58.5	NO		
21	PFHCS	413.368.7	1.3845		1.000	4.29	4.83	48.3	NO		
22	Total PFOS	469.779.9	2.7644		1.000	4.67	58.7	58.7	NO		0.1437419

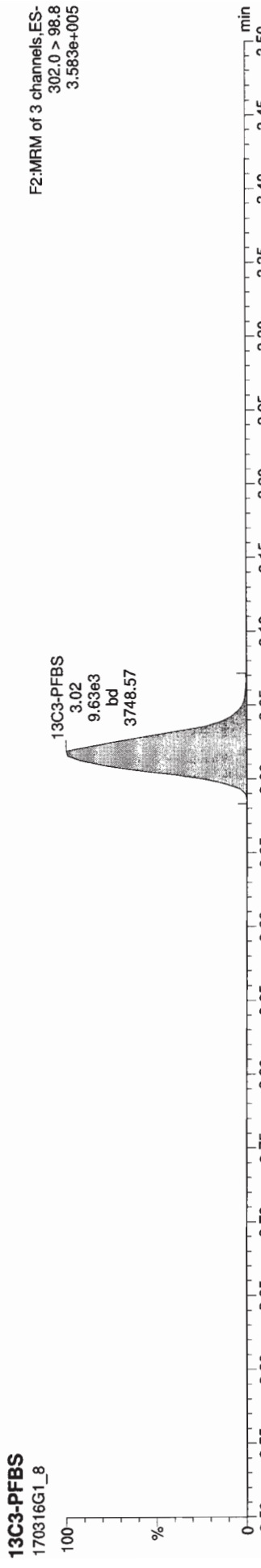
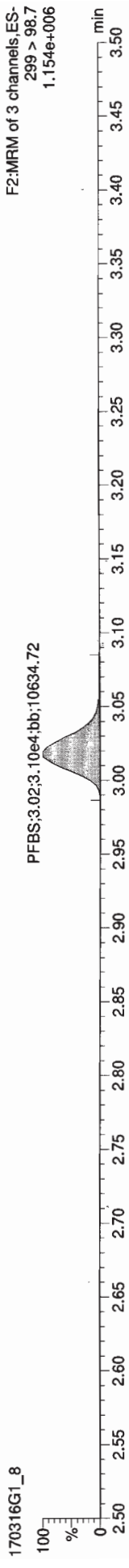


Quantify Sample Report
Vista Analytical Laboratory Q1

Dataset: Untitled

Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

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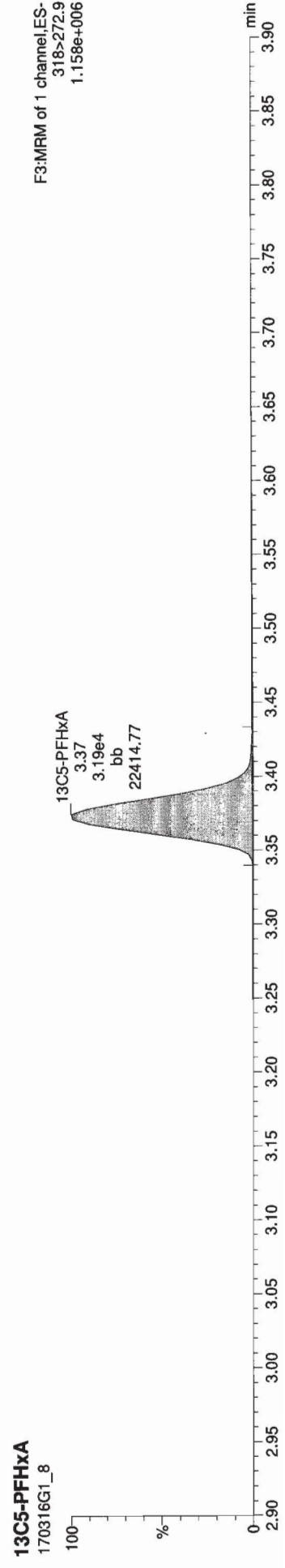
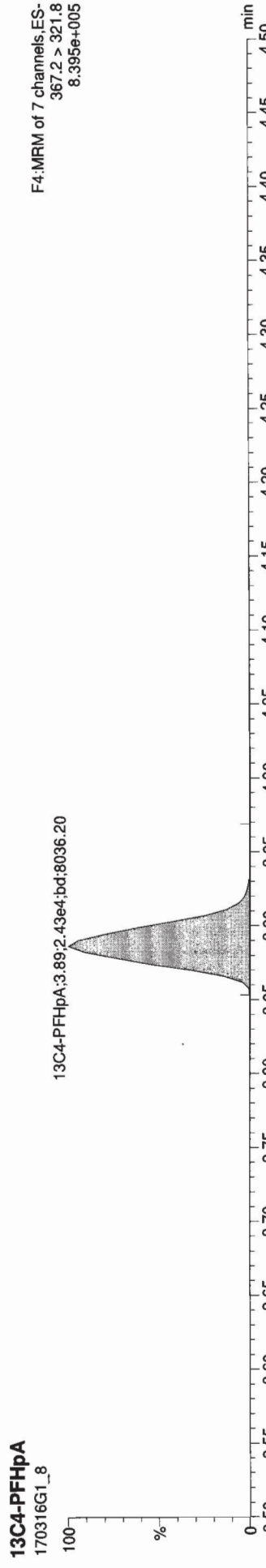
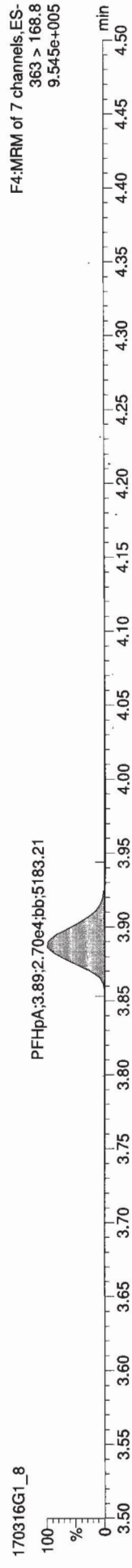
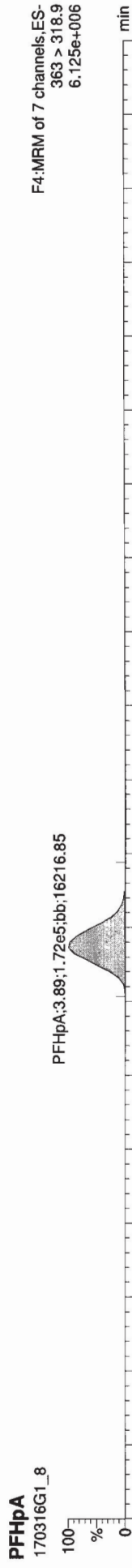


Quantify Sample Report
Vista Analytical Laboratory Q1

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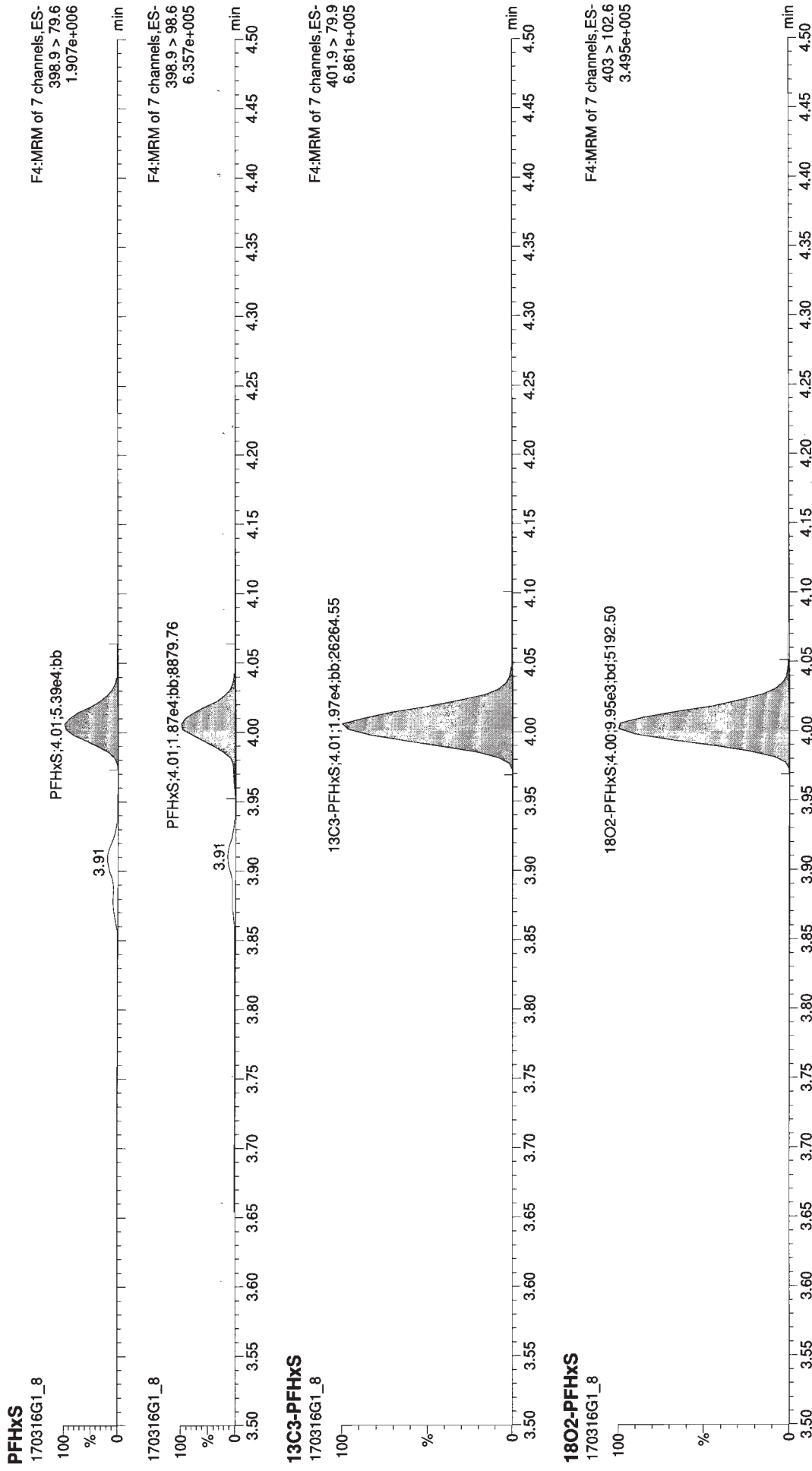


Quantify Sample Report
Vista Analytical Laboratory Q1

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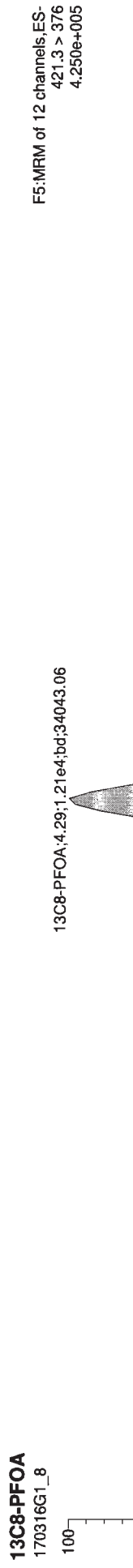
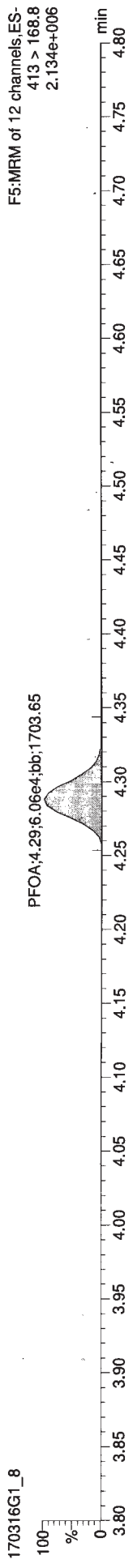
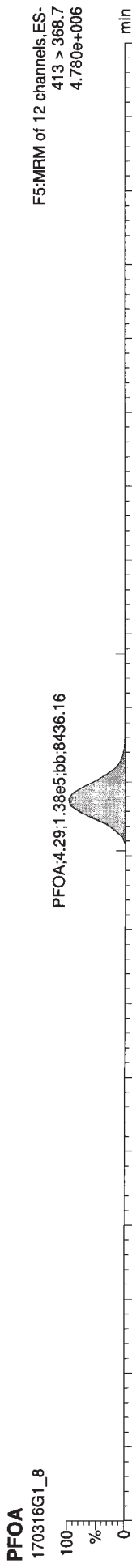


Quantify Sample Report
Vista Analytical Laboratory Q1

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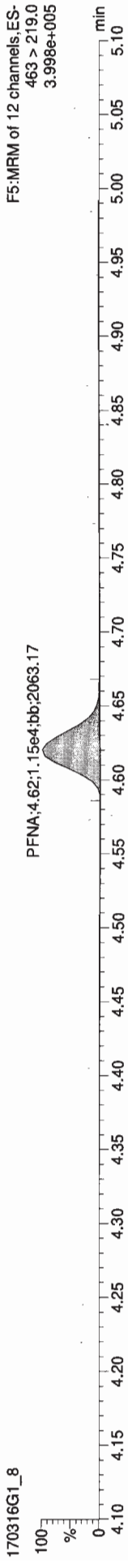
Quantity Sample Report
Vista Analytical Laboratory Q1

MassLynx 4.1 SCN815

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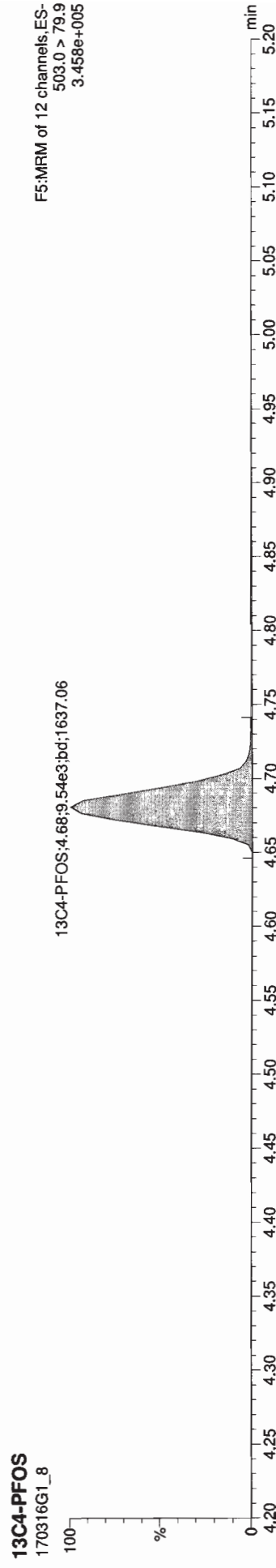
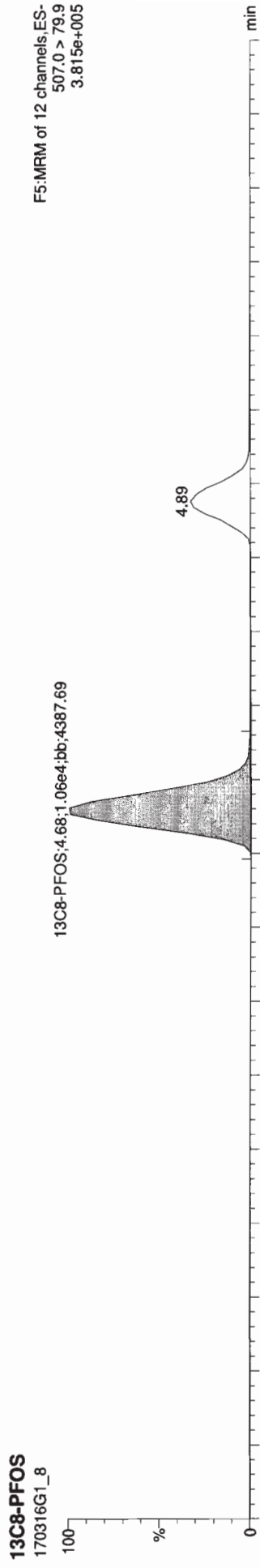
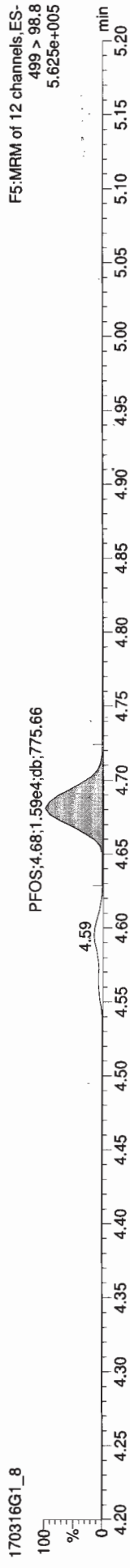
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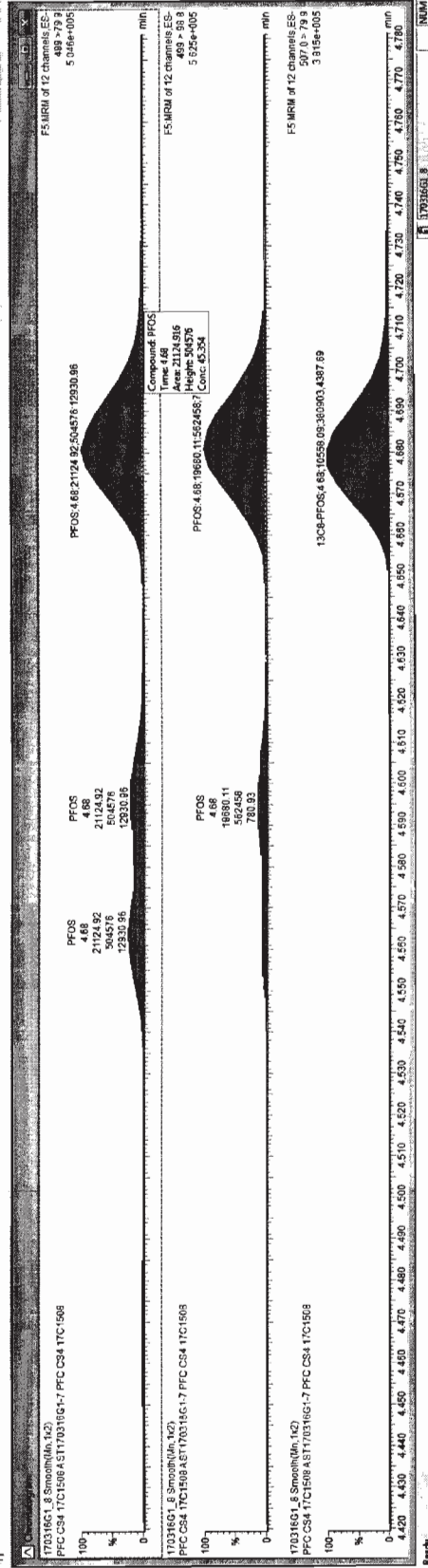
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SL	Name	Comp	DL	Units	EMPC	Area	RRF	RT	SP	RA	Y/N	RTI	Acq.Date	Acq.Time	Channel	0	Sample	Unit	Factor	SW	Cell	File	ML
1	PFB5	47.74946	95.5	8.33144	3.02	7	0.271	YES	1.000	16-Mar-17	11:45:43	168.408	ST1703162	11:45:43	168.408	ST1703162	PCF C54 17C15	1.0	1.00			YES	
2	PF16A	51.157600	102.3	1.71745	3.89	2	9		1.001	16-Mar-17	11:45:43		ST1703162	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			YES	
3	PF16C	48.619153	87.0	6.89844	4.01	3	8		1.001	16-Mar-17	11:45:43		ST1703162	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			YES	
4	PF16D	49.268975	95.6	1.38945	4.29	4	10		1.000	16-Mar-17	11:45:43		ST1703162	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			YES	
5	PF16E	51.089954	102.2	1.39945	4.62	5	11		1.000	16-Mar-17	11:45:43		ST1703162	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			YES	
6	PF16F	47.74946	95.5	2.71959	4.68	6	12		1.000	16-Mar-17	11:45:43		ST1703162	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			YES	
7	13C6-PF16S	12.155975	0.0958	97.2	9.62953	9.531	3.02	7	14			0.285	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
8	13C6-PF16A	12.146804	0.09385	95.3	2.62844	2.237	3.88	8	14			0.370	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
9	13C6-PF16B	12.146804	0.09385	95.3	8.89425	8.295	3.88	9	14			0.288	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
10	13C6-PF16C	11.82823	0.09663	104.8	1.5054	1.229	4.50	15	14			1.001	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
11	13C6-PF16A	12.874403	0.0010	103.8	1.5054	1.879	4.52	16	15			1.001	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
12	13C6-PF16C	12.810934	0.0027	102.5	1.55644	1.820	4.68	12	17			1.000	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
13	13C6-PF16A	12.500000	0.00139	100.0	3.18744	1.820	3.38	13	13			0.000	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
14	13C6-PF16B	12.500000	0.00119	100.0	1.97544	1.820	4.01	14	14			0.000	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
15	13C6-PF16A	12.500000	0.00919	100.0	1.21444	1.820	4.29	15	15			0.000	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
16	13C6-PF16B	12.500000	0.00158	100.0	1.32844	1.820	4.62	16	18			0.000	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
17	13C6-PF16C	12.500000	0.0191	100.0	9.54043	1.820	4.68	17	17			0.000	16-Mar-17	11:45:43		ST1703162	PCF C54 17C15	1.0	1.00			NO	
18	Total PF16S	47.74946					18																
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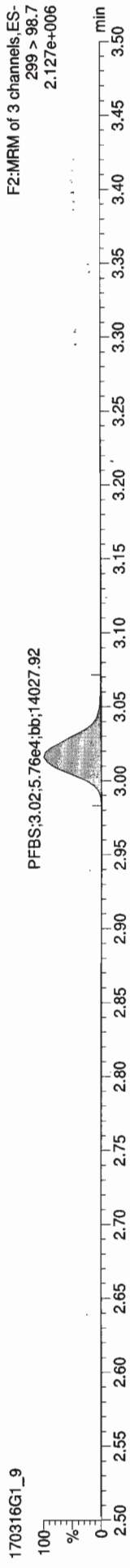


Quantify Sample Report
Vista Analytical Laboratory Q1

Dataset: Untitled

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Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

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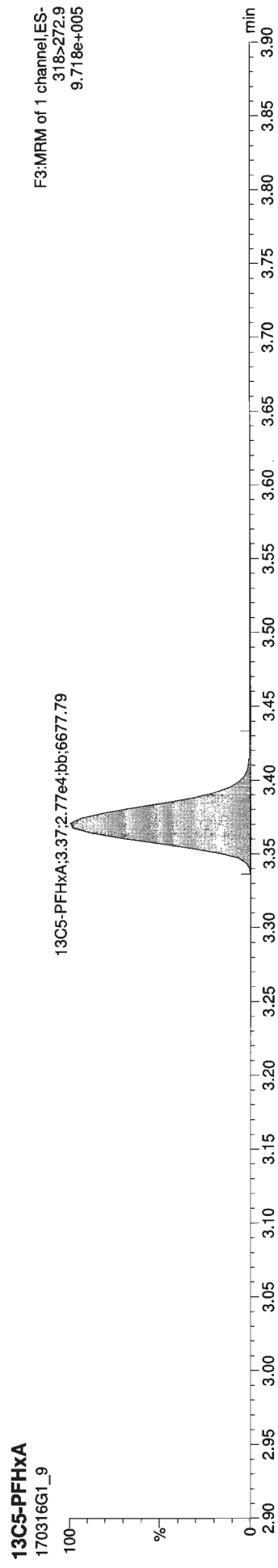
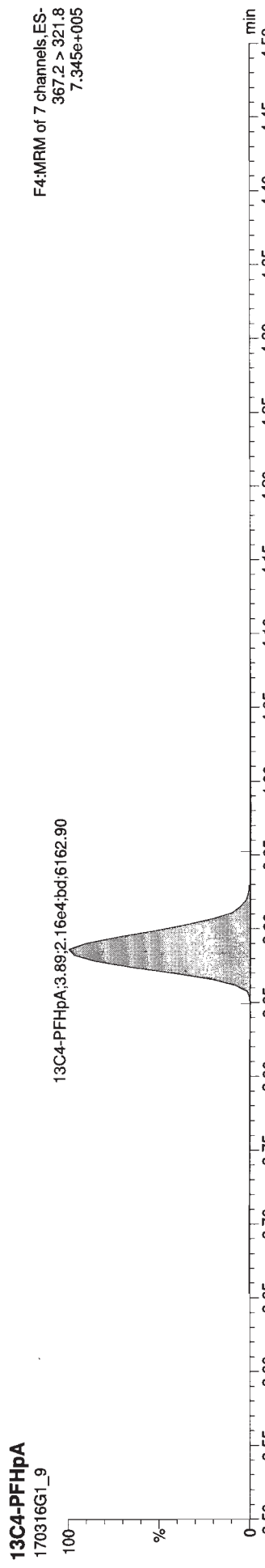
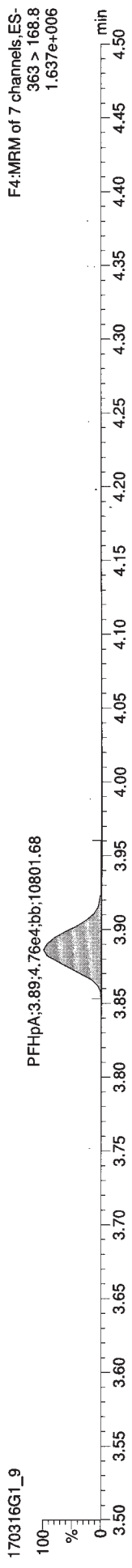
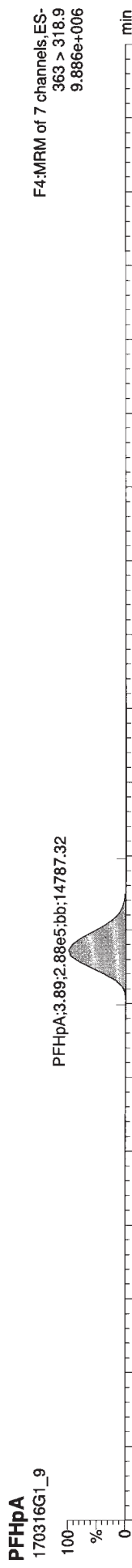


Quantify Sample Report
Vista Analytical Laboratory Q1

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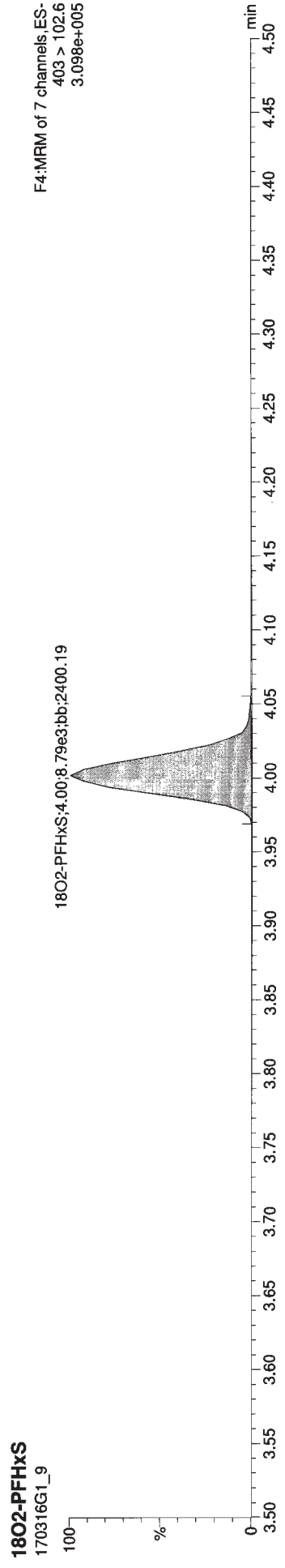
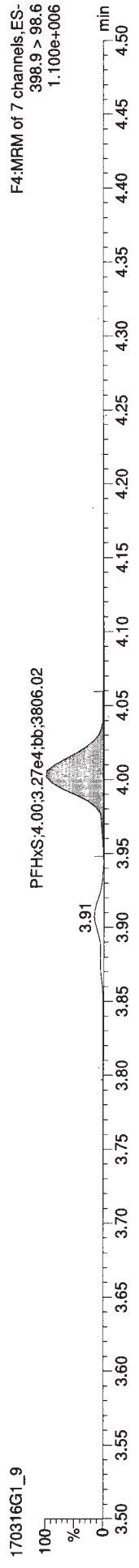
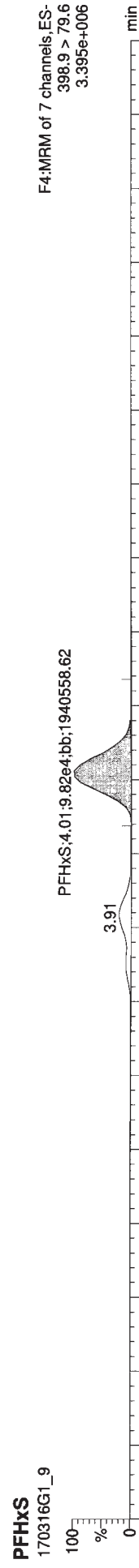
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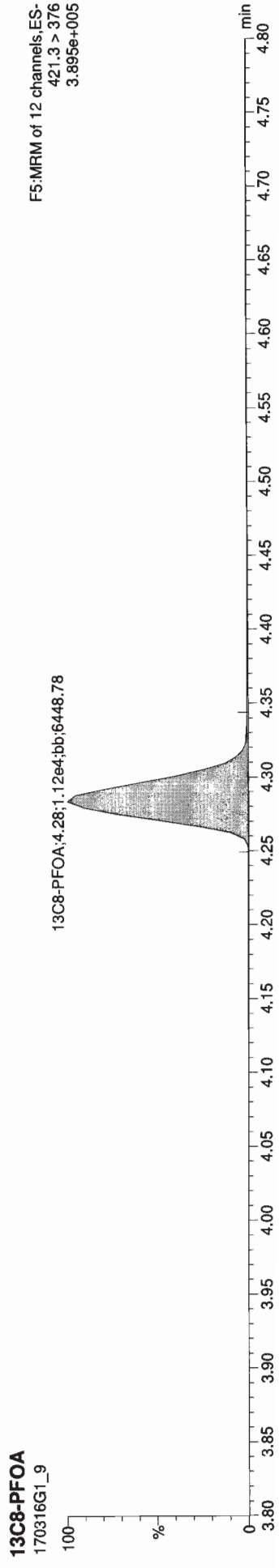
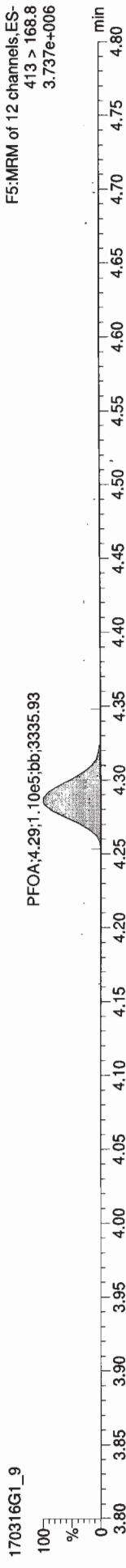


Quantify Sample Report
Vista Analytical Laboratory Q1

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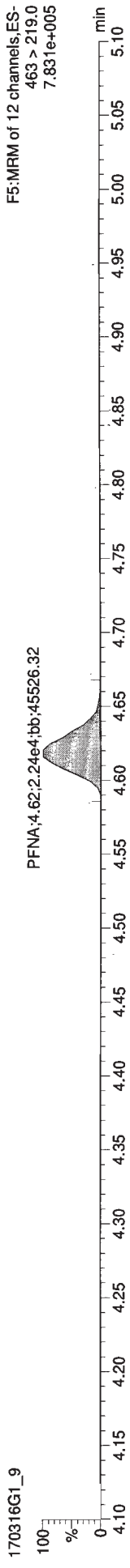
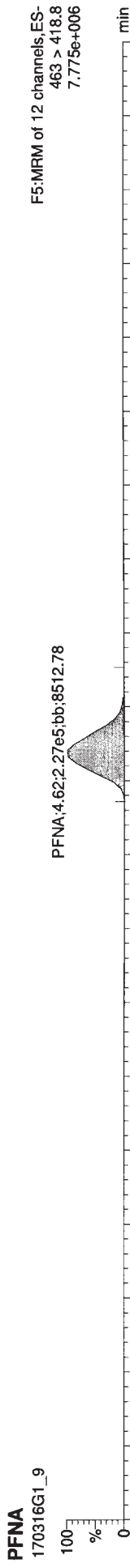


Quantify Sample Report
Vista Analytical Laboratory Q1

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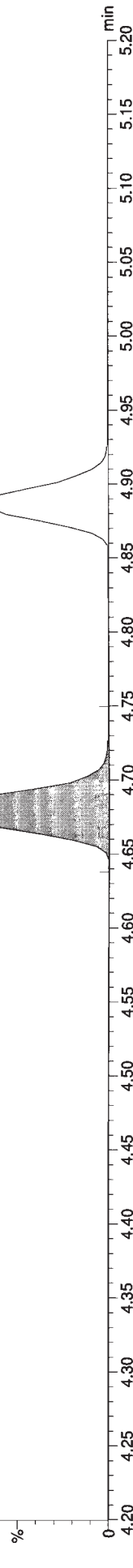
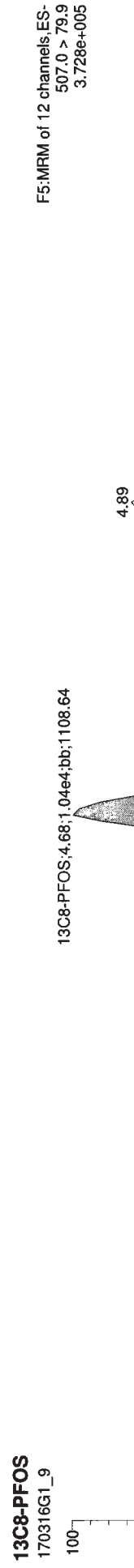
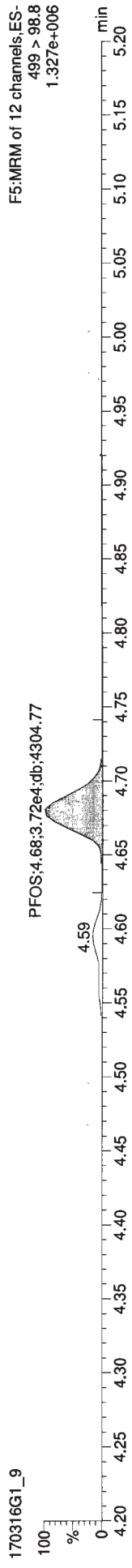
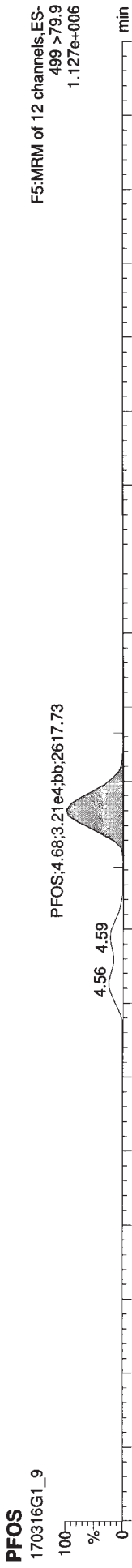


Quantify Sample Report
Vista Analytical Laboratory Q1

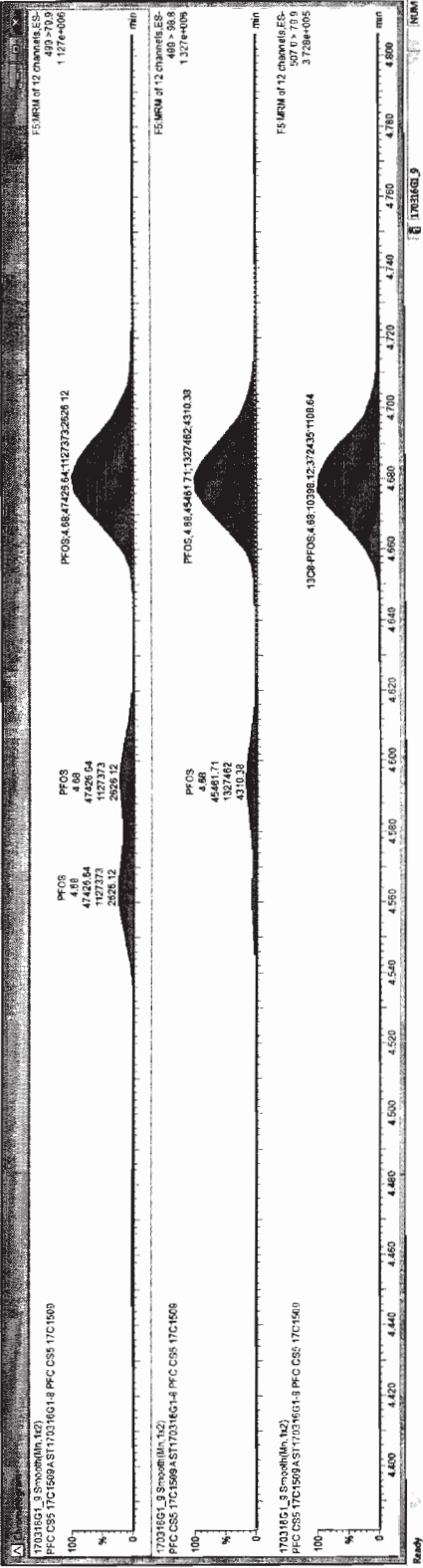
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Last Altered: Thursday, March 16, 2017 13:27:05 Pacific Daylight Time
Printed: Thursday, March 16, 2017 13:28:00 Pacific Daylight Time

ID: ST170316G1-8 PFC CS5 17C1509, Description: PFC CS5 17C1509 A, Name: 170316G1_9, Date: 16-Mar-2017, Time: 11:58:17, Instrument: , Lab: , User:



Item	Trace	Area	Height	Width	Area%	Height%	Width%	Area%	Height%	Width%	Area%	Height%	Width%
1	PFOS	269 > 79.7	1.43e5	1.000	3.32	3.02	100	YES	100.0	0.0000000			
2	PFOS	350 > 119.9	2.02e5	1.000	3.89	3.89	96.5	YES	96.5	0.0000000			
3	PFOS	358.9 > 79.6	1.26e5	1.000	4.91	4.91	100	YES	100.0	0.0000000			
4	PFOS	413 > 360.7	2.52e5	1.000	4.28	4.29	89.5	YES	89.5	0.0000000			
5	PFOS	483 > 418.8	2.72e5	1.000	4.02	4.02	96.7	YES	96.7	0.0000000			
6	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
7	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
8	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
9	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
10	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
11	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
12	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
13	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
14	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
15	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
16	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
17	PFOS	502 > 366.3	2.72e5	1.000	3.96	3.96	97.2	YES	97.2	0.0000000			
18	Total PFOS	269 > 79.7	1.43e5	1.000	3.11	4.88	100	NO	100.0	0.0000000			
19	Total PFOS	350 > 119.9	1.53e5	1.000	4.89	1.22	100	NO	100.0	0.0000000			
20	Total PFOS	413 > 360.7	2.52e5	1.000	4.35	96.5	100	NO	100.0	0.0000000			
21	Total PFOS	483 > 418.8	2.72e5	1.000	4.87	136	100	NO	100.0	0.0000000			



Quantify Sample Summary Report
Vista Analytical Laboratory Q1

MassLynx 4.1 SCN815

Dataset: U:\G1.PRO\Results\2017\170316G1\170316G1-11.qld

Last Altered: Thursday, March 16, 2017 14:27:32 Pacific Daylight Time
Printed: Thursday, March 16, 2017 14:28:49 Pacific Daylight Time

Method: U:\G1.PRO\MethDB\PFAS_6_2trans_LINEAR.mdb 02 Mar 2017 12:26:53
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

Name: 170316G1_11, Date: 16-Mar-2017, Time: 12:23:32, ID: SS170316G1-1 PFC SSS 17C1510, Description: PFC SSS 17C01510 A

#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	PFBS (A)	299 > 79.7	1.55e4	1.09e4		1.000	3.02	7.76 87.7 77.6	77.6
2	PFHpA	363 > 318.9	3.41e4	2.51e4		1.000	3.89	9.75	97.5
3	PFHxS (A)	398.9 > 79.6	1.22e4	1.03e4		1.000	4.01	8.28 90.8 82.8	82.8
4	PFOA	413 > 368.7	2.79e4	4.17e4		1.000	4.29	9.45	94.5
5	PFNA	463 > 418.8	2.15e4	1.23e4		1.000	4.62	10.0	100.1
6	PFOS (A)	499 > 79.9	2.91e3	8.65e3		1.000	4.68	7.73 83.7 77.3	77.3
7	13C3-PFBS	302.0 > 98.8	1.09e4	1.89e4	0.501	1.000	3.02	14.4	115.3
8	13C4-PFHpA	367.2 > 321.8	2.51e4	1.89e4	1.237	1.000	3.89	13.4	107.2
9	18O2-PFHxS	403 > 102.6	1.03e4	1.89e4	0.495	1.000	4.01	13.8	110.1
10	13C2-PFOA	414.9 > 369.7	4.17e4	1.22e4	3.221	1.000	4.29	13.3	106.1
11	13C5-PFNA	468.2 > 422.9	1.23e4	1.18e4	0.979	1.000	4.62	13.3	106.4
12	13C8-PFOS	507.0 > 79.9	8.65e3	6.92e3	1.080	1.000	4.68	14.5	115.7
13	13C5-PFHxS	318 > 272.9	3.23e4	3.23e4	1.000	1.000	3.37	12.5	100.0
14	13C3-PFHxS	401.9 > 79.9	1.89e4	1.89e4	1.000	1.000	4.01	12.5	100.0
15	13C8-PFOA	421.3 > 376	1.22e4	1.22e4	1.000	1.000	4.29	12.5	100.0
16	13C9-PFNA	472.2 > 426.9	1.18e4	1.18e4	1.000	1.000	4.62	12.5	100.0
17	13C4-PFOS	503.0 > 79.9	6.92e3	6.92e3	1.000	1.000	4.68	12.5	100.0

75-125
↓

ES 3/16/17

✓ AC 3/17/17

(A) Concentration < 10ng/L in second source native mix ES 3/16/17

Quantify Sample Report

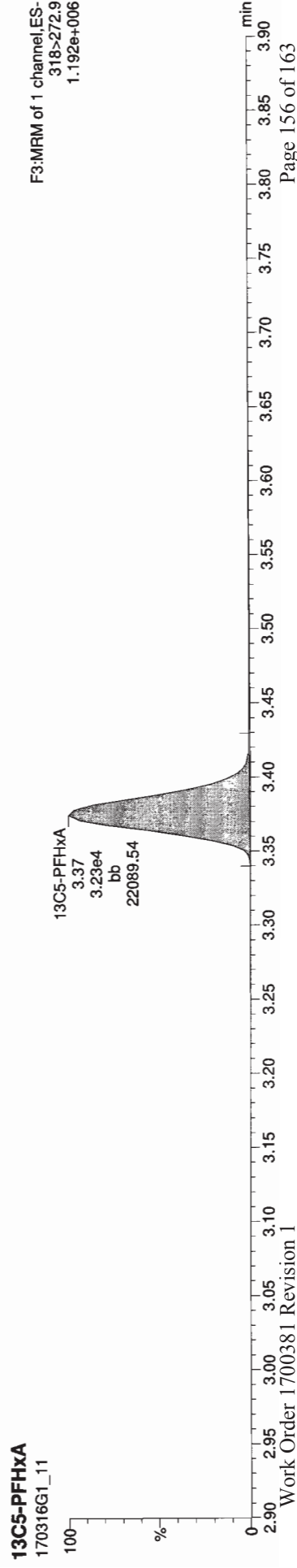
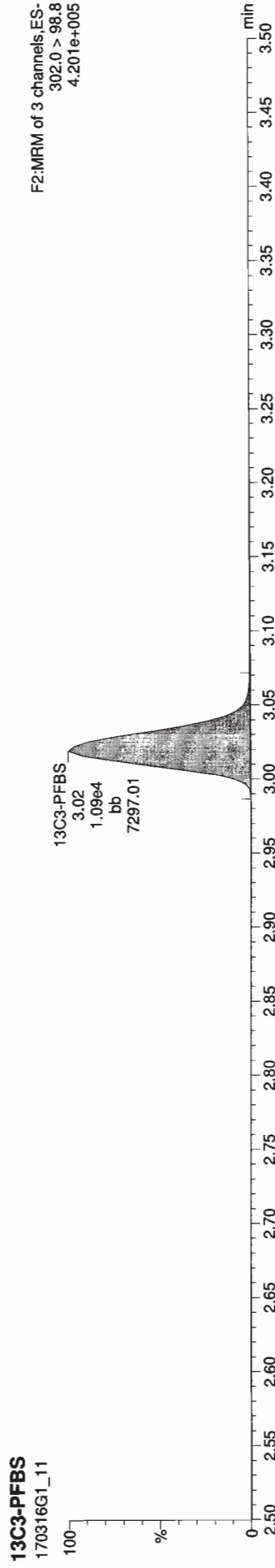
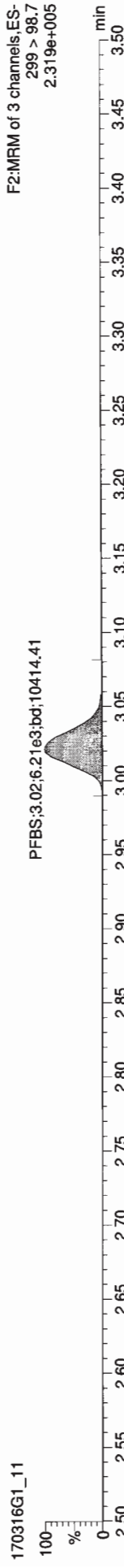
Vista Analytical Laboratory Q1

Dataset: Untitled

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Printed: Thursday, March 16, 2017 14:26:34 Pacific Daylight Time

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Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_3-16-17_L6_2Trans.cdb 16 Mar 2017 13:24:03

ID: SS170316G1-1 PFC SSS 17C1510, Description: PFC SSS 17C01510 A, Name: 170316G1_11, Date: 16-Mar-2017, Time: 12:23:32, Instrument: , Lab: , User:



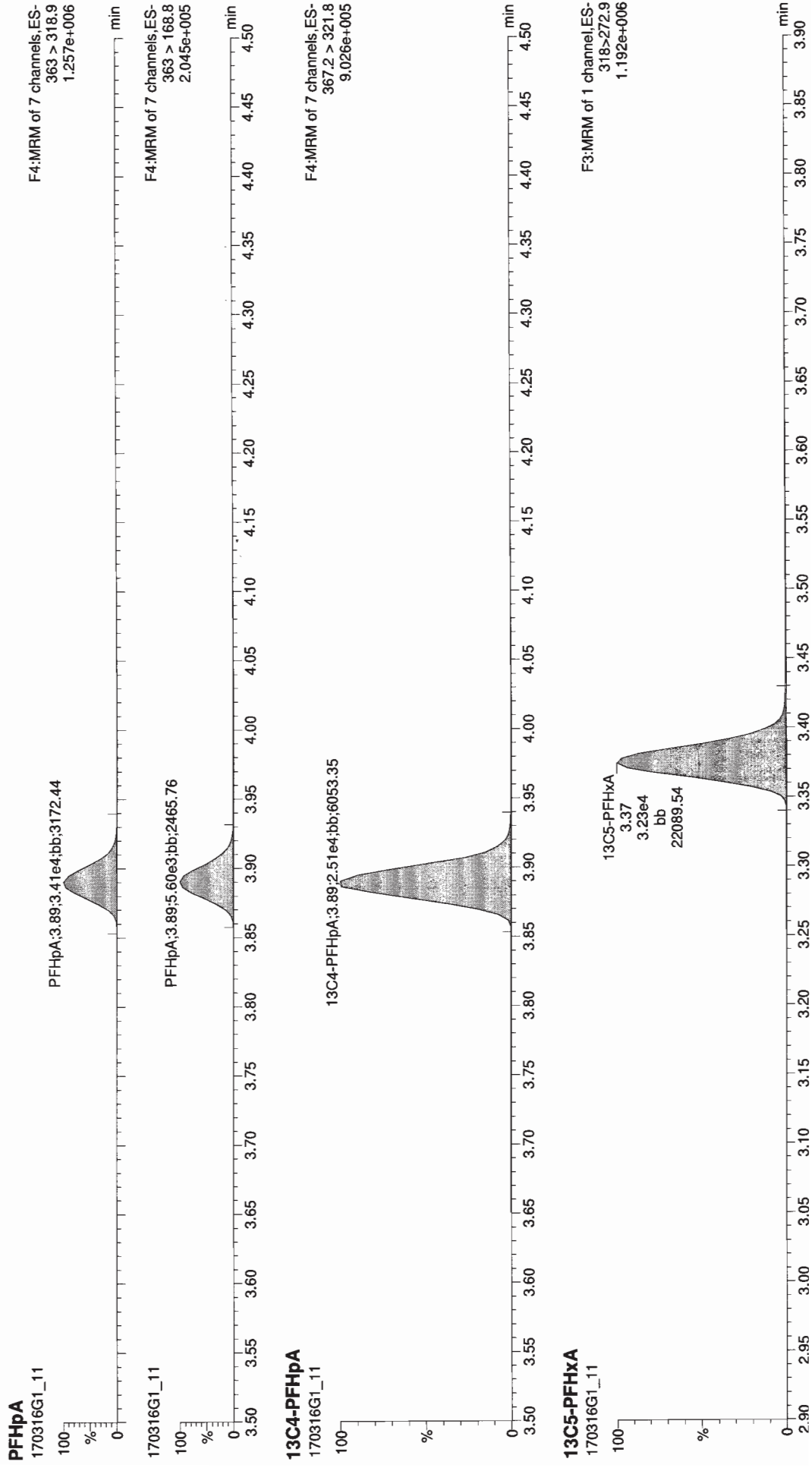
Quantify Sample Report

Vista Analytical Laboratory Q1

Dataset: Untitled

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Printed: Thursday, March 16, 2017 14:26:34 Pacific Daylight Time

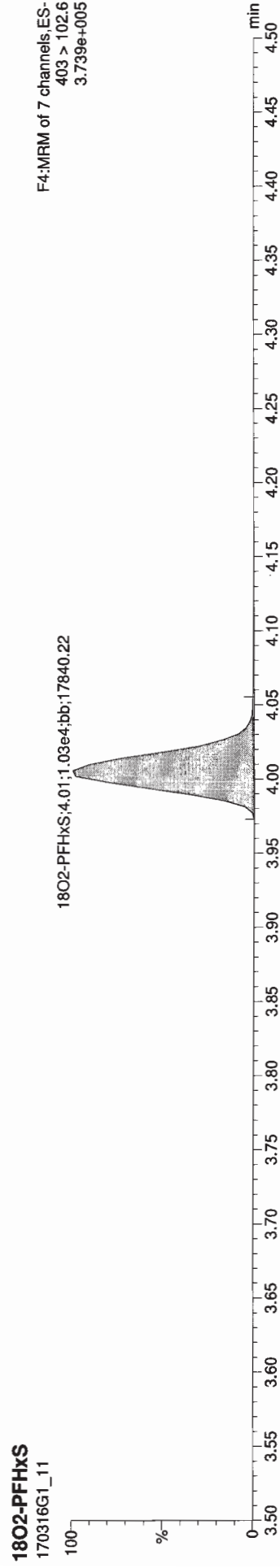
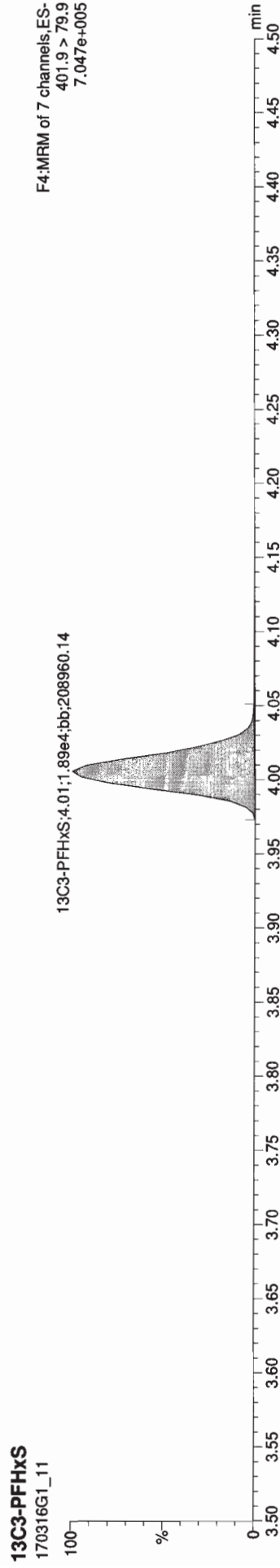
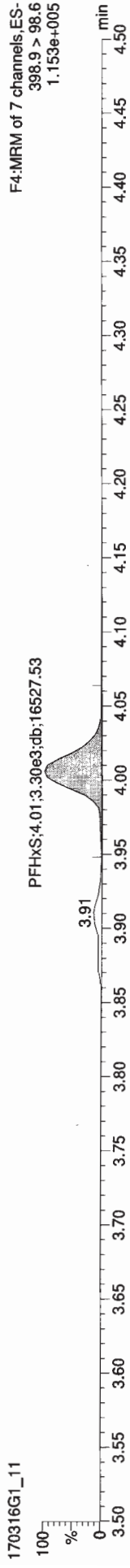
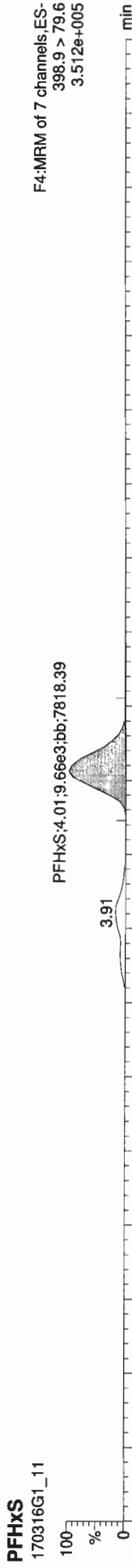
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Printed: Thursday, March 16, 2017 14:26:34 Pacific Daylight Time

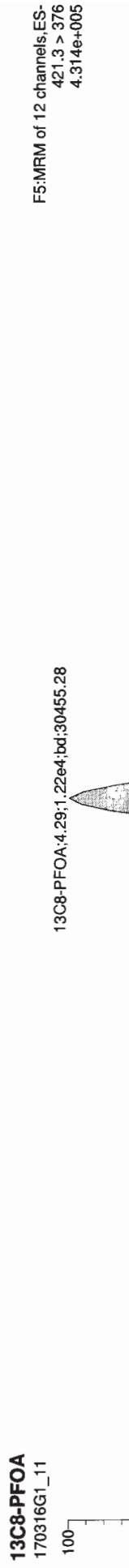
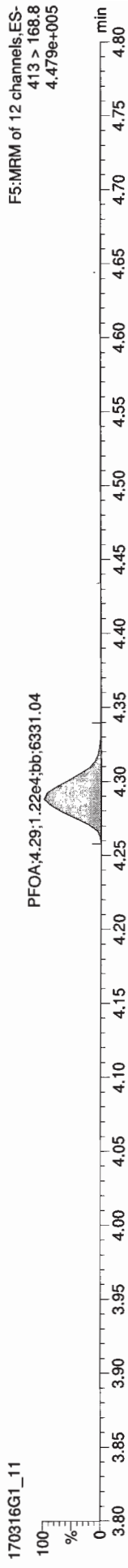
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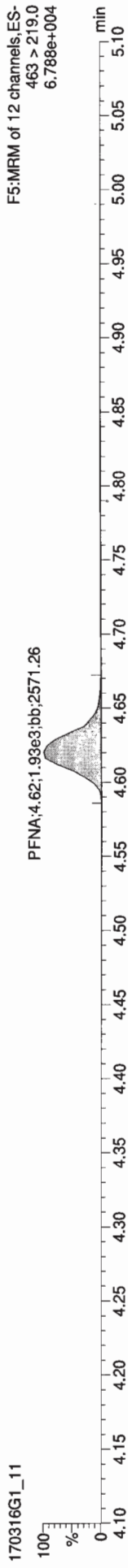
Quantify Sample Report

Vista Analytical Laboratory Q1

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Printed: Thursday, March 16, 2017 14:26:34 Pacific Daylight Time

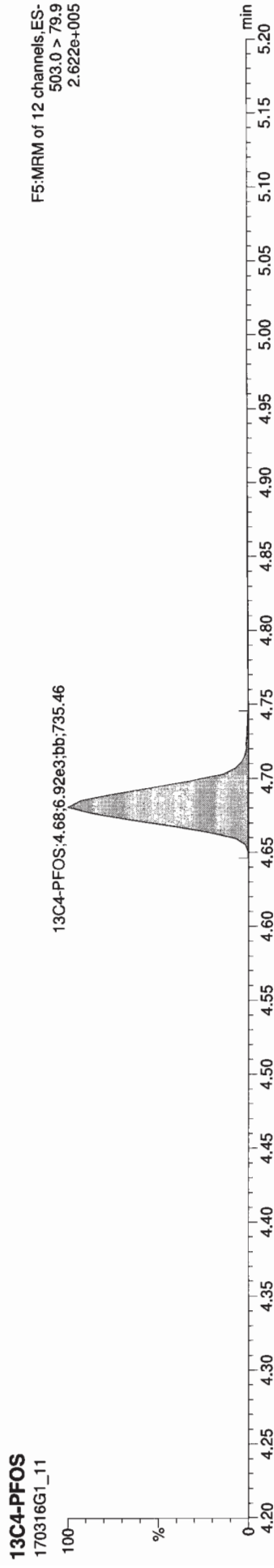
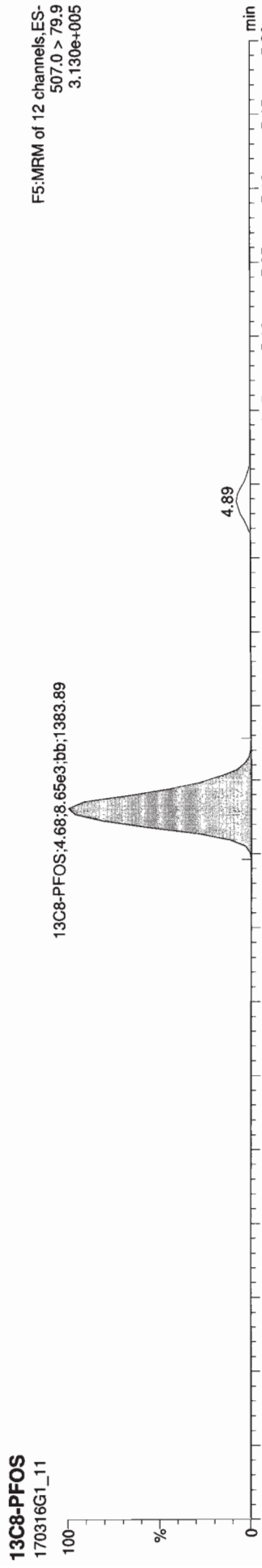
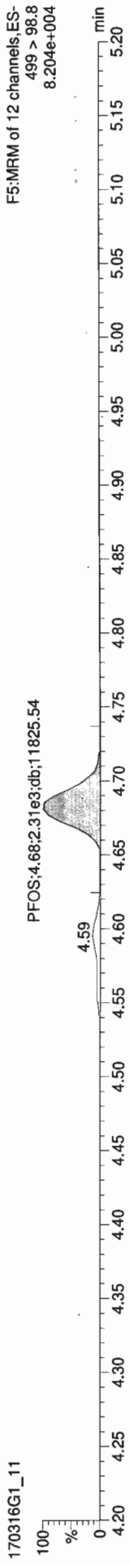
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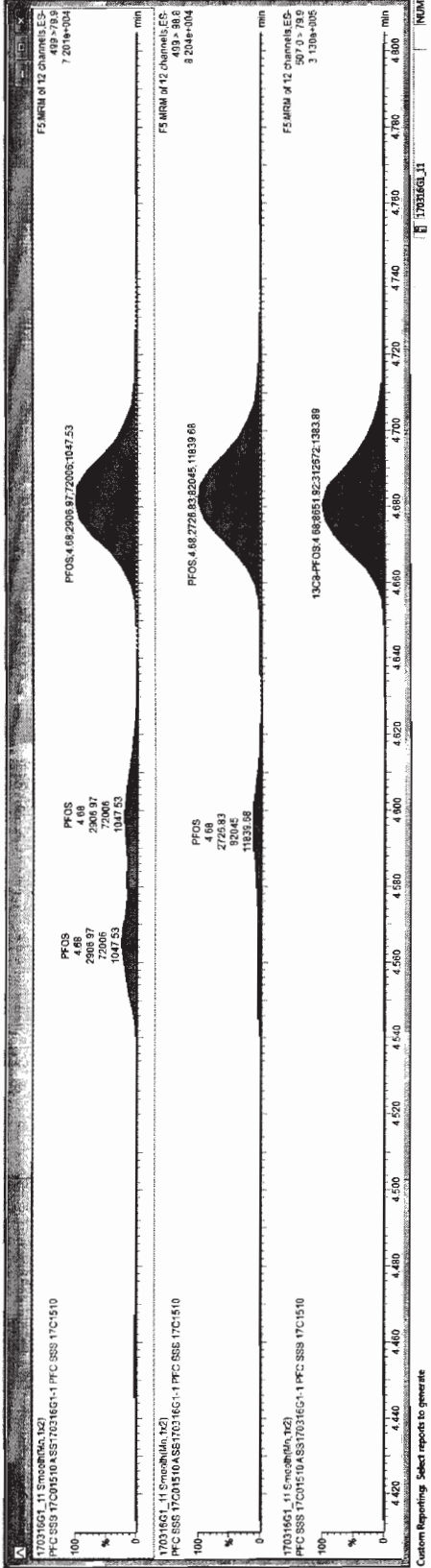
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Printed: Thursday, March 16, 2017 14:26:34 Pacific Daylight Time

ID: SS170316G1-1 PFC SSS 17C1510, Description: PFC SSS 17C01510 A, Name: 170316G1_11, Date: 16-Mar-2017, Time: 12:23:32, Instrument: , Lab: , User:



SI	Name	Comp	DL	Misc	QPC	Area	DFP	RT	SP	RA	IN	RR1	Acq Date	Acq Time	Sample	Unit	Method
1	PFBS	7.7633034	0.0000	77.6	1.55044	3.02	7	0.401	1.001	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
2	PFPA	9.7477687	0.0000	87.5	3.40794	3.89	2	8	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
3	PFHS	8.2615747	0.0000	82.8	1.22484	4.01	3	9	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
4	PFDA	9.4536474	0.0000	94.5	2.79464	4.29	4	10	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
5	PFNA	10.0100403	0.0000	100.1	2.15804	4.60	5	11	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
6	PFOS	11.0145255	0.0000	110.2	2.20165	4.89	6	12	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
7	PFDEA	13.0455000	0.0000	130.2	2.02544	5.01	7	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
8	PFDEA	13.0455000	0.0000	130.2	2.02544	5.01	8	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
9	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	9	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
10	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	10	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
11	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	11	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
12	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	12	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
13	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	13	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
14	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	14	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
15	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	15	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
16	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	16	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
17	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	17	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
18	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	18	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
19	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	19	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
20	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	20	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
21	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	21	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO



SI	Name	Comp	DL	Misc	QPC	Area	DFP	RT	SP	RA	IN	RR1	Acq Date	Acq Time	Sample	Unit	Method
1	PFBS	7.7633034	0.0000	77.6	1.55044	3.02	7	0.401	1.001	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
2	PFPA	9.7477687	0.0000	87.5	3.40794	3.89	2	8	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
3	PFHS	8.2615747	0.0000	82.8	1.22484	4.01	3	9	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
4	PFDA	9.4536474	0.0000	94.5	2.79464	4.29	4	10	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
5	PFNA	10.0100403	0.0000	100.1	2.15804	4.60	5	11	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
6	PFOS	11.0145255	0.0000	110.2	2.20165	4.89	6	12	1.000	16-Mar-17	12:23:32	YES	SS1703166	1.0	1.00	C18.V	YES
7	PFDEA	13.0455000	0.0000	130.2	2.02544	5.01	7	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
8	PFDEA	13.0455000	0.0000	130.2	2.02544	5.01	8	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
9	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	9	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
10	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	10	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
11	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	11	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
12	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	12	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
13	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	13	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
14	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	14	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
15	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	15	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
16	PFDA	13.0455000	0.0000	130.2	2.02544	5.01	16	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
17	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	17	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
18	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	18	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
19	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	19	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
20	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	20	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO
21	PFOS	13.0455000	0.0000	130.2	2.02544	5.01	21	14	0.995	16-Mar-17	12:23:32	NO	SS1703166	1.0	1.00	C18.V	NO

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	20170328	13:43:00	20170329	13:16:00	1700381-01	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	4.07	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	20170328	13:43:00	20170329	13:16:00	1700381-01	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	2.03	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	20170328	13:43:00	20170329	13:16:00	1700381-01	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.915	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	20170328	13:43:00	20170329	13:16:00	1700381-01	1	-999			13C3-PFBS		87.0	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	20170328	13:43:00	20170329	13:16:00	1700381-01	1	-999			13C2-PFOA	13C2-PFOA	73.5	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	20170328	13:43:00	20170329	13:16:00	1700381-01	1	-999			13C8-PFOS	13C8-PFOS	80.8	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	20170328	13:43:00	20170329	13:28:00	1700381-02	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	4.13	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	20170328	13:43:00	20170329	13:28:00	1700381-02	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	2.07	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	20170328	13:43:00	20170329	13:28:00	1700381-02	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	1.20	NG L	J		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	20170328	13:43:00	20170329	13:28:00	1700381-02	1	-999			13C3-PFBS		90.3	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	20170328	13:43:00	20170329	13:28:00	1700381-02	1	-999			13C2-PFOA	13C2-PFOA	80.9	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	20170328	13:43:00	20170329	13:28:00	1700381-02	1	-999			13C8-PFOS	13C8-PFOS	85.0	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	20170328	13:43:00	20170329	13:41:00	1700381-03	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	3.97	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	20170328	13:43:00	20170329	13:41:00	1700381-03	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	1.98	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	20170328	13:43:00	20170329	13:41:00	1700381-03	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.893	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	20170328	13:43:00	20170329	13:41:00	1700381-03	1	-999			13C3-PFBS		78.1	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	20170328	13:43:00	20170329	13:41:00	1700381-03	1	-999			13C2-PFOA	13C2-PFOA	79.7	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	20170328	13:43:00	20170329	13:41:00	1700381-03	1	-999			13C8-PFOS	13C8-PFOS	91.1	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	20170328	13:43:00	20170329	13:54:00	1700381-04	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	4.17	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	20170328	13:43:00	20170329	13:54:00	1700381-04	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	2.08	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	20170328	13:43:00	20170329	13:54:00	1700381-04	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.938	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	20170328	13:43:00	20170329	13:54:00	1700381-04	1	-999			13C3-PFBS	13C3-PFBS	83.8	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	20170328	13:43:00	20170329	13:54:00	1700381-04	1	-999			13C2-PFOA	13C2-PFOA	75.5	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	20170328	13:43:00	20170329	13:54:00	1700381-04	1	-999			13C8-PFOS	13C8-PFOS	79.2	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	20170328	13:43:00	20170329	12:51:00	B7C0150-BLK1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	4.00	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	20170328	13:43:00	20170329	12:51:00	B7C0150-BLK1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	2.00	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	20170328	13:43:00	20170329	12:51:00	B7C0150-BLK1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.900	NG L	U		
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	20170328	13:43:00	20170329	12:51:00	B7C0150-BLK1	1	-999			13C3-PFBS	13C3-PFBS	103	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	20170328	13:43:00	20170329	12:51:00	B7C0150-BLK1	1	-999			13C2-PFOA	13C2-PFOA	83.6	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	20170328	13:43:00	20170329	12:51:00	B7C0150-BLK1	1	-999			13C8-PFOS	13C8-PFOS	79.3	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	20170328	13:43:00	20170329	11:53:00	B7C0150-BS1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	85.8	NG L			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	20170328	13:43:00	20170329	11:53:00	B7C0150-BS1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	79.4	NG L			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	20170328	13:43:00	20170329	11:53:00	B7C0150-BS1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	75.5	NG L			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	20170328	13:43:00	20170329	11:53:00	B7C0150-BS1	1	-999			13C3-PFBS	13C3-PFBS	106	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	20170328	13:43:00	20170329	11:53:00	B7C0150-BS1	1	-999			13C2-PFOA	13C2-PFOA	82.5	PCT REC			
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	20170328	13:43:00	20170329	11:53:00	B7C0150-BS1	1	-999			13C8-PFOS	13C8-PFOS	80.9	PCT REC			

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	GC_Column_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch	Validator_Name	Val_Date	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW12-0317	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-EB01-032717	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-AAA-MW13-0317	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	CBD-FB01-032717	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	PR	TRG																	
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	Blank	PR	IS		SLSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	PR	TRG		LSA	130	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	PR	TRG		LSA	130	70													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	PR	TRG		LSA	130	70													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	PR	IS		LSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	PR	IS		LSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	PR	IS		LSA	150	60													
N6247016D9000	0008		CHESAPEAKE_BEACH_NRL	LCS	PR	IS		LSA	150	60													

**DATA VALIDATION SUMMARY REPORT
NRL-CBD, MARYLAND**

Client: CH2M HILL, Inc., Corvallis, Oregon
SDG: 1700381
Laboratory: Vista Analytical Laboratory, El Dorado Hills, California
Site: NRL-CBD, CTO-0008, Maryland
Date: April 18, 2017

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	CBD-AOA-MW12-0317	1700381-01	Water
2	CBD-EB01-032717	1700381-02	Water
3	CBD-AOA-MW13-0317	1700381-03	Water
4	CBD-FB01-032717	1700381-04	Water

A full data validation was performed on the analytical data for two water samples, one aqueous equipment blank sample and one aqueous field blank sample collected on March 27, 2017 by CH2M HILL at the NRL-CBD site in Maryland. The samples were analyzed under the EPA Method “Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)”.

Specific method references are as follows:

Analysis
PFCs

Method References
USEPA Method 537 Modified

The data have been validated according to the protocols and quality control (QC) requirements of the analytical method, and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM), Version 5.0 (July 2013) and the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA “Contract Laboratories Program National Functional Guidelines for Superfund Organic Methods Data Review,” August 2014;
- and the reviewer's professional judgment.

The following data quality indicators were reviewed for this report:

Organics

- Date Completeness, Case Narrative & Custody Documentation
- Holding times
- Initial and continuing calibration summaries

- Method blank and field QC blank contamination
- Surrogate recovery (%R)
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Ongoing Precision and Recovery (OPR)
- Target Compound Identification
- Compound Quantitation
- Field Duplicate sample precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Data Usability Assessment

There were no rejections of data.

Overall the data is acceptable for the intended purposes. There were no qualifications.

Perfluorinated Compounds (PFCs)

Data Completeness, Case Narrative & Custody Documentation

- The case narrative and chain-of-custody documentation were included in the data package as required. All criteria were met.

Holding Times

- All samples were extracted within 14 days for water samples and analyzed within 28 days.

Initial Calibration

- All percent difference (%D) and/or correlation coefficients criteria were met.

Continuing Calibration

- All percent difference (%D) and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- The field blank samples were free of contamination except for the following.

Blank ID	Compound	Conc. ng/L	Qualifier	Affected Samples
CBD-EB01-032717	PFOS	1.20	None	All Samples ND
CBD-FB01-032717	None - ND	-	-	-

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- MS/MSD samples were not analyzed.

Ongoing Precision and Recovery (OPR)

- The OPR samples exhibited acceptable percent recoveries (%R) values.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation


- All criteria were met.

Field Duplicate Sample Precision

- Field duplicate samples were not collected.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed:


Nancy Weaver
Senior Chemist

Dated: 4/19/17

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the samples.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.

Sample ID: CBD-AOA-MW12-0317

Modified EPA Method 537

Client Data		Sample Data		Laboratory Data					
Name:	CH2M Hill	Matrix:	Groundwater	Lab Sample:	1700381-01	Date Received:	28-Mar-2017 9:34		
Project:	NRL-CBD PFAS	Sample Size:	0.123 L	QC Batch:	B7C0150	Date Extracted:	28-Mar-2017 13:43		
Date Collected:	27-Mar-2017 9:45			Date Analyzed:	29-Mar-17 13:16	Column:	BEH C18		
Location:									
Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.82	4.07	8.15		IS 13C3-PFBS	87.0	60 - 150	
PFOA	ND	0.663	2.03	8.15		IS 13C2-PFOA	73.5	60 - 150	
PFOS	ND	0.822	0.915	8.15		IS 13C8-PFOS	80.8	60 - 150	

DL - Detection limit
 RL - Reporting limit

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

mw 4/18/17

2

Sample ID: CBD-EB01-032717

Modified EPA Method 537

Client Data		Sample Data		Laboratory Data					
Name:	CH2M Hill	Matrix:	Groundwater	Lab Sample:	1700381-02	Date Received:	28-Mar-2017 9:34		
Project:	NRL-CBD PFAS	Sample Size:	0.121 L	QC Batch:	B7C0150	Date Extracted:	28-Mar-2017 13:43		
Date Collected:	27-Mar-2017 10:25			Date Analyzed:	29-Mar-17 13:28	Column:	BEH C18		
Location:									
Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.84	4.13	8.23		IS 13C3-PFBS	90.3	60 - 150	
PFOA	ND	0.670	2.07	8.23		IS 13C2-PFOA	80.9	60 - 150	
PFOS	1.20	0.830	0.930	8.23	J	IS 13C8-PFOS	85.0	60 - 150	

DL - Detection limit
RL - Reporting limit

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

see 4/18/17

3

Sample ID: CBD-AOA-MW13-0317		Modified EPA Method 537			
Client Data		Sample Data		Laboratory Data	
Name:	CH2M Hill	Matrix:	Groundwater	Lab Sample:	1700381-03
Project:	NRL-CBD PFAS	Sample Size:	0.126 L	QC Batch:	B7C0150
Date Collected:	27-Mar-2017 12:05			Date Analyzed:	29-Mar-17 13:41
Location:				Column:	BEH C18
Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.77	3.97	7.93	IS 13C3-PFBS
PFOA	ND	0.645	1.98	7.93	IS 13C2-PFOA
PFOS	ND	0.800	0.893	7.93	IS 13C8-PFOS
					%R
					78.1
					79.7
					91.1
					LCL-UCL
					60 - 150
					60 - 150
					60 - 150

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

NW 4/18/17

4

Sample ID: CBD-FB01-032717		Modified EPA Method 537							
Client Data		Sample Data		Laboratory Data					
Name:	CH2M Hill	Matrix:	Groundwater	Lab Sample:	1700381-04				
Project:	NRL-CBD PFAS	Sample Size:	0.120 L	QC Batch:	B7C0150				
Date Collected:	27-Mar-2017 11:05			Date Analyzed:	29-Mar-17 13:54				
Location:				Column:	BEH C18				
Date Received:	28-Mar-2017 9:34								
Date Extracted:	28-Mar-2017 13:43								
Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
PFBS	ND	1.86	4.17	8.32		IS 13C3-PFBS	83.8	60 - 150	
PFOA	ND	0.677	2.08	8.32		IS 13C2-PFOA	75.5	60 - 150	
PFOS	ND	0.840	0.938	8.32		IS 13C8-PFOS	79.2	60 - 150	

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

Nov 4/18/17

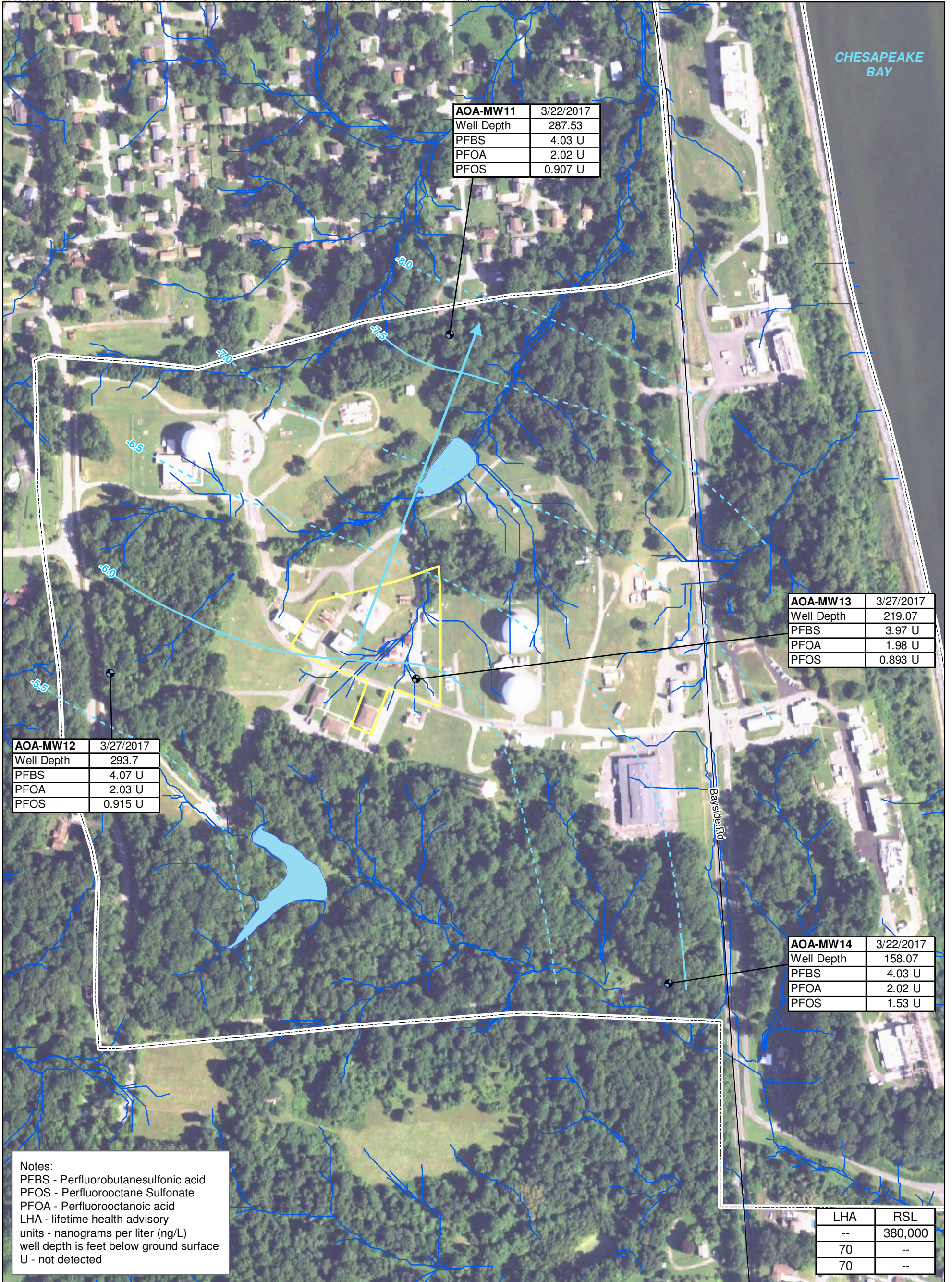


Figure 9
 Analytical Results of PFAS in the Piney Point Aquifer (deep)
 Naval Research Laboratory - Chesapeake Bay Detachment
 Chesapeake Beach, Maryland